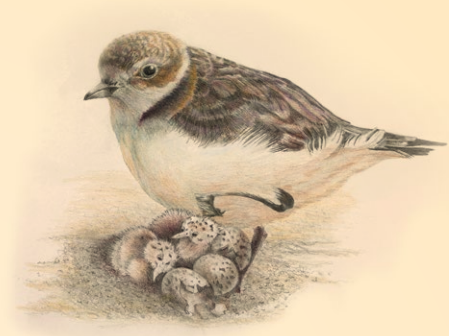


Fort Ord

Multi-Species Habitat Conservation Plan

Volume 1: Habitat Conservation Plan



FORT ORD MULTI-SPECIES HABITAT CONSERVATION PLAN

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Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
ADA	Americans with Disabilities Act
Admin	Program Administration
AMM	Avoidance and Minimization Measures
Army	U.S. Department of the Army
ASV	All Seasons Vehicle
baseline studies	Army's 1992 Flora and Fauna Baseline Study of Fort Ord, California
BGOs	biological goals and objectives
BLM	Bureau of Land Management
Board	Governing Board
Caltrans	California Department of Transportation
CCI	Construction Cost Index
CCR	California Code of Regulations
CDF	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CESA	California Endangered Species Act
CFD	Community Facilities District
CFR	Code of Federal Regulations
Changed Circumstances	Changed Circumstances Measures
CIP	Capital Improvement Program
CNDDDB	California Natural Diversity Database
Cooperative	Fort Ord Regional Habitat Cooperative
County	County of Monterey
CPI	Consumer Price Index
CR	Corridor Reserve
CRMP	Coordinated Resource Management and Planning
CSUMB	California State University, Monterey Bay
Del Rey Oaks	City of Del Rey Oaks
DPS	distinct population segments
EIR	environmental impact report
EIS	environmental impact statement
ESA	federal Endangered Species Act of 1973
ESCA	Environmental Services Cooperative Agreement
FLPMA	Federal Land Policy and Management Act
FODSP	Fort Ord Dunes State Park
FONM	Fort Ord National Monument

FONR	Fort Ord Natural Reserve
FORA	Fort Ord Reuse Authority
FORTAG	Fort Ord Recreational Trail and Greenway
FR	Federal Register
FSEIS	Final Supplemental EIS, Fort Ord Disposal and Reuse
FTE	full-time equivalent
GEP	General Endowment Pool
HCP	Habitat Conservation Plan
HMA	Habitat Management Areas
HMP	Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord
IA	Implementing Agreement
IAF	Implementation Assurances Fund
IRS	Internal Revenue Service
J&S	Jones & Stokes Associates
JPA	Joint Powers Authority
Km	kilometers
LAFCO	Local Agency Formation Commission
LE	luxury edition
LOT	Letter of Transfer
Marina	City of Marina
MBSST	Monterey Bay Sanctuary Scenic Trail
MEC	munitions and explosives of concern
MMTC	multi-modal transportation corridor
MOAs	Memoranda of Agreement
Monterey	City of Monterey
MOU	Memorandum of Understanding
MOUT	Military Operations on Urban Terrain
MPC	Monterey Peninsula College
MPRPD	Monterey Peninsula Regional Park District
NAE	Natural Area Expansion
NEPA	National Environmental Policy Act
NFWF	National Fish and Wildlife Foundation
NLCS	National Landscape Conservation System
NR	North Reserve
O&M	Operations and Management
OPLMA	Omnibus Public Land Management Act of 2009
PBCS	Point Blue Conservation Science
PCE	primary constituent element
PG&E	Pacific Gas and Electric Company
Plan Area	Fort Ord military base, the former
POM	Presidio of Monterey

PSE	participating special entities
RATRI	Road and Trail Resources Inventory
Reporting	Reporting Measures
RMP	Resource Management Plan
ROW	right-of-way
Seaside	City of Seaside
SR	South Reserve
SR 68	State Route 68
SRMA	Special Recreation Management Areas
State Parks	California Department of Parks and Recreation
SUV	sport utility vehicle
SWPPP	Stormwater Pollution Prevention Plan
TAC	Technical Advisory Committee
TC	Travel Camp
UC	University of California
UC MBEST	University of California Monterey Bay Education, Science and Technology Center
UC/NRS	University of California Natural Reserve System
UCSC	University of California, Santa Cruz
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VegCAMP	Vegetation Classification and Mapping Program
WMA	Weed Management Area
WRAR	watershed and riparian assessment report

ES.1 Overview

This Habitat Conservation Plan (HCP) provides the framework for ensuring mitigation of 8 special status plant and animal species (HCP species, Table ES-1) on former Fort Ord. The HCP will serve as the basis for issuance of a base-wide California Endangered Species Act (CESA) Section 2081(b) incidental take permit by the California Department of Fish and Wildlife (CDFW). The HCP will also serve as the basis for issuance of a base-wide Federal Endangered Species Act (ESA) Section 10(a)(1)(B) incidental take permit by the U.S. Fish and Wildlife Service (USFWS).

While the Army's *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord* (HMP), issued by the U.S. Army Corps of Engineers (USACE) in April 1997, provides a framework for species and habitat conservation on former Fort Ord, it does not meet USFWS or CDFW standards or requirements for an application soliciting the issuance of incidental take permits. The HMP was intended to serve as the basis for this HCP and to support the issuance of incidental take permits under Section 10(a)(1)(B) of the ESA and Section 2081 of the CESA to non-Federal land recipients. The general conservation strategy developed in the HMP and evident in the configuration of reserve and development lands was designed to be sufficient for use in an HCP, once all details and appropriate documents were completed. Accordingly, the provisions of this HCP closely mirror the provisions of the HMP and are intended to provide those details and that documentation.

The HCP incorporates all relevant information from the HMP, and supersedes it as the primary species and habitat conservation planning document for non-Federal recipients of Fort Ord lands, except where the HMP requires more intensive conservation measures than the HCP. This HCP provides the framework for ensuring conservation and enhancement of *HCP species*¹ upon transfer of the former Fort Ord lands to non-Federal public and private recipients, while allowing appropriate and compatible growth and development in accordance with applicable laws. To this end, the HCP describes how to avoid, minimize, and mitigate impacts on endangered and threatened species under ESA section 10 and CESA section 2081, thereby addressing the permitting requirements relevant to these species for activities conducted in the *Plan Area*² by the *Permittees*³.

The HCP will accompany applications to CDFW and USFWS for incidental take of HCP species. USFWS will consider issuance of permits for all HCP species but CDFW can only issue permits for the three state-listed species (Table ES-1). Upon approval of the applications, including the HCP and other supporting documentation, permits will be issued for a term of 50 years. For more details on the HCP species, see Chapter 2, *Environmental Setting/HCP Species*.

¹ The species listed in this HCP and proposed for coverage by ESA and CESA permits are referred to as HCP species.

² Plan Area is the area covered by this HCP, which is the former Army facility known as Fort Ord.

³ The Permittees include the agencies and organizations applying to the Wildlife Agencies for endangered species permits. See Section 1.9.1, Permittees.

The Permittees are the following:

- Fort Ord Reuse Authority.
- California Department of Parks and Recreation.
- Regents of the University of California (Santa Cruz Campus).
- County of Monterey.
- City of Marina.
- City of Seaside.
- City of Del Rey Oaks.
- City of Monterey.
- Board of Trustees of California State University (on behalf of the Monterey Bay Campus).
- Monterey Peninsula College.
- Monterey Peninsula Regional Park District.
- Marina Coast Water District.
- Fort Ord Regional Habitat Cooperative (Cooperative)⁴.

On March 22, 1995, the Army entered into a Memorandum of Understanding (MOU) with the Bureau of Land Management (BLM) to define the procedures for the transfer of certain Fort Ord lands from the Army to BLM (transferred Fort Ord lands). Under the MOU, the Army and BLM affirmed that transfer of the Fort Ord lands to BLM would “facilitate implementation of key provisions of the [1994 HMP] which was developed to assure that disposal and reuse of Fort Ord lands are in compliance with the [ESA].” The MOU also states that “[t]imely transfer of these lands and subsequent implementation of the HMP are critical to assure that regulatory requirements of the [ESA] and the [CESA] do not stall or preclude economic development of Fort Ord...”. Pursuant to the MOU, BLM agreed to comply with all of the 1993 ESA Biological Opinion and HMP. As owner of the Fort Ord National Monument (FONM) within the Plan Area, the BLM is an important land manager in the Plan Area and a partner with the HCP Permittees to the extent allowed by Federal law. For more details on the HCP’s background, Permittees, and the role of the Cooperative and the Bureau of Land Management in the HCP, see Chapter 1, *Introduction*.

Table ES-1. Proposed Habitat Conservation Plan Species

Common Name	Scientific Name	Status ^a Federal/State/CRPR
Plants		
Sand gilia	<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	E/T/1B.2
Yadon’s piperia	<i>Piperia yadonii</i>	E/-/1B.1
Monterey spineflower	<i>Chorizanthe pungens</i> var. <i>pungens</i>	T/-/1B.2
Seaside bird’s beak	<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i>	-/E/1B.1
Animals		
Smith’s blue butterfly	<i>Euphilotes enoptes smithi</i>	E/-

⁴ The Cooperative was created by the Permittees to implement the HCP. See Section 1.9.2, *Role of the Fort Ord Regional Habitat Cooperative*, and Section 7.2, *Implementing Structure*.

Common Name	Scientific Name	Status ^a Federal/State/CRPR
Western snowy plover	<i>Charadrius nivosus ssp. nivosus</i>	T/SSC
California tiger salamander	<i>Ambystoma californiense</i>	T/T
California red-legged frog	<i>Rana draytonii</i>	T/SSC

^a Status Explanations

– = no listing.

Federal

E = listed as endangered under the ESA.

T = listed as threatened under the Federal ESA.

State

E = listed as endangered under the CESA.

T = listed as threatened under the CESA.

SSC = CDFW species of special concern.

California Native Plant Society California Rare Plant Rank (CRPR)

CRPR 1B: plants rare, threatened, or endangered in California and elsewhere.

Threat Ranks

0.1- Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

Moderately threatened in California (20-80% of occurrence threatened/moderate degree and immediacy of threat)

ES.1.1 Base Reuse

The former Fort Ord military base (the Plan Area) occupies 27,832 acres (approximately 45 square miles) along the Pacific Ocean in northern Monterey County. About 3,954 acres of the former base were originally developed for military facilities with 23,888 acres left as relatively natural areas used for military training and other purposes. Development since base closure has reduced the natural areas to 23,474 acres. Base reuse would result in rehabilitation and construction of roads, utilities and other infrastructure to support new research/educational, residential, commercial, light industrial, recreational and other development. To accommodate this growth and development, an estimated 5,051 acres of natural land cover is expected to be affected by development in the designated development areas and 777 acres affected by the covered activities in the Habitat Management Areas (HMA⁵; 485 acres on the non-Federal HMAs). Impacts to HCP species resulting from base redevelopment would be minimized and fully mitigated through the preservation and management of 3,895 acres on non-Federal HMAs of HCP species, their habitat, and natural communities, and through management of habitat on 14,645 acres of HCP species and their habitat on Bureau of Land Management (BLM) land, to the extent allowed by Federal law (see Table 2-1).

ES.2 Covered Activities

All qualifying base reuse (i.e., post-transfer) activities that are conducted within the Plan Area pursuant to this HCP are considered *covered activities*. Allowable and/or required activities covered

⁵ Habitat Management Areas are the areas for habitat reserves and habitat corridors in the Plan Area.

by this HCP are identified and addressed in association with three general and overlapping land use categories: designated development areas, Borderlands, and HMAs. The incidental take permits issued pursuant to this HCP will be effective for all such activities within the Plan Area, and BLM administered lands, to the extent authorized by Federal law. For more details on the HCP land use designations and covered activities, see Chapter 3, *Covered Activities*.

Designated development areas generally have no habitat management requirements or other HCP restrictions. The resources found on these parcels will be lost as a result of reuse but are not considered essential to meeting the biological goals and objectives of this HCP. Losses of HCP species and natural communities on these parcels will be authorized under this HCP. Limited avoidance and minimization measures (AMM) will be required in these areas to minimize impacts on HCP species.

Borderlands are designated development areas or HMA parcels at the urban/wildland interface where specific planning and design considerations and management activities are required to minimize the effects of development on HCP species and natural communities. This land use designation overlaps with the other two land designations (i.e., designated development areas and HMAs). That is, an individual parcel can be categorized as a Borderland parcel and either a designated development area or HMA. In this HCP, the Borderlands designation applies to the entire parcel. In the HMP, the Borderlands designation was limited to development parcels adjacent to the main central habitat reserve, the FONM, and adjoining habitat areas. The HMP definition was expanded for the HCP to identify management responsibilities for additional boundary situations. These areas will be planned and managed according to AMMs. They include incorporation of fire-wise design principles, establishment and maintenance of fuelbreaks, siting and design of facilities, controlling access into the adjacent HMAs from the Borderland parcels, controlling the spread of non-native species, and monitoring effects at the urban/wildland interface.

The HMAs include large tracts of natural areas that support biologically diverse natural communities and are contiguous or otherwise connected through established corridors.⁶ Together, the HMAs compose the habitat reserve system of the HCP. Each non-Federal HMA will be managed to benefit HCP species and natural communities through implementation of site-specific AMMs and mitigation measures. Implementation of these HCP required actions, and any BLM administered land actions, will achieve both the habitat and species-level biological goals and objectives of the HCP (see Section 1.9.3, *Role of Bureau of Land Management*, for details).

ES.3 Managers of Habitat Management Areas

The California Department of Parks and Recreation (State Parks) will manage the 979-acre Fort Ord Dunes State Park (FODSP) west of Highway 1, also for public recreation and conservation with a minimum of 700 acres of the park designated as open space and native habitat. The University of California (UC) is responsible for the 606-acre Fort Ord Natural Reserve (FONR) in the northern portion of the former base. UC does not intend to provide general public access but rather to foster research targeted to address species and habitat management issues of base-wide relevance. Other HMAs include smaller parcels situated around the periphery of the BLM lands and parcels that maintain a connection between this central reserve and the FONR. Table ES-2 lists the habitat

⁶ “Natural areas” and “natural lands” mean areas that are historically undeveloped and have vegetation, in this HCP.

managers, HMAs, and acreages of the HMAs. These HMAs comprise the habitat reserve system for this HCP.⁷

Table ES-2. Habitat Management Areas within the Habitat Reserve System

Land Recipient	Habitat Manager	Habitat Management Area	Amount (acres)
BLM	BLM	Fort Ord National Monument (FONM)	14,645
State Parks	State Parks	Fort Ord Dunes State Park (FODSP)	979
UC	UC	Fort Ord Natural Reserve (FONR)	606
Monterey County	Cooperative	East Garrison Reserve (EG)	
		North	148
		South	275
		Habitat Corridor/Travel Camp (TC)	398
		Oak Oval Reserve (OO)	73
		Parker Flats Reserve (PF)	372
		Landfill Parcel (LF)	308
		Laguna Seca Recreational Expansion (LS)	
		Wolf Hill (WH)	79
		Lookout Ridge (LR)	196
Subtotal – Monterey County			1,477
City of Marina	Cooperative	Salinas River Habitat Area (SR)	43
		Marina Airport Habitat Reserve (AR)	130
		Marina Northwest Corner (NWC)	63
Subtotal – City of Marina			236
Monterey Peninsula College	Cooperative	Range 45 Reserve (R45)	206
Monterey Peninsula Regional Park District	Cooperative	Natural Area Expansion (NAE)	19
Total			18,540

⁷ BLM has a special role in assisting with implementation the HCP but it is not a permittee under the HCP, nor otherwise subject to the requirements of the HCP. BLM manages the FONM, the largest of identified HMAs within the HCP area, pursuant to the HMP, its own RMP, and in accordance with the Fort Ord National Monument proclamation. BLM has agreed to cooperate with the Cooperative to allow possible additional mitigation measures on the Fort Ord National Monument in conformance with Federal law. Under the Federal section 10 Incidental Take Permit, only those additional mitigation measures implemented or funded by the Cooperative on the Fort Ord National Monument will be credited to Permittees. Mitigation credit for BLM's current management activities will not be transferred credited to Permittees for the Federal permit. BLM's current management activities and any BLM authorized additional mitigation measures will be credited to Permittees by CDFW for its section 2081 permit. However, under applicable Federal law, those activities and mitigation measures may change and are not permanent restrictions on use or obligations for use. See Section 1.9.3, *Role of Bureau of Land Management* for more details.

ES.4 Impacts

Incidental take of HCP species and loss of habitat for these species will occur as a result of the following.

- *Development in designated development areas.* The HCP assumes that direct impacts on land uses within designated development areas would eliminate all biological resources in the land use footprint. Indirect impacts on habitat management areas are likely as the human population grows on former Fort Ord. Predation by domestic pets, disturbance to wildlife by recreationists, soil erosion resulting in loss of plant habitat or degradation of wetlands, harassment because of reuse at the urban/wildland border, unauthorized vehicle access, trash dumping, landscape waste dumping, and spread of non-native species could result in adverse effects on biological resources within the HMAs. AMMs, especially in Borderlands parcels, include barriers to unauthorized vehicle use, measures to prevent erosion, measures to prevent the spread of non-native species, and fuelbreak construction.
- *Non-Federal HMA allowable development.* Limited development by the Permittees on non-Federal HMAs will be allowed in some of the HMAs. Specific development envelopes have been designated in some, but not all of the non-Federal HMAs. However, all development in non-Federal HMAs will be required to site and design facilities to avoid or reduce impacts on HCP species. Public use of the non-Federal HMAs could affect HCP species through trampling, harassment, or degradation of habitat. Management actions and other AMMs have been identified to reduce these effects.
- *Federal HMA allowable development.* BLM's management of the national monument is currently limited to a 2% development restriction per the BLM's 2007 RMP. The Army's 1994 HMP, as amended, also prescribed a 2% development allowance for the Natural Resource Management Area (NRMA) that mostly aligns with the BLM national monument boundary. The 2% development restriction within the 1994 HMP did not include the BLM's compound development parcel (parcel F1.12) or lands within a Cal Trans study corridor for realignment of SR 68 (parcels F1.1.2, and F1.13.1). Development of the BLM's NRMA will be sited in accordance with BLM's RMP and any corresponding section 7 process when applicable.
- *Non-Federal HMA mitigation and monitoring measures, operations and management (O&M) activities, road corridors, and infrastructure.* Ground-disturbing effects by covered activities in non-Federal HMAs will remove or disturb HCP Species and their habitat. However, for some of the facilities, the ground disturbance will be temporary and HCP plant species may be able to recolonize the disturbed areas. The extent of the disturbance varies by project. Indirect effects also vary depending on the type of project. Specific impacts are identified for construction of new road corridors and segments, construction, and O&M of Marina Coast Water District facilities.

Habitat management activities are expected to have a net benefit on all HCP species but some activities may have temporary or permanent adverse impacts resulting in take. The HCP establishes large enough preserve areas to ensure that the net effect of all habitat management activities is beneficial across the habitat reserve system. Non-Federal land use management activities such as road maintenance and access controls will be required to support habitat restoration, enhancement, and maintenance activities. The potential effects on HCP species from a range of management activities are identified.

The effects to each HCP species were estimated based on the areal extent of allowable developments, activities causing the impacts, and other factors, not necessarily on the nature of the impacts. For example, fuelbreak maintenance may enhance habitat for some species; impacts associated with O&M activities for infrastructure are likely to be temporary. The impact assessment assumes complete loss of HCP species (on non-Federal and Federal land) from covered activities and identifies AMMs to further reduce these effects. A summary of impacts on HCP species is provided in Table ES-3 at the end of the chapter. For more details on the effects of covered activities, see Chapter 4, *Impact Assessment and Levels of Take*. See Chapter 10, *Alternatives Analyzed*, for more information on the alternative measures considered that would avoid or minimize the potential for take of HCP species.

ES.5 Conservation Strategy

The conservation strategy provides for the establishment, enhancement, and long-term management of habitats that support HCP species to protect and enhance populations of these species and ensure their long-term viability. Specifically, the conservation strategy will accomplish the following objectives:

- Ensure covered activities will avoid or minimize impacts on HCP species and natural communities to the maximum extent practicable.
- Preserve HCP species' populations and habitats.
- Restore, enhance, and maintain species' habitat and natural communities to mitigate for direct and indirect impacts on particular species and vegetation communities.
- Restore, enhance, and maintain HCP species habitat.
- Manage preserved HMAs, including appropriate natural processes, to maximize the functions of habitats for HCP species.

ES.5.1 Avoidance and Minimization Measures

Substantial AMMs were built into the redevelopment of the Plan Area through the HMP process. The parcels dedicated for conservation (i.e., HMAs) and parcels dedicated for development (as identified by the U.S. Army Corps of Engineers, Sacramento District 1997) were selected based on the distribution and abundance of HCP species, and the size, shape, and location of parcels to maximize conservation value for the HCP species. Accordingly, the HMAs are areas that have high densities of HCP species, are of large size, have minimal edge-to-area ratio, and are adjacent to existing preserved areas or other HMAs. Through the HMP planning process, covered activities already avoid many impacts by being located in areas with lower HCP species density and lower habitat value.

The AMMs serve to augment those measures adopted in the HMP in order to meet ESA section 10 and CESA section 2081 purposes. The AMMs developed for this HCP will apply to qualifying covered activities occurring in designated development areas, Borderlands, and HMAs. These measures will be applied as conditions on covered activities in non-Federal designated development areas, Borderlands, or HMAs to ensure that impacts on covered species and their habitats are avoided and minimized to the maximum extent practicable during HCP implementation.

ES.5.2 Mitigation Measures

HCP required mitigation measures were developed to offset any impacts resulting from implementation of the covered activities. Mitigation measures will be applied at the landscape-level, habitat (or natural community) level, and the species-level in the HMAs (see Table ES-2). Landscape-level mitigation measures are applied over the entire Plan Area and relate to establishment, planning, design, and management of designated HMAs. Landscape-level mitigation measures address ultimate disposition (ownership and management responsibilities) of the land and the management activities and commitments necessary to maintain a well-functioning habitat reserve and corridor system. Habitat-level and species-level mitigation measures are directly linked to HCP biological goals and objectives. Habitat-level mitigation measures apply to each natural community within the habitat reserve system. These habitat-level mitigation measures were determined by the habitat needs of HCP species and by actions required to conserve and manage natural communities. Mitigation measures at this level will conserve most HCP species through conservation and management of their habitats. However, some species-level mitigation measures will provide additional conservation tailored to a particular HCP species at the individual- or population-level. These species-specific mitigation measures will augment the landscape-level and habitat-level mitigation measures. Habitat-level and species-level mitigation measures include requirements for habitat revegetation, restoration, and enhancement, prescribed burning and alternative vegetative management, non-native invasive species control, erosion control for habitat restoration and enhancement, and evaluation of alternatives to burning. Each of the conservation tools used to develop the mitigation measures is defined below.

- **Habitat Preservation.** The primary means of protecting HCP species and natural communities is preservation of high-quality habitat, as land preservation is critical to the conservation strategy at the landscape, natural community, and species levels. Identifying and setting aside those areas with important ecosystem functions, linkages, known species occurrences, and other characteristics suitable to support and sustain HCP species is the foundation of the conservation strategy.
- **Habitat Management.** Habitat preservation is only one branch of the conservation strategy; alone, it does not necessarily ensure long-term habitat protection and sustainability in the absence of some form of human intervention. Especially in an increasingly urbanized environment, designated natural open spaces require periodic attention to maintain their natural resources, restore degraded and disturbed areas, and enhance habitat values. Habitat management is the broad term that encompasses all aspects of human stewardship of the preservation areas established by this HCP, including habitat maintenance, enhancement, and restoration.
- **Habitat Maintenance.** At a minimum, habitat-level mitigation measures are expected to maintain current conditions and populations of HCP and other native species in the HMAs. A basic assumption of the conservation strategy is that existing population levels, distribution, habitat quality, and other characteristics will be sustained and enhanced in perpetuity. In some cases, populations of HCP species and habitats are expected to increase and expand through the maintenance of existing conditions without additional enhancement or restoration efforts. Habitat maintenance is a primary requirement for all habitat types included in this HCP.
- **Habitat Enhancement.** Habitat enhancement is the improvement of an existing degraded vegetation community. Enhancement involves improving one or more ecological factors, such as native species richness, native species diversity, overall vegetative cover, and wildlife habitat function. Habitat enhancement activities typically occur on soils that are largely intact (i.e., soils

that have not been tilled or otherwise disturbed). An example of enhancement would be planting coast live oak seedlings in an existing stand of oaks to increase cover and density and improve the age-class structure of the oak population. Improving wildlife habitat function might include removing barriers or reducing hazards to animal movement such as removing fences, adding or resizing culverts, or regulating traffic use on roads through habitat areas.

- **Habitat Restoration.** Habitat restoration is the establishment of a vegetation community in an area that historically supported it, but no longer does because of the loss of one or more required ecological factors. Restoration may involve altering the substrate or removing major impediments to improve a site's ability to support the historic natural community. For example, iceplant-dominated coastal dunes could be restored to viable coastal dune scrub habitat by physically (or chemically) removing large iceplant mats, straw crimping, and seeding with native species. In this HCP, habitat restoration is only specified in those vegetation communities or land cover types for which techniques are generally proven and where restoration would substantially enhance habitat for HCP species and native biological diversity. For more details on the HCP's conservation strategy, see Chapter 5, *Conservation Strategy*.

ES.6 Monitoring and Adaptive Management

Monitoring and adaptive management are essential components of an HCP. They provide information on implementation of required AMMs, the effectiveness of these actions, as well as provide a foundation to make adjustments to these measures as needed. As such, the purpose of the monitoring and adaptive management program for this HCP is to ensure that the conservation strategy is achieving the biological goals and objectives for HCP species and their habitats. Monitoring implementation of this HCP will include two components: *compliance monitoring* and *effectiveness monitoring*. Information obtained from these monitoring actions can be used to adjust AMM and mitigation measure implementation, as appropriate, based on specific HCP management decisions that will need to be made to ensure the success of this HCP's adaptive management.

Compliance monitoring tracks the status of HCP implementation, ensuring that HCP required actions are executed and permit compliance is maintained. A cornerstone of this HCP's compliance monitoring program is the evaluation of land use status to ensure compliance with the stay-ahead provision and to track the cumulative take of covered species. This monitoring effort provides a systematic means of measuring progress on base reuse against the assumptions and requirements of the HCP. Covered activities in designated development areas, especially in Borderlands, will be tracked through this type of monitoring. The Cooperative, in coordination with the Permittees and BLM, will coordinate and perform compliance monitoring. Compliance monitoring, for areas including the Borderlands, will allow the Cooperative to assure USFWS and CDFW that impacts from development activities on HCP species and habitats are sufficiently offset by the amount of land preserved and managed for those species and habitats.

Effectiveness monitoring measures the biological response to implementation of the HCP required AMMs and mitigation measures. Information obtained from this monitoring uses metrics that can be directly compared and contrasted to the biological goals and objectives of the HCP. This type of monitoring includes *status and trends monitoring* and *effects monitoring*. It is focused on HCP species and natural communities. It will quantify resources and threats in the Plan Area through time. Additionally, monitoring results will be used to evaluate the success of specific projects initiated as part of HCP required AMMs and mitigation measures, such as controlled burns, non-native plant

control treatments, and trail closures. These efforts will commence with *baseline studies* that identify, characterize, and map HCP species and natural communities within HMAs.

- Information obtained from compliance and effectiveness monitoring will be used, as appropriate, to adjust AMM and mitigation measure implementation using an adaptive management approach. Critical decisions affecting management of the HCP are expected to occur when monitoring results indicate that previously employed management measures do not produce desired results, that circumstances have changed, or that biological conditions are different from those originally estimated for the HCP. As such, evaluation of monitoring results against compliance and biological thresholds for the HCP species will be reviewed annually through the Technical Advisory Committee (TAC). Adjustments to implementation of the HCP required actions will be made as appropriate. For more details on monitoring and adaptive management, see Chapter 6, *Monitoring and Adaptive Management*.

ES.7 Implementation

HCP implementation begins when the ESA Section 10(a)(1)(B) incidental take permit and CESA Section 2081(b) permit are issued. Primary responsibility for implementing the HCP rests with the Permittees. BLM will assist Permittees to the extent allowable under Federal law. An HCP Joint Powers Authority (JPA), called the Fort Ord Regional Habitat Cooperative (Cooperative), will be formed prior to permit issuance. The Cooperative will coordinate and track HCP activities required by the permits and will evaluate the consistency of covered activities with the terms of the HCP. Permittees will adopt HCP implementing ordinances or policies before permit issuance.

The Permittees, BLM, TAC, Wildlife Agencies, and consultants and contractors will have different HCP implementation roles and responsibilities. FORA, the Cooperative, University of California Natural Reserve System (UC/NRS), State Parks, and BLM will play a large role in implementing activities required by the HCP permits. HMAs owned by State Parks, and UC/NRS will be managed by these entities according to the terms of the HCP. BLM will manage its HMA according to Federal law, including the HMP, RMPs, associated biological opinions, and the FONM proclamation. For more details on the HCP's implementation structure, see Chapter 7, *Implementation*.

ES.8 Regulatory Assurances

Approval of this HCP, issuance of the Section 10(a)(1)(B) and Section 2081(b) permits, and proper implementation of the HCP by the Permittees and with the cooperation of BLM will provide assurances that HCP species and their habitats in the Plan Area will be adequately conserved and protected in perpetuity insofar as can be known at this time. Except as provided in the HCP or otherwise required by law, USFWS and CDFW will not seek to impose additional mitigation requirements pursuant to the ESA, CESA, National Environmental Policy Act (NEPA), or California Environmental Quality Act (CEQA) directed specifically at the protection and conservation of HCP species and their habitats on Permittees within the Plan Area through any other agency approval process whether or not such agency is an entity participating in this HCP.

Further assurances specific to each Permittee are provided by the HCP. These assurances assume that the HCP's responses to changed circumstances will be implemented as planned and that adequate funding sources will be established. In the event of unforeseen circumstances that result in

a substantial and adverse change in the status of the HCP species, and if USFWS and CDFW determine that additional conservation and mitigation measures are necessary to respond to them, USFWS, CDFW, and the Cooperative would work together to identify opportunities to redirect resources to address these circumstances. If BLM decides to change its management of FONM lands in the future, it will work with USFWS, CDFW, and the Cooperative to identify opportunities to address this circumstance on BLM managed lands.

The HCP provides a discussion of the following reasonably foreseeable changed circumstances, including measures Permittees will implement to respond to them, as they may occur within the Plan Area.

- Earthquakes.
- Listing of a new species within the Plan Area.
- Global climate change.
- Catastrophic fire.
- Coastal erosion.
- Invasion by new non-native invasive species or disease.

For more details on the assurances requested by the Permittees, assurances provided by the Permittees and BLM, and process for minor and major amendments to the HCP, see Chapter 8, *Assurances*.

ES.9 Funding

The HCP includes funding provisions for all HCP required actions. The cost of HCP required actions will be funded by a number of sources. The Permittees, through the Federal and State permits, Implementing Ordinances, and HCP JPA Agreement, will commit to adequately funding all HCP required actions. Funding for HCP required actions will be provided from two primary sources: the Community Facilities District (CFD) Special Tax or replacement funding mechanism and annual state budget appropriations. Other funding sources (e.g., grants) would also be available, but are not assumed, to fund HCP-required actions. With the exception of State Parks and Monterey Peninsula Regional Park District, no Permittee may be compelled to obligate its general fund to satisfy its financial obligations under the HCP. It is anticipated that the two primary funding sources will provide adequate funding to assure HCP implementation.

HCP funding sources will be used to implement HCP-required actions during the permit term and in perpetuity. The CFD Special Tax will be used to annually fund HCP required actions and two separate endowment funds: the FONR Endowment Fund and the Cooperative Endowment Fund. The Cooperative Endowment Fund will consist of three accounts: the HCP Fund, the Implementation Assurances Fund (IAF), and the Borderlands Fund. Costs attributed to the Cooperative will be funded by the HCP Endowment Fund. Costs attributed to UC/NRS will be funded by the FONR Endowment Fund. HCP required actions, aside from monitoring, on State Parks–managed HMAs will be funded by annual budget allocations during the permit term and in perpetuity. The Implementation Assurances Fund will provide funding assurances for State Parks, the Cooperative, and UC/NRS in the event of a budget shortfall or to address changed circumstances. The Borderlands Endowment Fund will provide funding for implementation of AMMs on Borderlands

associated with personnel, non-native invasive species control, fuelbreak maintenance, access control (e.g., fencing, locks, signs), and erosion control. For more details on the planning-level cost estimate for HCP implementation, and funding sources and assurances, see Chapter 9, *Cost and Funding*.

Table ES-3. Net Effects Summary

Species	Habitat Available in Plan Area ^a (acres)	Take Limit of Habitat on non-Federal HMAs (acres)	Impact Location	Land Protection (acres)	Mitigation Location ^b	HCP Required Actions that Benefit Species
Federally and State Listed Animal Species						
California tiger salamander	19,598	3,614	Potential upland would be impacted from covered activities in designated development areas and all HMAs (except FODSP and Marina Northwest Corner where no potential upland habitat occurs). Impacts to potential upland habitat would occur as a result of new road corridor and infrastructure activities within the Inter-Garrison Road, FORTAG, Marina Airport, and MCWD facility locations and alignments. No impacts to potential or occupied breeding habitats.	Non-Federal HMAs: 2,104 FONM: 13,167 Plan Area Total: 15,271	Occupied and potential breeding habitat will be preserved and maintained or enhanced in designated development areas and FONM, East Garrison South, HC/TC, and Laguna Seca (Wolf Hill and Lookout Ridge), and NAE HMAs. Potential upland habitat will be preserved and maintained or enhanced in all HMAs where potential upland habitat occurs (i.e., does not occur in FODSP and Marina Northwest Corner HMAs).	AMMs 1–9, 14–21, 23–28, 32, 33, 36, 42–53 Mitigation Measures 1–5, 15, 17–21, 26–30, 36, 39, 40 Monitoring Measures 1–5, 7–17, 19–21, 24, 37-39 Adaptive Management Measures 1–11
Federally Listed Animal Species						
California red-legged frog	16,362	2,120	Potential upland would be impacted from covered activities in designated development areas and all HMAs (except FODSP, Landfill, Marina Airport, and Marina Northwest Corner where no potential upland habitat occurs). Impacts to potential upland habitat would occur as a result of new road corridor and infrastructure activities within the Inter-Garrison Road, FORTAG, Marina Airport, and MCWD facility locations and alignments. No impacts to potential or occupied breeding habitats.	Non-Federal HMAs: 1,374 FONM: 12,207 Plan Area Total: 13,581	Occupied and potential breeding habitat will be preserved and maintained or enhanced in designated development areas and FONM, East Garrison South, HC/TC, and Laguna Seca (Wolf Hill and Lookout Ridge), and NAE HMAs. Potential upland habitat will be preserved and maintained or enhanced in all HMAs where potential upland habitat occurs (i.e., does not occur in FODSP, Landfill, Marina Airport, and Marina Northwest Corner HMAs).	AMMs 1–2, 14–21, 23, 24, 26–28, 32, 33, 36, 42–53 Mitigation Measures 1–5, 15, 17–20, 26–30, 36, 39, 40 Monitoring Measures 1–5, 7–10, 12–16, 19–21, 24, 40, 41 Adaptive Management Measures 1, 2, 4–8 10, 11
Smith’s blue butterfly	110	7	Potential or occupied habitat would be impacted from covered activities in designated development areas and HMAs (FODSP, and Marina Northwest Corner). Infrastructure construction impacts are expected at MCWD facility locations and alignments.	Non-Federal HMAs: 103 FONM: 0 Plan Area Total: 103	Species habitat will be preserved and maintained or enhanced in FODSP and FONR HMAs. Species host plant will be included within FODSP restoration (700 acres) at a minimum of 10% of the plant mix.	AMMs 1, 2, 10, 14–17, 20, 21, 23, 26-29, 32, 33, 37-40, 42-47, 49, 52, 53 Mitigation Measures 1–4, 8–11, 13, 20, 29–32 Monitoring Measures 1–4, 7–14, 19, 24, 33, 34 Adaptive Management Measures 1, 2, 4–8, 11, 13
Western snowy plover	71	11	Species habitat would be impacted from covered activities in FODSP. This includes impacts from HMA allowable development, HMA management, and mitigation measure implementation, and MCWD facility construction.	Non-Federal HMAs: 60 FONM: 0 Plan Area Total: 60	Species habitat will be preserved and maintained or enhanced in FODSP HMA.	AMMs 1, 2, 14–17, 20–23, 26–28, 32, 33, 39, 42–47, 49, 52, 53 Mitigation Measures 1–4, 14, 20, 26, 29, 30 Monitoring Measures 1–4, 7–10, 12-14, 19, 21, 24, 35, 36 Adaptive Management Measures 1, 2, 4–8, 11, 12
State and Federally Listed Plant Species						
Sand gilia	9,089	1,511	Species habitat would be impacted from covered activities in designated development areas and HMAs (FONM, FODSP, FONR, East Garrison (North and South), HC/TC, Parker Flats, Landfill Parcel, Laguna Seca (Wolf Hill), Range 45, Marina	Non-Federal HMAs: 1,525 FONM: 5,742 Plan Area Total: 7,267	Species habitat and known occurrences will be preserved and maintained or enhanced in FONM, FODSP, FONR, East Garrison (North and South), HC/TC, Parker Flats, Landfill Parcel, Laguna Seca (Wolf Hill) Range 45, Northwest	AMMs 1, 2, 12, 14–17, 20, 21, 23, 32–35, 37, 38, 40–47, 49, 52, 53 Mitigation Measures 1–7, 10, 12, 15, 17, 20, 22–25, 29–32, 34–36, 39, 40

Species	Habitat Available in Plan Area ^a (acres)	Take Limit of Habitat on non-Federal HMAs (acres)	Impact Location	Land Protection (acres)	Mitigation Location ^b	HCP Required Actions that Benefit Species
			Airport, and Northwest Corner). Impacts to habitat would occur as a result of new road corridor and infrastructure activities within the Inter-Garrison Road, FORTAG, Marina Airport, and MCWD facility locations and alignments.		Corner, and Marina Airport HMAs. A minimum of 281 acres will be restored or enhanced through active restoration or habitat enhancement projects in FONM, FONR, or FODSP.	Monitoring Measures 1–6, 8–14, 16–19, 22–26 Adaptive Management Measures 1, 2, 4–8, 10, 11
Federally Listed Plant Species						
Yadon’s piperia	2,420	204	Species habitat and known occurrences would be impacted from covered activities in designated development areas and HMAs (FONM and Marina Northwest Corner). No road corridor or infrastructure activities impacts are expected.	Non-Federal HMAs: 5 FONM: 2,140 Plan Area Total: 2,145	Species habitat and known occurrences will be preserved and maintained or enhanced in FONM and Marina Northwest Corner HMAs. Additional species occurrences are expected to be identified in FONM during the 10-year reconnaissance studies.	AMMs 1, 2, 11, 13–17, 20, 21, 23, 31–34, 37, 38, 40, 42–47, 49, 52, 53 Mitigation Measures 1–7, 20, 22, 24, 25, 29–31, 33–38 Monitoring Measures 1–6, 8–10, 12-14, 16, 19, 22-24, 27, 28 Adaptive Management Measures 1, 2, 4–8, 10, 11, 14
Monterey spineflower	12,978	3,528	Species habitat and known occurrences would be impacted from covered activities in designated development areas and all HMAs. Road corridor and infrastructure construction and O&M impacts are expected within the MMTC and MCWD facility locations and alignments. Impacts to habitat would occur as a result of new road corridor and infrastructure activities within the Inter-Garrison Road, FORTAG, Marina Airport, and MCWD facility locations and alignments.	Non-Federal HMAs: 2,184 FONM: 6,893 Plan Area Total: 9,077	Species habitat and known occurrences will be preserved and maintained or enhanced in all HMAs. Targeted projects will enhance or restore an additional 156 acres of species habitat in FONM and FONR HMAs.	AMMs 1, 2, 14–17, 20, 21, 23, 26-28, 32-35, 37, 38, 40-47, 49, 52, 53 Mitigation Measures 1–7, 10, 12, 15, 17, 20, 22-25, 29-32, 34-36, 39, 40 Monitoring Measures 1–6, 8–19, 22-24, 29, 30 Adaptive Management Measures 1, 2, 4–8, 10, 11
Additional State Listed Plant						
Seaside bird’s beak	6,850	499	Species habitat and known occurrences would be impacted from covered activities in designated development areas and HMAs (FONM, FONR, East Garrison South, Parker Flats, Laguna Seca – Wolf Hill, Range 45, and NAE). Impacts to habitat would occur as a result of infrastructure activities within the FORTAG and MCWD facility locations and alignments.	Non-Federal HMAs: 403 FONM: 5,642 Plan Area Total: 6,045	Species habitat and known occurrences will be preserved and maintained or enhanced in FONM, FONR, East Garrison South, Parker Flats, Laguna Seca – Wolf Hill, Range 45, and NAE HMAs.	AMMs 1, 2, 12, 14–17, 20, 21, 23, 26-28, 30, 32-35, 37, 38, 40-47, 49, 52, 53 Mitigation Measures 1–8, 10, 17, 20, 22–25, 29–32, 34–36, 39 Monitoring Measures 1–6, 8–10, 12–16, 18, 19, 22-24, 31, 32 Adaptive Management Measures 1, 2, 4–8, 10, 11

^a Habitat available is the quantity of occupied or suitable species’ habitat found in the Plan Area. The methods used to define and quantify habitat for each species are presented in Chapter 2. Habitat available serves as the basis for quantifying impacts (i.e., take estimate) resulting from implementation of covered activities and mitigation provided to offset those impacts resulting from implementation of the conservation strategy.

^b Mitigation locations include conservation activities located on HMA’s administered by various Permittees where mitigation is a requirement of the HCP. Mitigation activities that are identified on the BLM administered FONM are subject to applicable Federal laws and BLM approval. See Section 1.9.3, *Role of Bureau of Land Management*, for more information.

1.1 Overview

In April 1997, the revised *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord* (HMP) was issued by the U.S. Army Corps of Engineers (USACE) on behalf of the U.S. Department of the Army (Army). The HMP established a comprehensive species and habitat conservation program as part of the closure, disposal, and reuse of former Fort Ord lands. While the Army's HMP provides a framework for species and habitat conservation on former Fort Ord, it does not meet (nor must it meet) U.S. Fish and Wildlife Service (USFWS) or California Department of Fish and Wildlife (CDFW) standards or requirements for an application soliciting the issuance of incidental take permits. This Habitat Conservation Plan (HCP) is intended to fulfill those requirements by combining key components of the HMP with additional elements to assure compliance with section 10 of the Federal Endangered Species Act of 1973 (ESA) (16 United States Code (USC) §§ 1531–1544) as amended and section 2081 of the California Endangered Species Act of 1984 (CESA) (California Fish and Game Code §§ 2050 et seq.) as amended; thereby serving as a basis for issuance of base-wide permits to non-Federal entities by USFWS and CDFW.

The USFWS has recommended that all non-Federal entities acquiring, developing, or managing lands at the former Fort Ord apply for a Section 10(a)(1)(B) incidental take¹ permit (ITP) for protected species covered in the HMP (referred to here as *HCP species*). In addition, CDFW recommended non-Federal entities to obtain incidental take permits for three state-listed species that occur on the former base pursuant to Section 2081 of the California Fish and Game Code. To apply for the Federal permit, applicants must submit a habitat conservation plan along with their applications (50 Code of Federal Regulations [CFR] 17.22[b]). To apply for the state permit, applicants must propose measures to minimize and fully mitigate the impacts of the proposed taking, monitor compliance with those measures, and provide assurances that the measures will be funded (California Code of Regulations [CCR] Title 14, Section 783.2[a][8]–[a][10]).

1.2 Background

Closure, disposal, and reuse of former Fort Ord lands required consultation between the Army and USFWS under Section 7 of the ESA because the Army's actions potentially affected several species listed as threatened or endangered or proposed for listing under the ESA. As a result of that consultation, USFWS issued a biological opinion on October 19, 1993, and subsequent biological and

¹ "Take" and "Taking" as used in the ESA mean to harass, harm, hunt, pursue, shoot, wound, kill, trap, catch, capture, or collect, or attempt to engage in any such conduct involving a covered species. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Take" is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." "Incidental Take" means the take of any covered species where such take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity as that term is defined under the ESA, the CESA, and their implementing regulations.

conference opinions on January 31, 1997; April 11, 1997; March 30, 1999; October 22, 2002; March 14, 2005; August 3, 2011; April 28, 2014; and May 28, 2015 finding that no jeopardy to Federally listed plant and animal species or plants and animals proposed for listing, or destruction or adverse modification to critical habitat for any listed species would result from the Army's actions. A key provision of the original biological opinion required the development and implementation of the HMP to minimize incidental take of listed species and their habitats and to mitigate for impacts to vegetation and wildlife resources resulting from the Army's actions. In the 1993 biological opinion, USFWS also recommended that the Army consider all proposed and candidate species for Federal listing and other special-status species in the HMP.

In response to that requirement, the USACE (on behalf of the Army) developed the HMP with input from Federal, state, and local agencies and organizations concerned with the natural resources and reuse of Fort Ord. USFWS, the Bureau of Land Management (BLM), CDFW, the California Department of Parks and Recreation (State Parks), the University of California (UC), the Fort Ord Reuse Authority (FORA) and other members of the Monterey Bay area community were active participants in the development and signing of the HMP. The HMP thus describes a cooperative Federal, state, and local conservation program for plant and animal species and habitats of concern known to occur at Fort Ord.

While the conservation program established by the HMP is intended to be a comprehensive program for the former base, it stems from an agreement between the Army and USFWS and does not exempt other landowners (existing or future) of transferred property from the ESA Section 9 prohibitions against take of listed species or from compliance with the provisions of the CESA. Timely transfer of the Fort Ord lands from the Army to the BLM and subsequent implementation of the HMP was deemed critical to assure that the regulatory requirements of the ESA and CESA do not stall or preclude economic redevelopment of Fort Ord and the subsequent economic recovery of the local communities. The HMP was intended to serve as the basis for this HCP and to support the issuance of incidental take permits under Section 10(a)(1)(B) of the ESA and Section 2081 of the CESA to non-Federal land recipients. The general conservation strategy developed in the HMP and evident in the configuration of reserve and development lands was designed to be sufficient for use in an HCP, once all details and appropriate documents were completed. Accordingly, the provisions of this HCP closely mirror the provisions of the HMP and are intended to provide those details and that documentation.

1.3 Purpose and Need

The purpose of this HCP is to provide the framework for ensuring conservation and enhancement of HCP species upon transfer of the former Fort Ord lands to non-Federal public and private recipients while allowing appropriate and compatible growth and development in accordance with applicable laws. To this end, the HCP describes how to avoid, minimize, and mitigate impacts on endangered and threatened species, thereby addressing the permitting requirements relevant to these species for activities conducted in the Plan Area by the *Permittees*.² The HCP also describes the responsibilities associated with operating and maintaining the habitat reserves that will be created to mitigate anticipated impacts resulting from growth and development activities.

² The Permittees include the non-Federal agencies and organizations applying to the USFWS and CDFW for incidental take permits for endangered and threatened species. See Section 1.9.1, *Permittees*.

In the case of non-Federal recipients of former Fort Ord lands, this document will support the applications for incidental take permits from USFWS under Section 10(a)(1)(B) of the ESA and from CDFW under Section 2081 of the CESA. Incidental take permits are required because incidental take of HCP species will occur as the former base is redeveloped.

This document anticipates a reuse scenario that would result in the rehabilitation and construction of roads, utilities, and other infrastructure to support new research/educational, residential, commercial, light industrial, recreational and other development, expected to generate approximately 18,000 jobs. The population is estimated to increase to 37,000 individuals during the proposed permit term. This growth would generate demand for an additional 12,000 housing units on the former base. Development associated with the reuse of the base will result in removal of 9,292 acres, 4,241 acres of which contain vegetated habitat areas and 5,051 acres contain existing development. The base-wide program for habitat preservation and management of 18,540 acres³ of lands on former Fort Ord is intended to minimize and fully mitigate loss of HCP species and natural communities that would result from base redevelopment. Of the 18,540 acres, 3,895 acres will be protected in HMAs by non-Federal recipients of former Fort Ord lands. The remaining 14,645 acres will be managed by BLM, or by Permittees under authorization from BLM. Permittee management or funding of management that is in addition to BLM's normal management activities may be counted as mitigation for HCP impacts.

Issuance of these permits will not only allow for incidental take of HCP species in compliance with the ESA and the CESA, as described in the HCP, but will provide assurances to local jurisdictions that no further mitigation for impacts to those species or their habitats will be required, except as provided in applicable Federal and state laws and regulations.

1.4 Plan Area

The area covered by this HCP, referred to herein as the *Plan Area*, is the former Army facility known as Fort Ord. The Plan Area encompasses 27,832 acres (approximately 44 square miles) of land along the Pacific Ocean, 100 miles south of San Francisco, California (Figure 1-1). The site is in northern Monterey County; approximately 72% of the former base lies within unincorporated Monterey County, about 15% is within the City of Seaside, about 12% is within the City of Marina, about 1% is within the City of Del Rey Oaks, and less than 0.5% is within the City of Monterey (Figure 1-2). Sand City shares a portion of its boundaries with the Plan Area.

1.5 Covered Activities

All base reuse (i.e., post-transfer from the Army) activities that are conducted within the Plan Area by the Permittees (see Section 1.9.1, *Permittees*) pursuant to this HCP are considered *covered activities*. These activities include development in designated development areas, allowable development in HMAs, operations and management activities in non-Federal HMAs, road corridors and infrastructure construction and operations and maintenance in non-Federal HMAs, HCP required actions that may result in take, and other activities as described in Chapter 3, *Covered*

³ This is the total acreage within the HMAs. Approximately 1,438 acres of impacts are estimated within the HMAs from implementation of covered activities related to HMA allowable development, HCP required actions, road corridors, and infrastructure.

Activities. The incidental take permits requested pursuant to this HCP will address all such activities within the Plan Area. If CDFW decides to issue a Section 2081 permit prior to the USFWS decision to issue a Section 10(a)(1)(B) permit, activities described herein that could result in incidental take of Federally listed HCP animal species on non-Federal lands are not authorized until the Section 10(a) permits become effective.⁴

1.6 HCP Species

Wildlife and plant species included in this HCP were selected based on their legal protection under the state and Federal ESAs, their listing status, and the relative importance of existing populations and habitats in the Plan Area to the continued survival of the species. A complete list of plant and animal species covered by this HCP is provided in Table 1-1.

Table 1-1. HCP Plant and Animal Species and Incidental Take Coverage Requested

Scientific Name	Common Name	Status ^a		Incidental Take Coverage Requested	
		State/ CRPR	Federal	Section 2081	Section 10(a)(1)(B)
Plants					
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	sand gilia	T/1B.2	E	✓	✓ ^b
<i>Piperia yadonii</i>	Yadon's piperia	1B.1	FE		✓ ^b
<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey spineflower	1B.2	T		✓ ^b
<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i>	seaside bird's beak	E/1B.1		✓	✓ ^b
Animals					
<i>Euphilotes enoptes smithi</i>	Smith's blue butterfly		E		✓
<i>Charadrius nivosus</i> ssp. <i>nivosus</i>	western snowy plover	SSC	T		✓
<i>Ambystoma californiense</i>	California tiger salamander	T	T	✓	✓
<i>Rana draytonii</i>	California red-legged frog	SSC	T		✓

^aStatus:

State

E = State listed as endangered.

T = State listed as threatened.

SSC = California species of special concern.

Federal

E = Federally listed as endangered.

T = Federally listed as threatened.

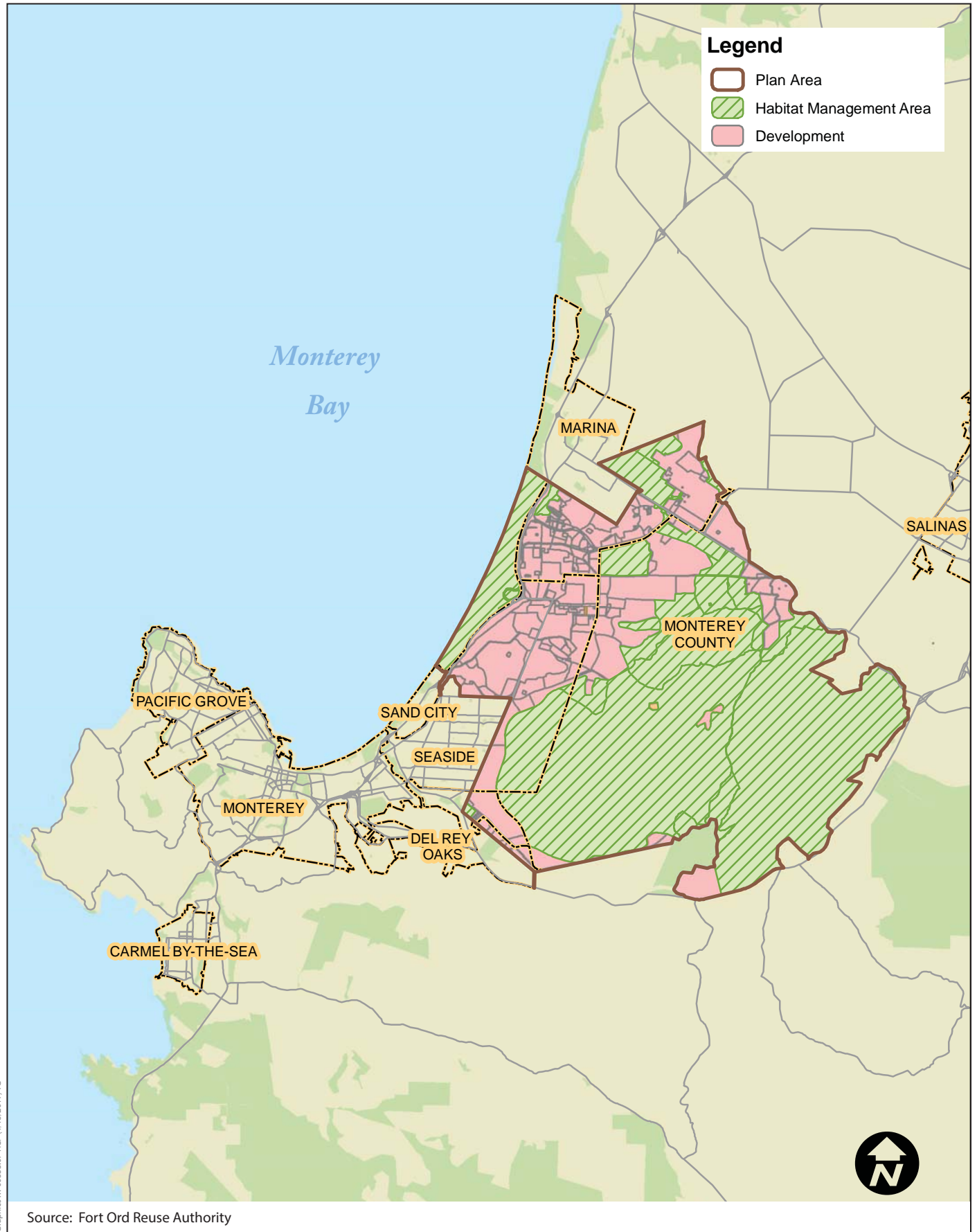
California Native Plant Society California Rare Plant Rank (CRPR)

CRPR 1B: plants rare, threatened, or endangered in California and elsewhere.

Threat Ranks

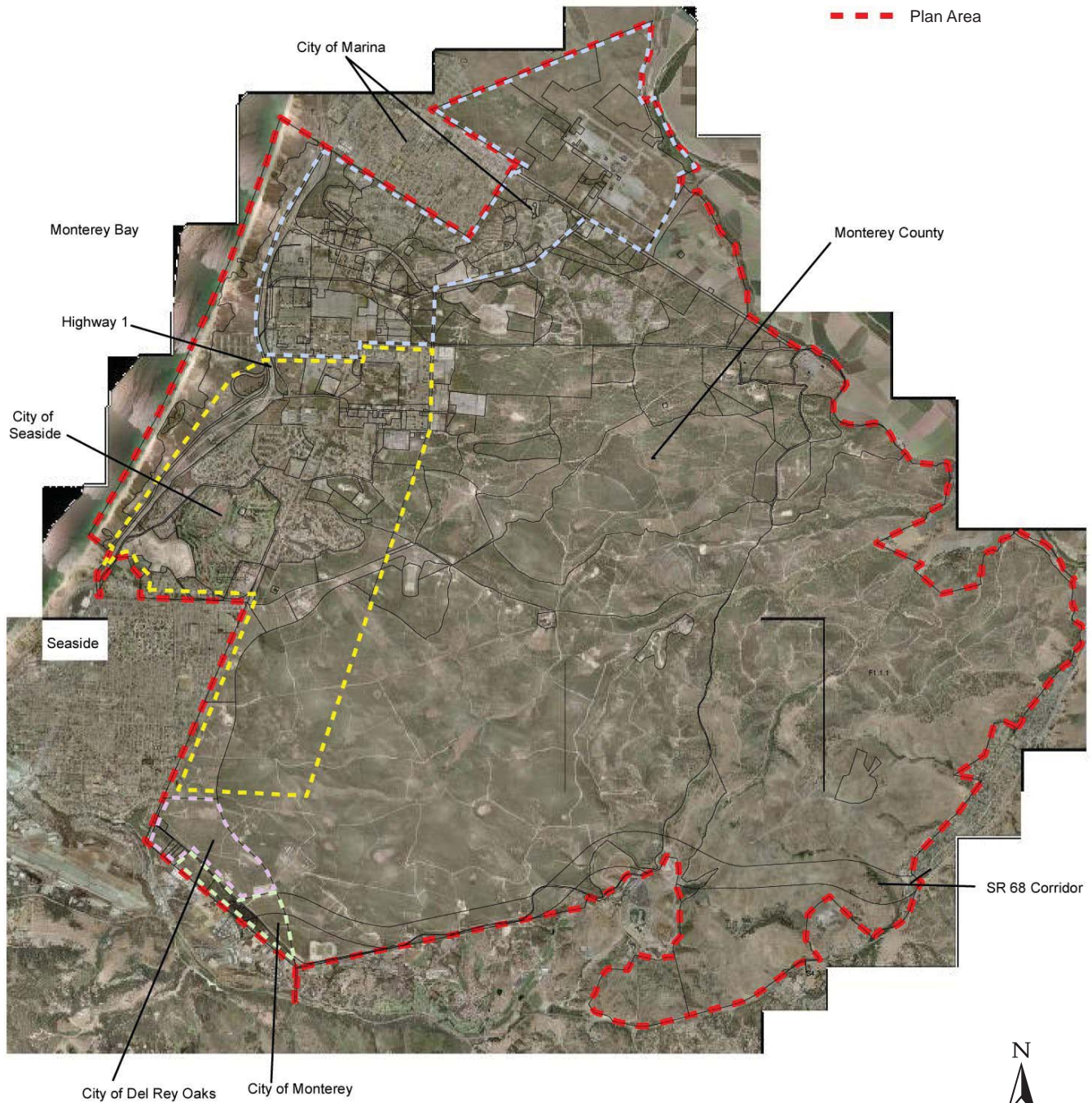
0.1 Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

⁴ USFWS incidental take authorization for California tiger salamander on non-Federal lands will continue to be allowed only in those specific cases where coverage has been extended through ESA Section 7 consultation, as described in Chapter 7, *HCP Implementation*.



Legend **Jurisdictional Boundaries** **within Former Fort Ord**

- City of Del Rey Oaks
- City of Marina
- City of Monterey
- City of Seaside
- Plan Area



Source: Zander Associates

0.2 Moderately threatened in California (20-80% of occurrence threatened/moderate degree and immediacy of threat)

^b Under the ESA there is no prohibition for take of plants on non-Federal lands. Section 10 incidental take permits are only required for wildlife and fish species. However, the Section 7(a)(2) prohibition against jeopardy applies to plants, and issuance of a Section 10(a)(1)(B) incidental take permit cannot result in jeopardy to a listed plant species. Some plants included as HCP species in this Plan are covered in order to comply with the CESA.

For the purposes of the Section 10(a)(1)(B) incidental take permits to be issued by USFWS, all HCP species listed above will be considered *covered species*. Section 10(a)(1)(B) expressly authorizes USFWS to issue a Section 10(a) permit to allow incidental take of species listed as threatened or endangered under the ESA.

The USFWS routinely approves HCPs that address both listed and unlisted species. CDFW on the other hand, cannot issue take permits under Section 2081 of the CESA for species other than those that are listed as threatened, endangered, or candidates for listing and only when that take is incidental to an otherwise lawful activity. Consequently, only those state-listed HCP species included in Table 1-1 will be considered covered species under the base-wide Section 2081 permits. For consistency, and so that this HCP will be applicable to both permits, the term *HCP species* is used instead of the term “covered species” throughout the document unless use of the latter term is necessary for clarity.

Over the course of Plan implementation (50 years), the status of non-listed species occurring within the Plan Area may change due to one or more threats. As a result, USFWS or CDFW may list as threatened or endangered under the ESA or the CESA, respectively, species that are not covered under the Plan. If a non-covered species is listed, the Permittees must implement actions under Changed Circumstances⁵ to evaluate the potential impacts of covered activities on the newly listed species and to develop measures to avoid impacts on the newly listed species until the HCP is amended to cover the species. Should a species not covered by the HCP be listed, proposed for listing, or petitioned for listing, the Permittees may request that USFWS or CDFW add the species to the Section 10(a)(1)(B) or 2081 permit, respectively. If incidental take coverage is desired, the HCP and permits could be modified or amended. Alternatively, the Permittees could apply for new and separate permits (see Chapter 8, *Assurances and HCP Amendments*, Section 8.1.1.2.2, *Listing of a New Species within the Plan Area*).

1.7 Relationship of the Habitat Management Plan Conservation Program to this HCP

The April 1997 HMP established a habitat conservation area and corridor system and parcel-specific land use categories and management requirements for all lands on former Fort Ord.

The conservation areas were designed through the application of ecological concepts by combining the distributions of the following resources.

⁵ *Changed circumstances* are defined in the Federal No Surprises Rule (Section 8.1.1.1, *No Surprises Rule*) as those circumstances affecting a species or geographic area covered by a conservation plan or agreement that can be reasonably anticipated by the applicant(s) and the USFWS and for which the parties can plan a response (50 CFR 17.3). Accordingly, 50 CFR 17.22(b)(2) and 17.32(b)(2) require that potential changed circumstances be identified in the conservation plan along with remedial measures that would be taken to address these changes.

- Sites supporting high or medium densities of known populations of sand gilia and Monterey spineflower.
- Sites supporting high and medium-quality habitat (as defined by the density of buckwheat) or known occurrences of Smith's blue butterfly.
- Sites supporting potential or known coastal nesting habitat for western snowy plover.
- Study polygons supporting the highest richness of HMP species (i.e., seven or more HMP species or suitable habitat occurrences).

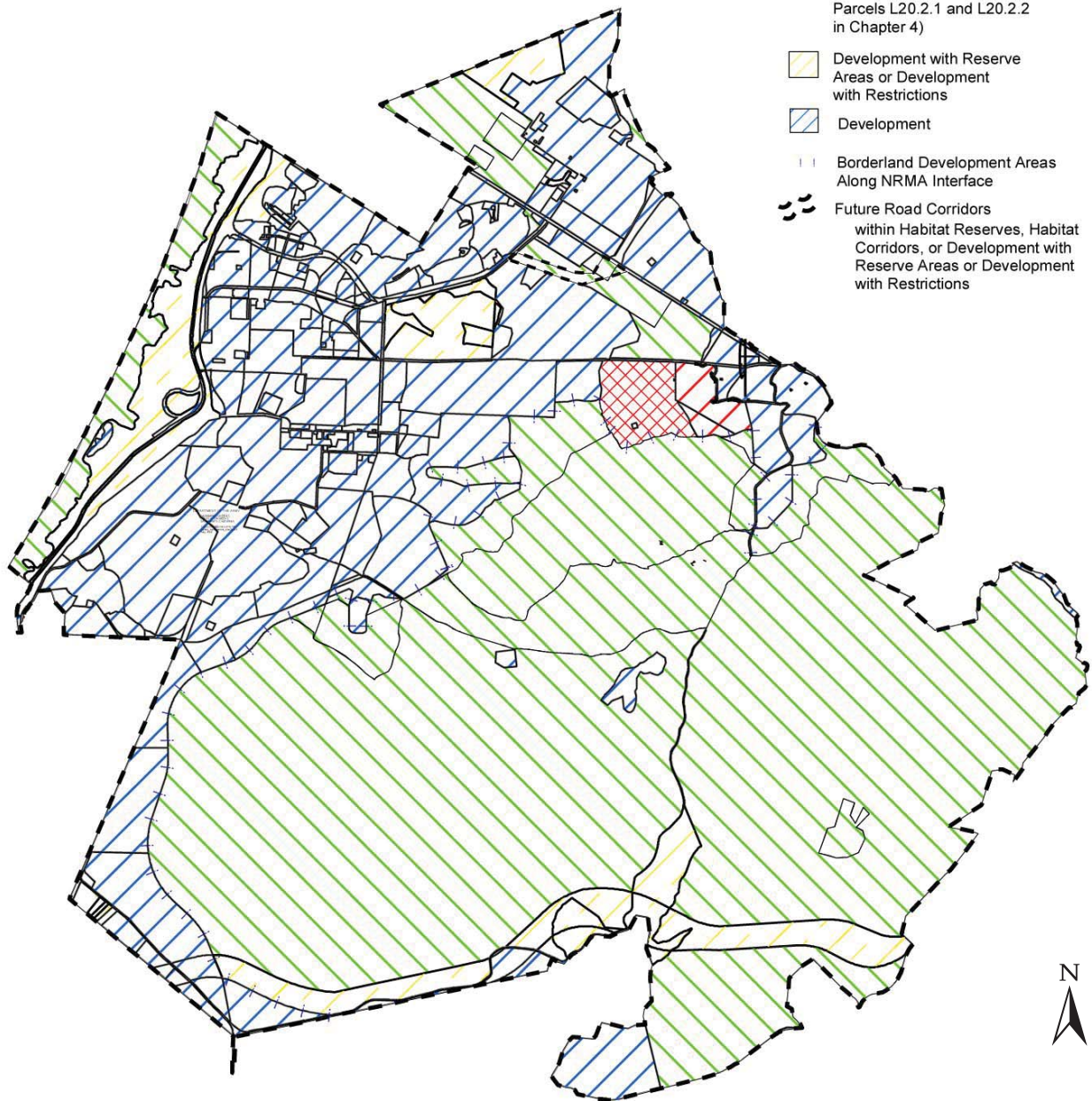
The HMP's conservation program established land use categories and habitat management requirements for all lands on the former base. Developable lands and habitat reserve areas were defined along with habitat corridors and restricted development areas (Figure 1-3). Resource conservation and management requirements were described and responsible parties for each designated habitat area on the former base were identified.

The conservation program described in the 1997 HMP provides the basic framework for the conservation strategy of this HCP (Chapter 5, *Conservation Strategy*). The habitat reserve areas and habitat corridors are considered Habitat Management Areas (HMAs) in this HCP, as are the restricted development parcels (Figure 1-4). A total of 14 HMAs fall under the ownership of seven entities.

- Bureau of Land Management (BLM)
 - Fort Ord National Monument (FONM)
- California Department of Parks and Recreation (State Parks)
 - Fort Ord Dunes State Park
- University of California Natural Reserve System (UC/NRS)
 - Fort Ord Natural Reserve (FONR)
- Monterey County
 - East Garrison Reserve (North and South)
 - Habitat Corridor/Travel Camp
 - Oak Oval Reserve
 - Parker Flats Reserve
 - Landfill Parcel
 - Laguna Seca Recreation Expansion (Wolf Hill and Lookout Ridge)
- City of Marina
 - Salinas River Habitat Area
 - Marina Airport Reserve
 - Marina Northwest Corner
- Monterey Peninsula College (MPC)
 - Range 45 Reserve

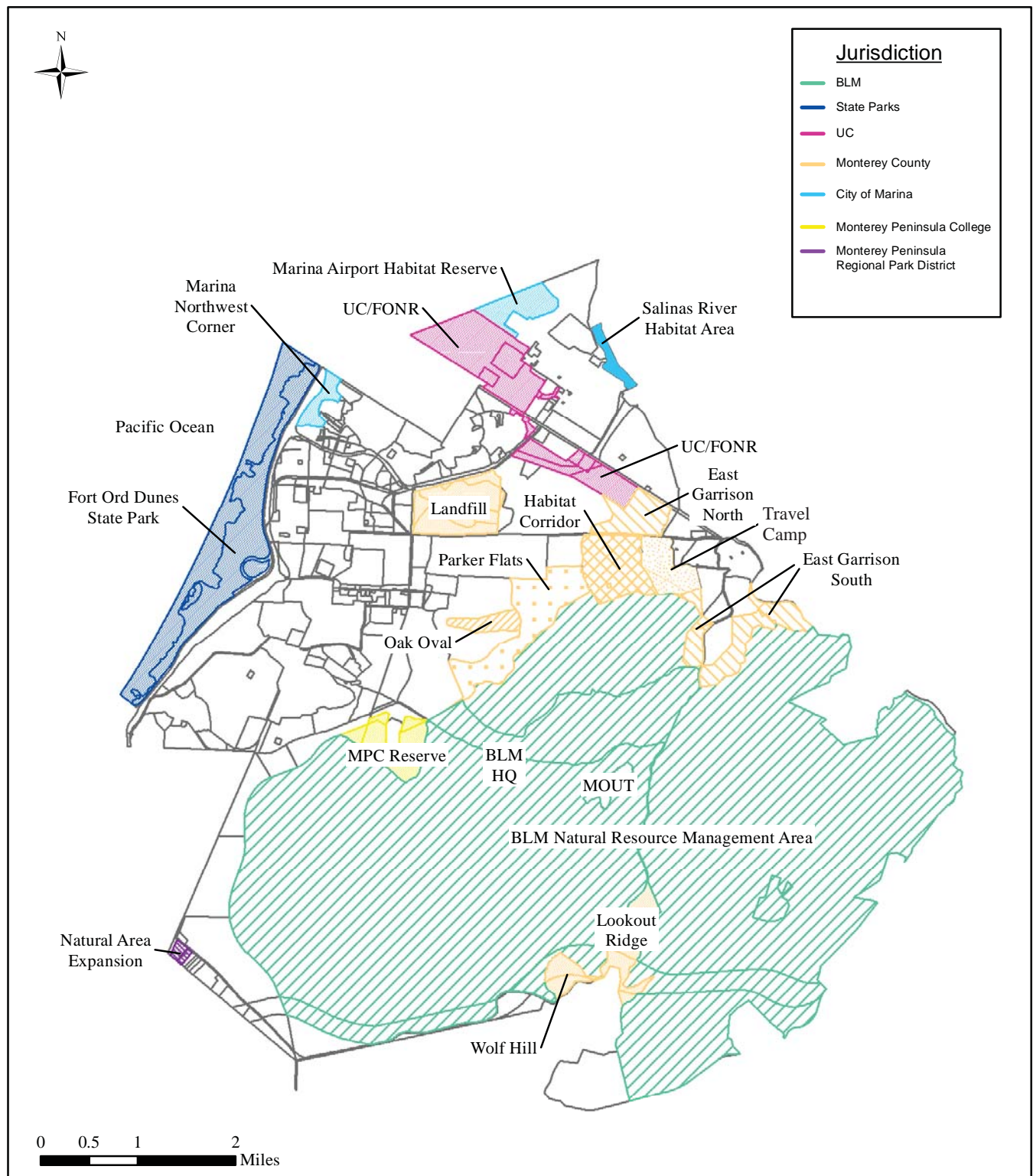
Notes:

- 1) Polygon boundaries in development areas may be modified, and development polygons may be subdivided or aggregated, before or after transfer. These types of changes in development polygons will not require modifications to this HMP.
- 2) The E11b parcels do not reflect the public benefit conveyance still being coordinated by FORA, the County of Monterey, and Monterey Peninsula Regional College. A portion of these parcels will likely be transferred as public benefit conveyance transfers.



Source: Zander Associates

Figure 1-3
HMP Management Categories



Source: Denise Duffy and Associates

Figure 1-4
Habitat Management Areas

- Monterey Peninsula Regional Park District (MPRPD)
 - Natural Area Expansion

All of these HMAs combine to create a Habitat Reserve System supporting the full range of HCP species and natural communities while allowing limited development on properties with lesser resource values. Specific planning has been completed for the restricted development parcels to identify allowable development areas and areas that will (or may, in the case of BLM lands) remain as habitat reserve lands. All land managers (designated by the HMP) receiving non-Federal HMA parcels will be responsible for management of HCP species and natural communities to meet the goals and objectives of the HCP's conservation strategy.

Management actions will (or may, in the case of BLM lands) also be required on development parcels adjacent to HMAs (referred to as Borderlands) to address the urban/wildland interface and protect the species and habitats on the HMAs.

Monitoring is required by the HMP, but has been more thoroughly described in this HCP (Chapter 6, *Monitoring and Adaptive Management*). Several types of monitoring are prescribed to document and track the timely assembly and management of the base-wide Habitat Reserve System, maintenance and enhancement of HCP species' populations and their habitats, and restoration activities in compliance with the requirements of this HCP. Adaptive management will occur in response to the monitoring results and/or changed circumstances, as needed to adjust specific actions, monitoring protocols and other covered activities without having to amend the HCP itself.

With implementation of this HCP's conservation strategy, impacts to HCP species and natural communities from development activities have been minimized by:

1. Locating development parcels in areas previously developed or with less species richness.
2. Protecting and preserving large, contiguous, and biologically diverse tracts of land.
3. Establishing resource conservation, management, and monitoring requirements for non-Federal HMAs and Borderlands to protect HCP species.
4. Applying an ongoing program of monitoring and adaptive management.

1.8 Biological Goals, Objectives, and HCP Required Actions

The overarching goal of this HCP is to protect and enhance populations of HCP species and assure their long-term viability by preserving and managing natural communities that support them within the Plan Area. Preservation and adaptive management of these species and natural communities will assure their sustainability in perpetuity while allowing limited development on properties with lesser resource values.

This goal will be achieved by the designation of 18,540 acres (over 66%) of the 27,832 -acre installation as habitat reserve lands in HMAs, of which 3,895 acres will be protected in non-Federal HMAs to mitigate for effects of covered activities to covered species. Large, contiguous, and biologically diverse habitat parcels are being transferred to natural resource management agencies including BLM, State Parks and the UC/NRS, with clear missions regarding habitat protection and

management⁶. Additional lands transferred to Monterey County, the City of Marina, MPC, and the MPRPD will be managed by the Fort Ord Regional Habitat Cooperative (Cooperative), a Joint Powers Authority (JPA), whose governing body will be composed of designated officials from each of the Permittees. The Cooperative will manage the lands for conservation, maintenance and beneficial enhancement of habitat. Together, these habitat reserve lands support the full range of HCP species and natural communities; they will be managed to benefit these resources following specific actions which will meet measurable biological goals and objectives (Section 5.3, *Biological Goals and Objectives*). Avoidance and minimization measures (AMMs) and mitigation measures (i.e., HCP required actions) described in this HCP (Section 5.4, *Measures to Avoid and Minimize Impacts* and Section 5.5, *Measures to Mitigate Unavoidable Impacts*) are clear and specific enough to ensure that every habitat manager will understand their responsibilities in relation to the permits being issued. These actions are designed to achieve both habitat and species-level biological goals and objectives of the HCP's conservation strategy (Chapter 5, *Conservation Strategy*) and are linked to a multi-tiered monitoring program (Chapter 6, *Monitoring and Adaptive Management*) that will ensure compliance with the requirements of the HCP and the permits. Impacts in the non-Federal HMAs will be limited to those activities identified in Section 3.3, *Covered Activities*, and quantified in Chapter 4, *Impact Assessment and Levels of Take*. These non-Federal HMAs are protected as mitigation lands for perpetuity. The FONM HMA is managed to protect the objects and values of the monument which correspond to the terms of the HMP. BLM's adherence to the HMP helps to ensure the Permittees comply with the terms of the HCP. Permittee-funded mitigation measures implemented on the FONM emphasize preserving, enhancing, maintaining, and restoring (as appropriate) aquatic features, maritime chaparral, and other habitats within the FONM and promotes the preservation of all HCP species therein.

The non-Federal HMAs have specific land use covenants for compliance with the HMP. If they are sold, the land use covenants are permanently part of the deeds. Any future owner must participate in the HMP in perpetuity. Additionally, the non-Federal HMA owners (with the exception of State Parks) will record, prior to permit issuance, conservation easements in the form of Appendix L to the HCP on their HMAs. The conservation easements will grant and convey the following rights to the Cooperative as the Grantee:

- (a) To preserve and protect the Conservation Values of the Property.
- (b) To enter upon the Property at reasonable times in order to monitor compliance with and otherwise enforce the terms of this Conservation Easement, the Permit, and the Management Plan and to implement at Grantee's sole discretion Permit and Management Plan activities that have not been implemented, provided that Grantee shall not unreasonably interfere with Grantor's authorized use and quiet enjoyment of the Property.
- (c) To prevent any activity on or use of the Property that is inconsistent with the purposes of this Conservation Easement and to require the restoration of such areas or features of the Property that may be damaged by any act, failure to act, or any use or activity that is inconsistent with the purposes of this Conservation Easement.
- (d) To require that all mineral, air and water rights as Grantee deems necessary to preserve and protect the biological resources and Conservation Values of the Property shall remain a part

⁶ BLM lands, which make up a large area of the HMAs in the HMP, are now subject to continuing management under federal land laws which may result in change in habitat protection and management over time.

of and be put to beneficial use upon the Property, consistent with the purposes of this Conservation Easement.

- (e) All present and future development rights appurtenant to, allocated, implied, reserved or inherent in the Property; such rights are hereby terminated and extinguished, and may not be used on or transferred to any portion of the Property, nor any other property adjacent or otherwise.

CDFW will be a third-party beneficiary to the conservation easements. If non-Federal HMAs are sold, the deed restrictions and conservation easements described above will ensure the continuance of mitigation and adaptive management under any ownership.

1.9 Permit Issuance

In response to the recommendations of USFWS and CDFW, and to benefit from direct authorizations from both agencies, non-Federal recipients of surplus Federal land in the Plan Area (Section 1.9.1, *Permittees*) will submit one joint application for incidental take of all HCP species to USFWS and one joint application to CDFW for incidental take of the three state-listed HCP species. This HCP will accompany both applications.

The HCP identifies permit required activities. Permit required activities will be implemented and funded by the Permittees to maintain permit compliance. The assumptions for implementation costs and funding regarding permit required activities are provided in Chapter 9, *Cost and Funding*. Each permit required activity is assigned a unique code and can be found in this HCP as follows:

- Avoidance and Minimization Measures (AMMs) are identified in Chapter 5, *Conservation Strategy*.
- Mitigation Measures are identified in Chapter 5.
- Monitoring Measures are identified in Chapter 6, *Monitoring and Adaptive Management*.
- Adaptive Management Measures are identified in Chapter 6.
- Program Administration (Admin) Measures are identified in Chapter 7, *HCP Implementation*.
- Reporting Measures (Reporting) are identified in Chapter 7.
- Changed Circumstances Measures (Changed Circumstances) are identified in Chapter 8, *Assurances and HCP Amendments*.

A summary of all the HCP participants and their roles can be found in Table 1-2. While USFWS will consider issuance of a section 10(a)(1) permit for all species addressed in this HCP, CDFW can only issue 2081 permits for state-listed or candidate species.

Table 1-2. Roles of HCP Participants

HCP Participants	Abbreviation or Acronym	Role	
		Permit Applicant	HMA Manager
Fort Ord Reuse Authority	FORA	X	
California Department of Parks and Recreation	State Parks	X	X
Regents of the University of California ^a		X	
University of California Natural Reserve System ^a	UC/NRS		X
University of California Monterey Bay Education, Science and Technology Center ^a	UC MBEST		
County of Monterey ^b	County	X	
City of Marina ^b	Marina	X	
City of Seaside	Seaside	X	
City of Del Rey Oaks	Del Rey Oaks	X	
City of Monterey	Monterey	X	
Board of Trustees of California State University (on behalf of the Monterey Bay)	CSUMB	X	
Monterey Peninsula College ^b	MPC	X	
Monterey Peninsula Regional Park District ^b	MPRPD	X	
Marina Coast Water District	MCWD	X	
Fort Ord Regional Habitat Cooperative	Cooperative	X	X
Bureau of Land Management	BLM		X

^a UC/NRS and UC MBEST are under the authority of the Regents of the University of California and therefore are not named separately in the permit applications; however, due to their distinct roles as HCP participants, UC/NRS and UC MBEST are identified here separately and throughout the HCP.

^b HCP Participants are recipients of parcels designated as HMAs; however, the Cooperative will be responsible for the implementation of all HCP required actions on their HMA parcels.

1.9.1 Permittees

Permittees will include the following agencies and organizations with local land use authority and/or jurisdiction over recreational, educational, or water resources on former Fort Ord under California state law. These entities also qualify for lead agency status under the California Environmental Quality Act (CEQA).

- Fort Ord Reuse Authority.
- County of Monterey.
- City of Marina.
- City of Seaside.
- City of Del Rey Oaks.
- City of Monterey.
- Regents of the University of California (Santa Cruz Campus).
- Board of Trustees of California State University (on behalf of the Monterey Bay).
- Monterey Peninsula College.

- Monterey Peninsula Regional Park District.
- Marina Coast Water District.
- California Department of Parks and Recreation.
- The Cooperative, created by the Permittees listed above to implement the HCP (see Section 1.9.2, *Role of the Fort Ord Regional Habitat Cooperative*, below and Section 7.2, *Implementing Structure*, for details).

These jurisdictions, organizations and agencies are requesting to be the Permittees under one non-severable ESA Section 10(a)(1)(B) incidental take permit and one non-severable CESA Section 2081 permit that would provide authorization for take that occurs as a result of implementing covered activities within their respective jurisdictions (Chapter 3, *Covered Activities*).

Take authorization is requested to be granted under a single non-severable Federal permit and a single non-severable State permit. If the permits are granted, coverage for incidental take under these permits could also be extended by the Permittees to other entities through land use approvals, entitlements or other authorizations within the jurisdiction of the Permittees (Chapter 7, *HCP Implementation*). If the USFWS or CDFW suspends or revokes their permit, take authorization provided to all Permittees and those under their jurisdiction would also be suspended or revoked. Such a suspension or revocation could occur for all or a subset of the species authorized by that permit. As such, for projects conducted by private developers under the jurisdiction of one of the Permittees, take authorization would remain in effect for that covered activity unless the permit issued by USFWS or CDFW to the Permittees is suspended or revoked.

Permittees will adopt HCP implementing ordinances or policies before permit issuance. The Cooperative will oversee and facilitate implementation of the HCP on behalf of the Permittees, as described in Chapter 7, *HCP Implementation*. However, the Permittees will ultimately be responsible for compliance with all the terms and conditions of the HCP's permits and for the performance of the Cooperative. Through the Governing Board (Chapter 7, *HCP Implementation*), each local jurisdiction will provide staff to advise the Cooperative on HCP implementation.

Although some of the Permittees (i.e., Regents of the University of California, CSUMB, Fort Ord Reuse Authority, California Department of Parks and Recreation, Monterey Peninsula College, Monterey Peninsula Regional Park District, Marina Coast Water District, and the Cooperative) are within the boundaries of the cities and county, under the HCP permits, they would have take coverage for covered activities for which they implement on land they own (Section 7.5, *Providing Take Authorization under the HCP*). If such a Permit Applicant sells property, the new owner would need to obtain a certificate of inclusion for take coverage from the relevant jurisdiction (city or county), unless the new owner is also a Permit Applicant (Section 7.5). They are not subject to local city or county ordinances or jurisdictional review. Aside from complying with the requirements of the HCP described herein, upon permit issuance, they do not have to seek authorization from the local jurisdictions to carry out their covered activities. However, they are responsible for tracking their covered activities as discussed in Chapter 7, *HCP Implementation*.

1.9.2 Role of the Fort Ord Regional Habitat Cooperative

FORA has been responsible for base-wide coordination of HMP requirements, serving as the primary link between local jurisdictions, regulatory agencies, other decision makers, and the general public. For the HCP, FORA's authority and responsibilities will be transferred to the Cooperative. The

Cooperative will arrange for (and fund through an endowment) coordinated management of habitat reserve lands transferred to Monterey County, the City of Marina, MPRPD, and MPC. The Cooperative will enter into specific agreements with UC and others for cost sharing and reimbursement agreements for HCP required management activities. The Cooperative will also arrange for and fund base-wide HCP species monitoring for all HMAs and track base reuse and development to assure that HCP required actions are being implemented in accordance with the Stay-Ahead Provision (Section 7.6, *Stay-Ahead Provision*). The Cooperative will prepare and submit annual reports documenting HCP implementation and permit compliance to USFWS and CDFW (Section 7.9.3, *Reporting*).

1.9.3 Role of Bureau of Land Management

Pursuant to the Defense Base Closure and Realignment Act of 1990, Public Law 101-510, 104 Stat. 1485 (1980), the Secretary of Defense was required to close Fort Ord, in Monterey County California. To ensure that the disposal and future reuse of Fort Ord lands is carried out in compliance with the ESA, the USACE developed the Fort Ord Multi-Species HMP dated February 1994, which was the subject of consultation with the USFWS under Section 7 of the ESA and resulted in the issuance of *Biological Opinion for the Disposal and Reuse of Fort Ord, Monterey County, California* (1-8-93-F-14) (Biological Opinion).

On March 22, 1995, the Army entered into a Memorandum of Understanding (MOU) with the BLM to define the procedures for the transfer of certain Fort Ord lands from the Army to BLM (transferred Fort Ord lands). Under the MOU, the Army and BLM affirmed that transfer of the Fort Ord lands to BLM would “facilitate implementation of key provisions of the [HMP] which was developed to assure that the disposal and reuse of Fort Ord lands are in compliance with the [ESA].” MOU at p. 2. The agencies further affirmed that “timely transfer of the [Fort Ord] lands and subsequent implementation of the HMP are critical to assure that regulatory requirements of the [ESA] and the California Endangered Species Act do not stall or preclude economic redevelopment of Fort Ord and the subsequent economic recovery of the local communities.” *Id.* Under the MOU, BLM agreed to “be responsible for the implementation of the HMP ... and to monitor HMP compliance.” MOU at pp. 3 and 4.

Subsequently, by Letter of Transfer (LOT) executed between the Secretaries of the Army and Interior, dated October 18, 1996, the Army transferred 7,204 acres of Fort Ord to BLM in accordance with applicable sections of the MOU and the terms of the LOT. Among other commitments, BLM agreed in the LOT that “to the extent permitted under applicable law,” its “management of the [transferred Fort Ord lands] will be guided by the Biological Opinion and the HMP. LOT at p. 4. BLM further committed “as permitted by law” to “implement specific actions on the [transferred Fort Ord lands] set forth in the Biological Opinion” and “to formally consult with the U.S. Fish and Wildlife Service to ensure compliance with Section 7 of the [ESA].” *Id.* at pp. 4 and 5.

Under the Federal Land Policy and Management Act (FLPMA), BLM undertakes a multi-tiered planning approach that generally includes Resource Management Plans and step-down Activity-Level and individual project implementation plans (collectively *step-down plans*). At all levels of planning, BLM engages in the ESA Section 7 consultation with USFWS unless BLM determines, with USFWS concurrence, that a proposed action will have no effect on a listed species or its designated critical habitat. BLM has followed that process to date in managing the transferred Fort Ord lands. Subsequent to the execution of the MOU and LOT with the Army, BLM developed and approved the Southern Diablo Mountain Range and Central Coast of California Resource Management Plan (RMP) (August 31, 2007) and various step-down plans prepared by the BLM Hollister Field Office, and USFWS has reviewed those plans under the ESA Section 7. The RMP and associated plans as they

apply to the transferred Fort Ord lands have been guided by and are consistent with the requirements of the HMP and USFWS Biological Opinion. As part of the RMP process, BLM has designated the transferred Fort Ord lands as an Area of Critical Environmental Concern (ACEC) in recognition, in part, of their significant biological resources. This ACEC was specifically designated to protect unique biological resources, including maritime chaparral, grassland, vernal pool habitats and special status species, in addition to considerations for public safety related to previous military operations. The approval of a resource management plan constitutes formal designation of an ACEC and the RMP is required to include the general management practices and uses, and mitigating measures, identified to protect the designated ACEC. In establishing the Fort Ord National Monument, “all Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, leasing, or other disposition under the public lands laws.” (*Federal Register*, Vol. 77, No. 80, Wednesday April 25, 2012, pp. 24579–24583).

As a national monument, the Fort Ord National Monument is part of BLM’s National Landscape Conservation System (NLCS) and will be managed in a manner that protects the values for which the site was designated as a national monument. As required under the Omnibus Public Land Management Act of 2009 (OPLMA), the BLM will manage components of the NLCS to “conserve, protect, and restore nationally significant landscapes.” OPLMA also states that the Secretary, through the BLM, will manage the components of the NLCS “in accordance with any applicable law (including regulations) relating to any component of the system ... and in a manner that protects the values for which the components of the system were designated.” Accordingly, discretionary uses will be managed in a manner consistent with the protection of the component’s values and may be allowed or prohibited when necessary and as documented in the National Environmental Policy Act (NEPA) analysis for the particular activity in question (BLM Manual 6220).

Also subsequent to the execution of the MOU and LOT with the Army, BLM, under the authority of Section 307 of FLPMA and various Executive Orders, has cooperated with FORA, USFWS and CDFW in preparation of this habitat conservation plan under Section 10 of the ESA, 16 USC 1531 et seq. The Fort Ord Multi-Species HCP was developed in support of applications for incidental take permits by several local jurisdictions, Regents of the University of California, FORA, California Department of Parks and Recreation, County of Monterey, CSUMB, MPC, MPRPD, and MCWD covering listed species that may potentially occur within the applicants’ jurisdictions. These listed species are also located on the Fort Ord lands transferred to BLM. Future management, monitoring and restoration of the Fort Ord lands transferred to BLM is an important element of the conservation strategy of the HCP, including the mitigation strategy (i.e., for mitigation actions provided for by Permittees that will occur on BLM lands) which will offset development impacts by private parties. BLM has been engaged in HCP development with USFWS and CDFW as they consider how the transferred Fort Ord lands may be used in development and implementation of the HCP. For the BLM, this assistance reflects the management goals and objectives of its RMP, the HMP, the FONM proclamation, and BLM’s governing statutory and regulatory authorities, including FLPMA, 43 USC 1701 et seq. For CDFW, this assistance reflects the ability of this agency to accept BLM land management to satisfy the requirements of section 2081 of the CESA. For USFWS, BLM’s cooperation to allow Permittee-funded mitigation measures on BLM property satisfies the requirements of section 10 of the ESA.

BLM intends to implement the HCP conservation strategy on the transferred Fort Ord lands to the extent the conservation strategy is consistent with BLM’s requirements in the RMP step-down plans, the ACEC designation, national monument designation, the HMP, the HMP MOU, and the LOT, and only to the extent allowed under governing law and regulation, including FLPMA, NEPA (42 USC

4321 et seq.), and the OPLMA. Nothing in the HCP will or shall be in the future interpreted as superseding BLM's requirements under the RMP, its step-down plans, the ACEC designation, the national monument designation, the HMP, or any requirements of BLM's governing law and regulation, including FLPMA and NEPA. Under Federal law, land use plans and step-down or implementation plans may be modified over time. In addition, Congress may modify the FONM designation or other requirement of Federal land management. Nothing in the HCP may be interpreted as impacting the ability of the Department of the Interior, BLM, or Congress in making these modifications.

As the RMP and step-down or implementation plans are updated and refined periodically in the future, BLM intends to update and refine such plans in a manner compatible with the conservation strategy of the HCP to the maximum extent BLM finds consistent with Federal law.

In the event an irreconcilable conflict arises between the requirements of the RMP, step-down or implementation plans, ACEC, national monument designation, FLPMA, OPLMA, or other plans and laws governing BLM management of the transferred Fort Ord lands and the HCP conservation strategy, BLM intends to work with the USFWS, CDFW, and Permittees to identify necessary changes to the HCP that will meet BLM legal requirements while maintaining the HCP conservation strategy to the maximum extent BLM finds consistent with Federal law.

BLM recognizes and acknowledges its continuing duty to comply with the ESA in managing the transferred Fort Ord lands. BLM intends to continue to manage the Fort Ord transferred lands in a manner compatible with the 1993 Biological Opinion for the Disposal and Reuse of Fort Ord, as it may be updated or revised based upon changes in BLM management, and with the RMP, step-down and project implementation plans, as they may be updated or revised, and in a manner consistent with the ACEC designation, and national monument designation for such lands.

BLM has agreed to cooperate with the Cooperative to allow possible additional mitigation measures on the Fort Ord National Monument in conformance with Federal law. Under the Federal section 10 Incidental Take Permit, only those additional mitigation measures implemented or funded by the Cooperative on the Fort Ord National Monument will be credited to Permittees. Mitigation credit for BLM's current management activities will not be transferred credited to Permittees for the Federal Permit. BLM's current management activities and any BLM authorized additional mitigation measures will be credited to Permittees by CDFW for its section 2081 permit. However, under applicable Federal law, those activities and mitigation measures may change and are not permanent restrictions on use or obligations for use.

1.9.4 Permit Process for Section 10(a)(1)(B) Permits

A single application and fee will be submitted to the USFWS by the Permittees requesting a Section 10(a)(1)(B) permit⁷. The application will include a copy of the draft HCP. The USFWS will notice the permit application in the Federal Register. USFWS will complete a biological opinion, and environmental impact statement (EIS), a record of decision, and findings document for the application. Additionally, the USFWS with assistance from the Permittees will comply with the National Historic Preservation Act. After completing the public notice period and addressing any comments received, USFWS will make a determination on permit issuance. Upon approval of the incidental take permit application, USFWS will finalize the permit documents. The incidental take

⁷ The Cooperative will be formed prior to permit issuance.

permit term requested by the Permittees is 50 years. Any permit activity that is contemplated to take place on BLM managed land requires the approval of the BLM pursuant to and in accordance with Federal law.

1.9.5 National Environmental Policy Act Compliance

Because the issuance by USFWS of an incidental take permit under Section 10 of the ESA constitutes a Federal action, USFWS must comply with NEPA. NEPA requires Federal agencies to include in their decision-making process appropriate and careful consideration of all environmental effects of a proposed action and a reasonable range of alternatives pursuant to the Federal agency's purpose and need. Documentation of the environmental impact analysis and efforts to avoid or minimize the adverse effects of proposed actions must be made available for public notice and review. For the former Fort Ord HCP, USFWS has determined that an EIS will be necessary to comply with NEPA. A draft EIS accompanies this draft HCP.

1.9.6 Federal Section 7 Consultations

Section 7 of the ESA requires Federal agencies to ensure that their actions, including issuing permits, do not jeopardize the continued existence of listed species or destroy or adversely modify listed species' critical habitat. "Jeopardize the continued existence of..." pursuant to 50 CFR 402.2, means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. Issuance of an incidental take permit under Section 10(a)(1)(B) of the ESA by the USFWS is a Federal action subject to Section 7 of the ESA. As a Federal agency issuing a discretionary permit, the USFWS is required to consult with itself (i.e., conduct an internal consultation). Delivery of the HCP and a Section 10(a)(1)(B) permit application initiates the Section 7 consultation process within USFWS.

The requirements of Section 7 and Section 10 substantially overlap. Elements unique to Section 7 include analyses of impacts on designated critical habitat, analyses of impacts on listed plant species, if any, and analyses of indirect and cumulative impacts on listed species. Cumulative effects are effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area, pursuant to Section 7(a)(2) of the ESA. The action area is defined by the influence of direct and indirect impacts of covered activities. The action area may or may not be solely contained within the HCP boundary. These additional analyses are included in this HCP to meet the requirements of Section 7 and to assist the USFWS with its internal consultation.

An important goal of the HCP is to provide a framework for the ESA compliance for covered species for all covered activities in the Plan Area. Whether a covered activity occurs under Section 7 or 10 of the ESA, except on BLM managed land, the HCP will provide the framework for future Section 7 consultations. On BLM managed land, the HCP will be taken into consideration by BLM in future land use plans or implementation actions, however, the HCP is not technically applicable to BLM or its land management and BLM is not constrained by it. As such, the HCP will inform but will not provide the framework for future section 7 consultation as applied to actions on BLM managed lands.

The HCP is not intended to alter the obligation of a Federal agency to consult USFWS pursuant to Section 7 of the ESA. USFWS will process subsequent ESA consultations for covered activities in accordance with the established regulatory process (50 CFR Section 402.14).

1.9.7 Permit Process for Section 2081 Permits

The CESA protects wildlife and plants listed as threatened and endangered by the California Fish and Game Commission. The CESA prohibits the take of state-listed wildlife and plants and requires an incidental take permit for authorization of take. The Fish and Game Code defines *take* as any action or attempt to “hunt, pursue, catch, capture, or kill.”

The requirements for an application for an incidental take permit under the CESA are described in Section 2081 of the California Fish and Game Code and in final adopted regulations for implementing Sections 2080 and 2081. Sections 2081(b) and (c) of the CESA allow CDFW to issue an incidental take permit for a State listed threatened and endangered species if specific criteria is met. These criteria are reiterated in Title 14 CCR, Sections 783.4(a) and (b)⁸.

- The authorized take is incidental to an otherwise lawful activity.
- The impacts of the authorized take are minimized and fully mitigated.
- The measures required to minimize and fully mitigate the impacts of the authorized take: (a) are roughly proportional in extent to the impact of the taking on the species, (b) maintain the applicant’s objectives to the greatest extent possible, and (c) are capable of successful implementation.
- Adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures.
- Issuance of the permit will not jeopardize the continued existence of a state-listed species.

A single application will be submitted by the Permittees to CDFW requesting a Section 2081 permit. The Permittees will be applying for a Section 2081 permit for those state-listed species for which CDFW may authorize take; the HCP provides a vehicle for describing and analyzing project effects as they pertain to such a permit. Under Section 2081, CDFW can also authorize the take of species identified as candidates for listing. The application will be submitted to the Regional Manager and will include a copy of the draft HCP, and will include the following components⁹.

- Applicant’s full name, mailing address, and telephone number(s). If the applicant is a corporation, firm, partnership, association, institution, or public or private agency, the name and address of the person responsible for the project or activity requiring the permit, the president or principal officer, and the registered agent for the service of process.
- The common and scientific names of the species to be covered by the permit and the species’ status under the CESA, including whether the species is the subject of rules and guidelines pursuant to Section 2112 and Section 2114 of the California Fish and Game Code.
- A complete description of the project or activity for which the permit is sought.
- The location where the project or activity is to occur or to be conducted.
- An analysis of whether and to what extent the project or activity for which the permit is sought could result in the taking of species to be covered by the permit.

⁸ Bulleted text taken directly from <http://www.dfg.ca.gov/habcon/cesa/incidental/incid_perm_proced.html> accessed February 11, 2009.

⁹ Bulleted text taken directly from <http://www.dfg.ca.gov/habcon/cesa/incidental/CodeRegT14_783.pdf> accessed February 11, 2009.

- An analysis of the impacts of the proposed taking on the species.
- An analysis of whether issuance of the incidental take permit would jeopardize the continued existence of a species. This analysis shall include consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (a) known population trends; (b) known threats to the species; and (c) reasonably foreseeable impacts on the species from other related projects and activities.
- Proposed measures to minimize and fully mitigate the impacts of the proposed taking.
- A proposed plan to monitor compliance with the minimization and mitigation measures and the effectiveness of the measures.
- A description of the funding source and the level of funding available for implementation of the minimization and mitigation measures.
- Certification of application completion and accuracy.
- Required ITP application fee and complexity fee payment.

CDFW will review the application for consistency with the requirements of the CESA, including compliance with CEQA. There is no required public noticing associated with Section 2081 permits apart from CEQA review. CDFW will make a determination on the permit application, prepare a findings document and issue a take authorization upon completion of CEQA review. The incidental take permit issued by CDFW shall be effective for a period of 50 years from issuance unless earlier suspended, revoked, or relinquished.

1.9.7.1 Existing Permits

There are several projects within or near the Plan Area that have obtained or need to obtain a Section 2081 permit ahead of the HCP (Table 1-3). For these projects, required mitigation (i.e., habitat restoration, protection) has occurred or may occur within the Plan Area. Mitigation can occur only if lands selected provide suitable habitat that can be appropriately managed and/or restored, and if the conservation values of those lands can be preserved in perpetuity through a conservation easement or other appropriate mechanism.

Table 1-3. Existing State Take Permits and their Status

Permittee or Permit Applicant	Project	Permit	Status of Take	Description of Mitigation Required
Cypress Marina Heights	Residential development	2081-2005-029-03	All of authorized take has occurred	Preserve and manage in perpetuity 58.8 acres for sand gilia plant and maritime chaparral habitat values. The permit expired in June 2010.
UC MBEST	UC MBEST Center	2081-2000-052-03	A portion of authorized take has occurred	Development of the UC MBEST project will result in the loss of 7.9 acres of sand gilia habitat and 0.03 acres of seaside bird's beak habitat. Per the mitigation requirements of permit 2081, 15.8 acres of sand gilia and 0.06 acres of seaside bird's beak habitat will be protected on the FONR. In addition, 7.9 acres of sand gilia habitat and 0.03 acres of seaside bird's beak habitat would be restored on the FONR. Permit expires in 2031.
East Garrison, LLC	Residential/mixed use development	2081-2005-047-03	All of authorized take has occurred	Approximately 70 sand gilia within a 45-square-foot area were identified within the project site. Per the conditions of the 2081 permit, the loss of sand gilia must be mitigated at a 5:1 ratio within the former Fort Ord base. As a result, a minimum of 350 sand gilia plants will be planted within at least a 225-square-foot area adjacent to the existing population.
UCP East Garrison, LLC	Mitigation lands	2081-2013-003-04	Issued	The 2081 permit issued by the CDFW to UCP is for the incidental take of the CTS at the East Garrison project site and the East Garrison CTS Interim Mitigation Monitoring Plan. The proposed mitigation lands will preserve approximately 134 acres of CTS habitat. The permit expires March 31, 2030, or when superseded by the Plan.
FORA	2 nd Avenue	2081-2002-003-03	All of authorized take has occurred	Per the 2081 permit conditions of approval, a minimum of 3,910 sand gilia were planted within a 2,500- square-foot area. A Mitigation Monitoring and Reporting Program was submitted to the CDFW in 2002.
FORA	Marina bike path—Imjin Road	2081-2001-022-03	All of authorized take has occurred	The 2081 permit required 15 acres within the former Fort Ord landfill to be restored with maritime chaparral habitat supporting sand gilia. Maritime chaparral species along with sand gilia will be introduced into suitable sites within the 15 acres to provide approximately

Permittee or Permit Applicant	Project	Permit	Status of Take	Description of Mitigation Required
Marina Coast Water District	MBEST/ Water Pipeline Project	2081-2000-089-3	All of authorized take has occurred	<p>10,000 square feet (1/4 acre) of new occupied habitat for sand gilia. Prior to construction, the existing seed bank would be salvaged to plant at the restoration site. A three-year monitoring program will be implemented to determine the success of the restoration effort. The permit expired on December 31, 2005.</p> <p>An approximately 400-foot by 6-foot section of unpaved road through the UC/NRS South Reserve is to be reduced to a narrow footpath and restored with sand gilia and other chaparral species using the methods described in the mitigation plan. A minimum of 1,364 sand gilia individuals covering approximately 1,420 square feet is required to meet mitigation requirements and restoration success criteria. Monitoring is required until mitigation requirements and restoration success criteria are met. Required mitigation was completed in 2015.</p>

With the exception of the UC MBEST and UCP East Garrison, LLC Section 2081 permits identified in Table 1-3, all authorized take has occurred and permits have expired. Inclusion of issued or expired state permits in the HCP is subject to approval by CDFW. As noted in the table, currently, the only existing permit that is allowed to be incorporated into the approved HCP is the UCP East Garrison, LLC project. Additional projects requiring Section 2081 permits prior to completion of the HCP would have to provide mitigation and security at the time those permits are issued and may not be allowed to rely on the prospective future approval of the HCP. If the HCP is approved, existing permits that are in compliance may be incorporated into the HCP permit. For such projects, mitigation would continue to be required only for impacts that occurred under the existing permit prior to approval of the HCP. Such mitigations must be funded by sources established for the existing permits, and not by sources established for funding the HCP. Any security for unmitigated impacts incurred prior to approval of the HCP would be used to meet the obligations incurred under the permit and would not be available to offset payment of HCP associated fees.

1.9.8 California Environmental Quality Act Compliance

CEQA applies to all California projects and requires the systematic identification of a project's environmental impacts, mitigation (if feasible) of significant impacts and the documentation of findings based on that evaluation prior to project approval. The action by each Permittee to adopt the HCP is subject to CEQA. As such, each Permittee is a CEQA lead agency. CDFW's issuance of a Section 2081 incidental take permit is an action that is also subject to CEQA. For purposes of HCP approval and permit issuance, CDFW recommended and FORA determined that an environmental impact report (EIR) will be necessary to comply with CEQA. Compliance with CEQA is a requirement of permit issuance, and should be addressed pursuant to CCR Title 14 §783.3. CDFW will act as a CEQA Responsible Agency (pursuant to CCR Title 14 §15096) with FORA acting as the CEQA Lead Agency. A draft EIR accompanies this draft HCP as a joint document with the EIS.

1.10 HCP Preparation Process

Development of the HCP has been administered by FORA and has been coordinated through the Fort Ord Coordinated Resource Management and Planning (CRMP) program. As early as 1995, FORA took an active role in producing a companion document to the Army's HMP. In 1995, USFWS considered (and partially funded) preparation of an Implementing Agreement (IA) that would have extended the benefits of the Army's HMP to FORA and other non-Federal entities within the Plan Area. A sub-committee of the (then newly formed) CRMP program organization was established to draft the IA in consultation with USFWS and CDFW representatives. However, before an acceptable IA could be completed through the CRMP program, USFWS determined that an HCP Supplement was required to provide additional information beyond that provided in the Army's HMP to enable the HMP to qualify as an HCP under the ESA. Elements of an HCP which USFWS considered lacking in the HMP were detailed in a November 18, 1996 letter to the Army and subsequent correspondence.

In response to USFWS's request for additional information, FORA sponsored the preparation of an HCP Supplement and revised IA beginning in early 1997. Zander Associates was retained by FORA to lead the effort through the CRMP program. Administrative draft documents went through several rounds of the internal CRMP program (including USFWS and CDFW) review and revision; complete drafts of both the HCP Supplement and IA were submitted to USFWS and CDFW in June 1998. Comments on those documents were received from the agencies and another draft HCP Supplement

and draft IA were prepared and submitted in September 2000. (USFWS has since removed the requirement of an IA.)

USFWS provided detailed written comments on the September 2000 draft documents in a letter submitted to FORA on November 13, 2003. In that letter, USFWS recommended that FORA create a “stand-alone” HCP integrating the core material from the HMP with the information presented in the HCP Supplement. USFWS also recommended better definition of covered activities, a clearer description of habitat management actions, development of a conservation strategy with measurable goals and objectives, specific development footprints or criteria in certain restricted development areas and other recommendations. In January 2004, CDFW also provided a letter commenting on the September 2000 HCP Supplement concurring with USFWS recommendations. CDFW also provided comments specific to the CESA and CEQA compliance.

In response to those comments from the two resource agencies and with input from habitat managers, Permittees and others, primarily through the CRMP program, a draft “stand-alone” HCP was prepared and distributed for review in September 2004. However, the 2004 draft HCP was produced before several key issues including funding, monitoring, use of prescribed fire for habitat management, appropriate land uses (e.g., multi-modal transportation corridor) in habitat reserve lands, and other issues had been adequately addressed through the CRMP program. To resolve those issues, subcommittees of the CRMP program were assigned specific tasks (e.g., resolution of funding issues), the primary habitat managers provided more detail on their specific management activities, a detailed plant monitoring program was developed by an independent consultant, and land uses in restricted development areas were better defined. Also, in the summer of 2005, FORA decided to separate the permit processing for the Section 2081 permit from the processing for the Section 10(a)(1)(B) permit to expedite issuance of Section 2081 take permits. That decision did not substantially affect the organization and content of the HCP.

Several revised administrative draft sections of this document have been circulated among the agencies, the CRMP program members and others for internal review and comment over a period of at least three years. A complete revised draft HCP was submitted by Zander Associates in January 2007 for consideration by the USFWS and CDFW.

In response to comments from the agencies, ICF Jones and Stokes was retained by FORA to address revision and final completion of the HCP’s funding and monitoring sections, and with the responsibility of organizing and coordinating preparation of the final HCP document. FORA and consultants revised several administrative drafts, resulting in a screen-check draft reviewed by USFWS and CDFW.

On July 29, 2016, FORA received written comments on the screen-check draft from the USFWS Ventura Fish and Wildlife Office/Solicitor. USFWS requested that the HCP better differentiate between the Federal and non-Federal actions, in particular, land management actions on the FONM. The intent of this request was to clarify that Permittees will only receive credit for mitigation implemented on FONM if those mitigation actions are funded or implemented by the Permittees and approved by the BLM, and if those actions are in addition to actions that the BLM would normally implement on FONM. USFWS also requested that the HCP should clarify that for the section 10 permit, protection of HCP species and their habitat on the Permittee’s non-Federal HMAs qualifies as mitigation for take, but the FONM, which would be managed through BLM’s normal operations and management actions, would not qualify as mitigation for take. For the state permit, CDFW considers protection and management of the FONM, consistent with its RMP, stepdown plans and ACEC

designation, national monument designation, the HMP, the HMP MOU, and the LOT, and only to the extent allowed under governing law and regulation, including FLPMA, NEPA (42 USC 4321 et seq.), and the OPLMA, to be in conformance with the HCP as mitigation for take of listed species. USFWS provided guidance on approaches to provide adequate mitigation. Those approaches included reducing the number of HCP species and not including BLM-funded land management actions on FONM as mitigation for impacts on non-Federal land. In five meetings with wildlife agency representatives, FORA identified a detailed approach to address USFWS comments. This HCP reflects the result of the USFWS/Solicitor's comments and discussions with the USFWS, including the following:

- HCP species are limited to Federal and state threatened and endangered species;
- The HCP distinguishes impacts, habitat protection, and other mitigation measures that occur on non-Federal and Federal lands; and
- HCP mitigation measures on FONM are funded by the Permittees and, if approved by the BLM, are explicitly additive to BLM activities.

Preparation of this HCP has and will continue to involve many agencies, organizations, and individuals. The Army provided electronic files of the HMP and Army staff have remained available for consultation on details throughout the preparation of the HCP. The primary habitat managers (BLM, UC/NRS, and State Parks) have all contributed significant sections pertaining to management activities on their respective lands. The Permittees and their staff members have provided details regarding land use plans, activities and development footprints on lands they control or expect to control over the permit term. CRMP and its subcommittees, notably the funding subcommittee consisting of representatives from FORA, BLM, UC and State Parks, have provided important elements of the HCP. Dr. Jodi McGraw developed the plant monitoring program in collaboration with CRMP, USFWS, and CDFW over the course of one year. Both USFWS and CDFW representatives have provided ongoing commentary and guidance throughout the HCP preparation process. The present document represents a truly collaborative effort and is intended to provide the required level of detail necessary to accompany applications for both Section 2081 and Section 10(a)(1)(B) permits.

1.11 Organization of the HCP

This HCP incorporates and updates information and data from the Army's April 1997 HMP, as appropriate, with additional elements that USFWS and CDFW consider necessary to meet the standards of a conservation plan for issuance of incidental take permits. This HCP is responsive to comments and recommendations from both USFWS and CDFW as noted above. The following is an overview of the HCP and includes a brief discussion of each of the HCP chapters and appendices.

Chapter 2, Environmental Setting / HCP Species. Chapter 2 of the HCP presents a general overview of the existing environmental conditions in the Plan Area with a brief description of the biological communities that occur on the former base. Information on the regulatory status, ecological characteristics, range and (updated) distribution of each HCP species is also presented in this chapter. In addition, an overview of the HCP species and natural communities found in each HMA is provided.

Chapter 3, Covered Activities. Chapter 3 includes an overview of the HCP land use designations, including development areas, Borderlands and HMAs. This is followed by a detailed discussion of all covered activities covered under the HCP.

Chapter 4, Impact Assessment and Levels of Take. Chapter 4 addresses both the direct and indirect impacts to the HCP species and natural communities that could result from the covered activities described in Chapter 3, *Covered Activities*. A species by species take assessment is provided in this chapter.

Chapter 5, Conservation Strategy. The conservation strategy is presented in Chapter 5. The conservation strategy includes HCP required AMMs and mitigation measures. Biological goals and objectives were used to identify AMM and mitigation measures that benefit HCP species. The relationship to the biological goals and objectives, species benefited, and location required is identified for each AMM and mitigation measure.

Chapter 6, Monitoring and Adaptive Management. The monitoring and adaptive management program is described in Chapter 6. Four types of monitoring for compliance with the HCP are required: land use status monitoring, HCP compliance monitoring, project monitoring, and HCP species monitoring. A monitoring strategy for each species or group of species is established as part of the HCP species monitoring program. Adaptive management measures are identified.

Chapter 7, HCP Implementation. Details regarding implementation of the HCP are presented in Chapter 7. This HCP will be implemented under an administrative framework, organized, coordinated, and managed by the Cooperative and a technical (biological resource-oriented) framework organized and managed through the TAC program. HCP required program administration and reporting requirements are described.

Chapter 8, Assurances and HCP Amendments. Assurances regarding the commitments and protections for Permittees, the agencies, third parties, and others are described in Chapter 8. Changed circumstances, unforeseen circumstances, and the necessity of modifying or amending the HCP are also described in this chapter.

Chapter 9, Costs and Funding. An overview of the HCP implementation costs and funding plan for habitat management, especially details regarding the FORA endowment, is presented in Chapter 9.

Chapter 10, Alternatives Analyzed. Chapter 10 considers alternatives to the proposed activities, including an alternative to the taking of listed species and a brief discussion of why that alternative is not proposed.

Chapter 11, References. Chapter 11 cites all references used in the preparation of the HCP.

Appendix A, HCP Species Occurrence Maps. Numerous maps illustrate the location of HCP wildlife and plant species.

Appendix B, Letter from Caltrans Declining their Participation in HCP. Caltrans discusses the reasons for not partaking in the development and implementation of the HCP.

Appendix C, Agreement for the Revised Habitat Management Plan. The conditions agreed upon by UC, FORA, CDFW, and USACE on March 15, 1996 for implementation of the revised HMP.

Appendix D, Marina Coast Water District Activities. An overview of the forthcoming capital improvements and operation and maintenance activities proposed within the HCP Plan Area.

Appendix E, Integrated Vegetation Management Protocols. The guidelines that were set forth in the BLM programmatic EIS for the California Vegetation Management Program are described, as well as a link for Cal-IPC Best Management Practices are provided for reference.

Appendix F, FONR Authorized User Guidelines. An overview of the Fort Ord Natural Reserve guidelines that should be followed by users of the reserve.

Appendix G, Plant Monitoring Program for the Installation-Wide Multispecies Habitat Conservation Plan for the Former Fort Ord. Sets forth practices to evaluate the success of habitat preservation, restoration, and management efforts proposed in the HCP.

Appendix H, Monitoring Protocols for Yadon's Piperia and HCP Wildlife Species. The proposed monitoring and survey protocols for the Yadon's piperia and HCP wildlife species are discussed.

Appendix I, CRMP Program. Technical guidance for implementing the HCP will be provided through the TAC, which will evolve from the CRMP program. This Appendix provides information on the Fort Ord CRMP program.

Appendix J, Draft Implementing Ordinance/Policy. A draft implementing ordinance/policy is included to provide a template for the Permittees.

Appendix K, Certificate of Inclusion. A sample certificate of inclusion that will be issued to third party participants receiving take authorization under the HCP is provided.

Appendix L, Standard Conservation Easement Template. All non-Federal HMAs will be protected via a conservation easement, held by the Cooperative with the Wildlife Agencies named as third-party beneficiaries, except for State Parks.¹⁰ A standard conservation easement template is provided.

Appendix M, Cost Model. Introduction and detailed cost analysis matrix is provided to provide justification for the HCP's cost and funding estimates.

Appendix N, Permit Applicant and BLM Reimbursement Agreements. Reimbursement agreements detail how money may be moved from the Cooperative to other entities for implementation of HCP required actions. A sample agreement is provided.

Appendix O, Habitat Conservation Plan Endowment Cash Flow Strategy. A memorandum providing the endowment funding strategy and supporting figures and tables is provided. This memorandum is included to detail the funding assurances for HCP required actions during the permit term and post-permit term.

Appendix P, Memorandum of Understanding Between the California Department of Parks and Recreation and the California Department of Toxic Substances Control. This MOU enforcement and implementation plan for surface lead in the FODSP.

Appendix Q, List of Preparers. A partial list of the individuals that contributed to the completion of the HCP.

¹⁰ State Parks has policies of not allowing conservation easements to be placed on existing parks or lands. State Parks has deed restrictions on their land that limit development.

2.1 Environmental Setting

Former Fort Ord (the Plan Area), located between the Salinas and Carmel River watersheds, has a moderate Mediterranean climate, receiving 90% of its average 14.2 inches of annual precipitation from November through April. Most of the 27,832 acre former base consists of undeveloped training and open space areas, with 84% (23,474 acres) undeveloped and 16% (4,359 acres) developed (Table 2-1). The three major developed areas in the Plan Area are the former Main Garrison and East Garrison areas and the Marina Municipal Airport, formerly known as the Fritzsche Army Airfield.

The topography of the Plan Area is characterized by stabilized sand dunes in the western half of the base, transitioning to rolling hills and canyons in the eastern half. The sandy soils in the western half of the base are highly permeable and absorb much of the rainfall and runoff without forming distinct creek channels. The streams in the canyons in the eastern part of the base are small and intermittent. A number of creeks drain into the Salinas River. Canyon Del Rey drains the southern portion of the base and empties into Monterey Bay, a designated national marine sanctuary.

The soils in the Plan Area are characteristically medium-grained sand of low organic content. The soils are low in fertility and water-holding capacity, highly erodible, and excessively well drained. Although there are some minor inclusions of other soils, most of the soils in the Plan Area are represented in six major soil series (Arnold, Antioch, Baywood, Diablo, Oceano, and Santa Ynez) and three general classifications (Coastal beaches, Dune land, and Xerorthents) (Figure 2-1).

The wide range of climatic, topographic, and soil conditions in the Plan Area contribute to the variety and uniqueness of the biological communities present. Eight broad categories of biological communities have been identified in the Plan Area: coastal strand and dune communities; maritime chaparral; coastal scrub; coast live oak (*Quercus agrifolia*) woodland and savanna; grassland; riparian; wetland; and marine communities (Table 2-1). Following are descriptions of the components of these communities. The approximate location and extent of each community is depicted on Figure 2-2.

2.1.1 Coastal Strand and Dune Communities

Coastal strand and dune scrub habitats of the coastal dunes are dynamic plant communities that respond to a moving sand substrate, wind and wave patterns, and changing dune and beach configurations. Blowing sand undermines and buries plants, but most dune plants are adapted to shallow burial and blasting by sand. Large areas of destabilized sand, called “blowouts,” result in large-scale removal of vegetation and change in dune structure. As plants reinvade the bare sand they stabilize the dune. Dune structure creates a variety of habitats. The foredune is more exposed to wind and salt spray than the rear dune. Dune crests are subject to high winds and substrate removal, while interdune valleys are protected from wind, have higher soil moisture, and experience sand deposition. North-facing dune slopes are usually moister and cooler than south-facing dune slopes. Native plants likely to be found in healthy coastal strand and foredune habitats on Monterey

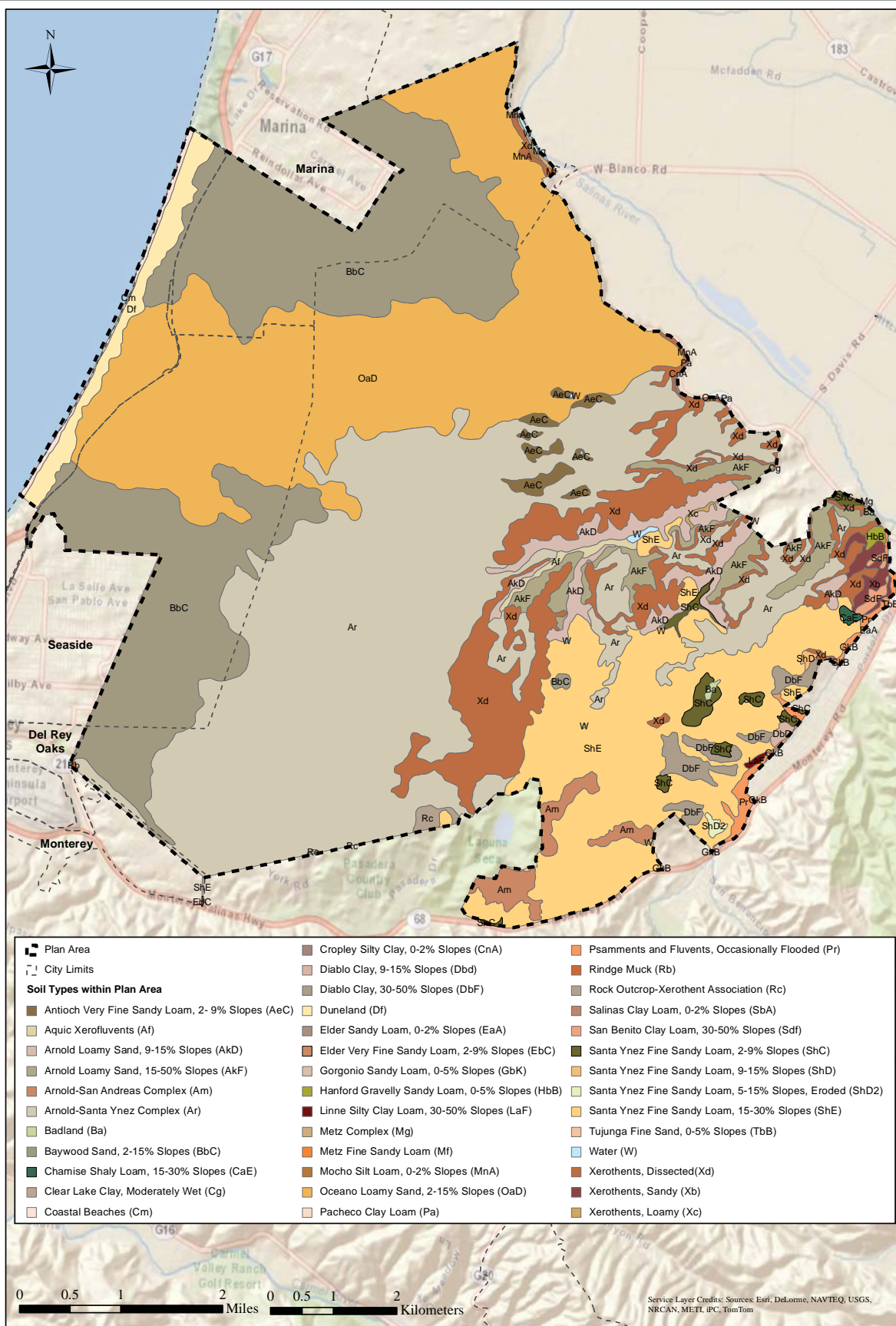
Bay include coastal sand verbena (*Abronia latifolia*), pink sand verbena (*Abronia umbellata* var. *umbellata*), beach sagewort (*Artemisia pycnocephala*), beach bur (*Ambrosia chamissonis*), beach evening primrose (*Camissonia cheiranthifolia* ssp. *cheiranthifolia*), beach morning-glory (*Calystegia soldanella*), live-forever (*Dudleya* ssp.), woolly paintbrush (*Castilleja lanata*), coastal paintbrush (*Castilleja affinis*), Douglas' bluegrass (*Poa douglasii*), mock heather (*Ericameria ericoides*), sea thrift (*Armeria maritima* ssp. *californica*), wild buckwheat (*Eriogonum latifolium*) (also known as coast buckwheat), seaciff buckwheat (*Eriogonum parvifolium*) and cudweed aster (*Corethrogyne filaginifolia*).

There are 987 acres of coastal strand and dune in the Plan Area (Table 2-1). Most of the coastal areas within the Plan Area support a stabilized dune community dominated by the non-native, aggressive ice plant, which forms extensive mats. While it provides cover for some wildlife, it crowds out native plant species and provides very little forage material for wildlife. Other areas consisting of beaches, bluffs, blowouts, and disturbed dunes are generally devoid of vegetation because of frequently moving substrates or intense ground disturbance in firing ranges, around structures, and in borrow pits. The vegetation that does establish in these areas consists of species tolerant of frequent ground disturbance such as sea rocket (*Cakile maritima*; *Cakile edentula*), beach primrose (*Camissonia cheiranthifolia* ssp. *cheiranthifolia*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), annual fescue (*Festuca* ssp.) and kikuyu grass (*Pennisetum clandestinum*). Common wading birds, such as sanderlings (*Calidris alba*), plovers (*Charadrius* ssp.), and godwits (*Limosa* ssp.), occur along the beaches; California ground squirrels (*Spermophilus beecheyi*), deer mice (*Peromyscus maniculatus*), gray fox (*Urocyon cinereoargenteus*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), loggerhead shrike (*Lanius ludovicianus*) and red foxes (*Vulpes vulpes*) occur in the disturbed dune. Healthy coastal strand and dune scrub communities in the Plan Area contain native perennial herbs, shrubs and subshrubs including wild buckwheat, seaside painted cup (*Castilleja latifolia*), Douglas' bluegrass, bush lupine (*Lupinus albifrons*), Chamisso bush lupine (*Lupinus chamissonis*), mock heather, poison oak (*Toxicodendron diversilobum*), coyote bush (*Baccharis pilularis*), bracken fern (*Pteridium aquilinum*), and deer weed (*Acmispon glaber*). Wildlife diversity increases in the central dune scrub relative to other dune communities because soils are more stable and vegetation is more abundant.

HCP species most strongly associated with coastal strand and dune scrub are Smith's blue butterfly (*Euphilotes enoptes smithi*), western snowy plover (*Charadrius nivosus* ssp. *nivosus*), sand gilia (*Gilia tenuiflora* ssp. *arenaria*), and Monterey spineflower (*Chorizanthe pungens* var. *pungens*). Although seaside bird's beak (*Cordylanthus rigidus* ssp. *littoralis*) occurs in coastal strand and dune scrub, there are no known occurrences of seaside bird's beak in this community in the Plan Area.

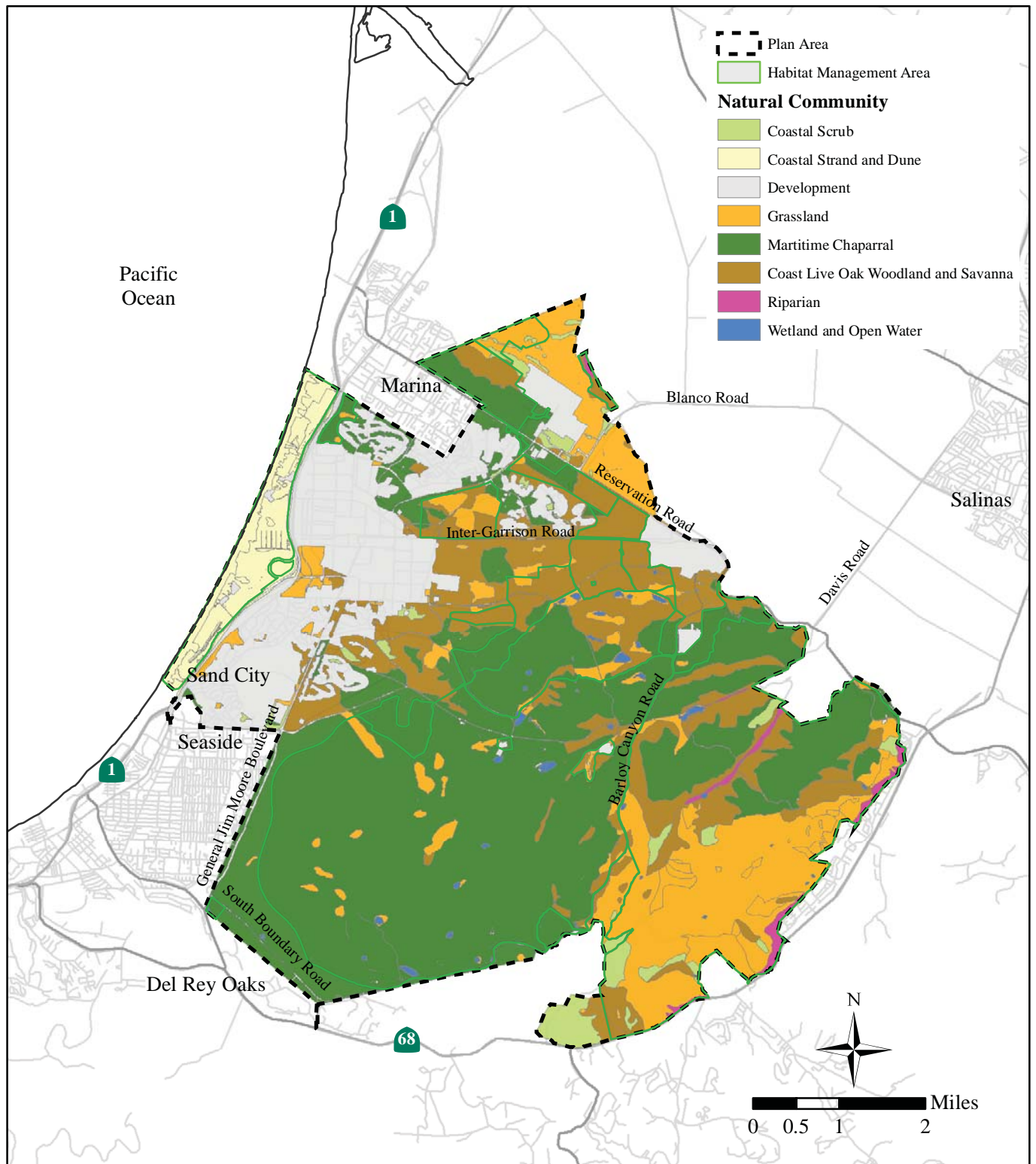
2.1.2 Maritime Chaparral

Maritime chaparral is a coastal form of chaparral associated with specific soil conditions. Two forms are recognized in the Plan Area based on the substrate that supports them: sand hill maritime chaparral occurs on relict dunes of the late Pleistocene Epoch and Aromas formation maritime chaparral occurs on weakly consolidated red sandstone that is a relic of mid-Pleistocene dunes. The occurrence of maritime chaparral may be limited to the summer fog zone.



Source: Denise Duffy and Associates

Figure 2-1
Major Soil Types



Source: Denise Duffy and Associates

Figure 2-2
Natural Communities in the Plan Area

Table 2-1. Land Cover Types in the Plan Area

Location	Land Cover (Acres)									
	Natural Communities (Undeveloped Land Cover)							Developed		Total
	Coastal Strand and Dune	Maritime Chaparral	Coastal Scrub	Coast Live Oak Woodland and Savanna	Grasslands	Riparian	Wetland and Open Water	Total Natural Communities	Existing Development	
Designated Development Areas	51	2,045	373	1,559	1,020	2	2	5,051	4,241	9,292
Non-Federal HMAs										
East Garrison North Reserve	0	6	0	142	0	0	0	148	0	148
East Garrison South Reserve	0	203	0	55	16	0	1	274	0	275
FONR	0	337	4	243	19	0	0	603	3	606
FODSP	936	0	0	0	0	0	0	936	43	979
Habitat Corridor/Travel Camp	0	0	0	376	17	0	1	394	4	398
Landfill Parcel	0	36	0	151	116	0	0	304	4	308
Lookout Ridge	0	1	23	39	128	0	<1	191	4	196
Wolf Hill	0	77	0	0	0	0	<1	77	2	79
Marina Airport Habitat Reserve	0	0	20	2	109	0	0	130	0	130
Range 45 Reserve	0	206	0	0	0	0	0	206	0	206
Natural Area Expansion	0	18	0	0	0	0	1	19	0	19
Marina Northwest Corner	0	55	0	0	8	0	0	63	0	63
Oak Oval Reserve	0	0	0	72	1	0	0	72	0	73
Parker Flats	0	170	0	179	19	0	0	369	3	372

Location	Land Cover (Acres)									
	Natural Communities (Undeveloped Land Cover)							Developed		Total
	Coastal Strand and Dune	Maritime Chaparral	Coastal Scrub	Coast Live Oak Woodland and Savanna	Grasslands	Riparian	Wetland and Open Water	Total Natural Communities	Existing Development	
Reserve										
Salinas River Habitat Area	0	0	0	32	1	11	0	43	0	43
Non-Federal HMAs Total	936	1,110	47	1,291	433	11	3	3,831	64	3,895
Federal HMAs										
BLM FONM	0	2,447	242	1,612	2,699	178	63	7,242	25	7,267
Army Lands pending transfer to BLM	0	6,748	0	274	269	0	58	7,349	29	7,378
Federal HMAs total	0	9,195	242	1,886	2,969	178	122	14,591	54	14,645
Totals										
HMAs Total	936	10,305	289	3,177	3,402	189	125	18,422	118	18,540
Plan Area Total	987	12,349	662	4,736	4,421	191	127	23,474	4,359	27,832

Table 2-2. HCP Species and their Associated Natural Communities in the Plan Area

HCP Species	Natural Community						
	Coastal Strand and Dune	Maritime Chaparral	Coastal Scrub	Coast Live Oak Woodland and Savanna	Grassland	Riparian	Wetland and Open Water
Plants							
Sand Gilia	X	X	X	X	X		
Yadon's Piperia		X	X		X		
Monterey Spineflower	X	X	X	X	X		
Seaside Bird's Beak	X	X	X	X	X		
Wildlife							
Smith's Blue Butterfly	X	X	X		X		
Western Snowy Plover	X						
California Tiger Salamander							
Upland Breeding	X	X	X	X	X	X	
California Red-Legged Frog							
Upland Breeding	X	X	X	X	X	X	
							X

Maritime chaparral is the dominant vegetation type in the Plan Area, encompassing 12,349 acres (Table 2-1). It is characterized by a wide variety of evergreen, sclerophyllus (hard-leaved) shrubs occurring in moderate to high density on sandy, well-drained substrates. This community is primarily dominated by woollyleaf manzanita (*Arctostaphylos tomentosa* subsp. *tomentosa*). Other species found in the shrub layer include chamise (*Adenostoma fasciculatum*), Toro manzanita (*Arctostaphylos montereyensis*), sandmat manzanita (*Arctostaphylos pumila*), toyon (*Heteromeles arbutifolia*), blue blossom ceanothus (*Ceanothus thyrsiflorus*), and Monterey ceanothus (*Ceanothus rigidus*). The greatest diversity of wildlife species in the Plan Area occur in the chaparral. Birds such as orange-crowned warbler (*Vermivora celata*), spotted towhee (*Pipilo maculatus*), and California quail (*Callipepla californica*) nest in the chaparral. Small mammals such as the California mouse (*Peromyscus californicus*) and brush rabbit (*Sylvilagus bachmani*) forage in this habitat and serve as prey for gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), spotted skunk (*Spilogale gracilis*) and western rattlesnake (*Crotalus viridis helleri*).

HCP species occurring in maritime chaparral are seaside bird's beak, sand gilia, Monterey spineflower, and Yadon's piperia (*Piperia yadonii*) (Table 2-2). California tiger salamander (*Ambystoma californiense*) and California red-legged frog (*Rana draytonii*) may use chaparral areas for movement and upland habitat, especially in relatively close proximity to breeding ponds. Maritime chaparral also provides suitable habitat for Smith's blue butterfly.

2.1.3 Coastal Scrub

In the Plan Area the coastal scrub occurs near the coast on sandy soils and on inland hills on shallow soils. It integrates with grassland, maritime chaparral, coast live oak woodland, and dune scrub. More inland areas of the Plan Area support coastal sage scrub on rocky slopes as habitat patches

within annual grassland and oak woodland. The vegetation is characterized by sparse to dense cover of soft-leaved, low-stature shrubs such as coyote brush, California sagebrush, and black sage. There are 662 acres of coastal scrub in the Plan Area (Table 2-1).

Coastal scrub is considered an important natural community because it provides habitat for several special-status plant species, provides forage for wildlife, and stabilizes sandy soils and steep slopes. HCP plant species most strongly associated with coastal scrub are sand gilia, Yadon's piperia, Monterey spineflower, and seaside bird's beak. California tiger salamander and California red-legged frog may use coastal scrub for movement and upland habitat, especially in relatively close proximity to breeding ponds. Obligate host plants (i.e., coast and seaciff buckwheat) for the Smith's blue butterfly are also found in coastal scrub, including mapped locations near Blanco Road. .

2.1.4 Coast Live Oak Woodland and Savanna

Coast live oak woodland is an open-canopied to nearly closed-canopied community with a grass or sparsely scattered shrub understory. Savanna is a transitional community between grassland and woodland with scattered trees at less than 10% cover and a grassy understory. Coast live oak is the dominant tree of woodlands and savannas at Fort Ord, usually occurring in pure stands. Three coast live oak communities, each with different growth characteristics, understory associates and canopy cover, have been recognized in the Plan Area: coastal coast live oak woodland, inland coast live oak woodland, and coast live oak savanna (U.S. Army Corps of Engineers 1993). Together, these communities comprise 4,736 acres in the Plan Area (Table 2-1).

Oak woodlands and savannas are considered important natural communities because they provide a variety of ecological, aesthetic, and economic values. Oak habitats in general are important to a variety of plant and wildlife species, including several HCP species. They provide nesting sites, cover, forage, habitat connectivity, and other ecological values important to the HCP conservation strategy. Common wildlife species in coast live oak woodlands include black-tailed deer (*Odocoileus hemionus columbianus*), California mouse, raccoon (*Procyon lotor*), California quail, scrub jay (*Aphelocoma californica*), and Nuttall's woodpecker (*Picoides nuttallii*). Red-tailed hawks and great-horned owls (*Bubo virginianus*) nest and roost in the inland coast live oaks, but probably make little use of the coastal oaks because the tightly spaced branches discourage them from entering the tree canopies.

HCP species associated with oak woodland and savanna at Fort Ord include sand gilia, seaside bird's beak, and Monterey spineflower (Table 2-2). California tiger salamander and California red-legged frog may use oak woodland and savanna areas for movement and upland habitat, especially in relatively close proximity to breeding ponds.

2.1.5 Grasslands

Fort Ord supports mostly grassland comprised of non-native annual grasses, although there are some areas supporting a good component of native perennial bunchgrasses. Grasslands occur primarily at the most inland, southeast section of Fort Ord; around the Marina Airport; and as scattered, small meadows within coast live oak woodland and maritime chaparral. Annual grasslands in the Plan Area are dominated by mostly non-native annual grasses such as slender wild oats (*Avena fatua*), soft chess, and ripgut brome, as well as perennial and annual forbs. Perennial grasslands are of two types in the Plan Area: valley needlegrass (*Stipa pulchra*), and blue wildrye (*Elymus glaucus*). Perennial grasslands support native perennial grass species as dominant or important components of the vegetative cover and intergrade with annual grassland, oak savanna,

and oak woodland on hills at the southeast portion of the Plan Area. Small occurrences of perennial grassland are also in grassland areas characterized by mima mound topography associated with wetland areas in the central part of the former base. There are 4,421 acres of grasslands in the Plan Area (Table 2-1).

Grasslands provide nesting and foraging habitat and movement areas for a variety of wildlife species including reptiles, amphibians, small and large mammals, and raptors. Common wildlife species include California ground squirrel, Heerman's kangaroo rat (*Dipodomys heermanni*), narrow-faced kangaroo rat (*Dipodomys venustus*), western meadowlark (*Sturnella neglecta*), and American kestrel. Perhaps most notably for the purposes of this HCP, grasslands provide one of the primary upland habitats for California tiger salamander and California red-legged frog (Table 2-2). To a limited extent, where intermixed with more suitable habitat types, the grasslands also support Monterey spineflower, sand gilia, seaside bird's beak, Yadon's piperia, and Smith's blue butterfly (i.e., where obligate host plants occur). Grasslands also protect the soil from erosion and provide the primary source of forage for grazing domestic livestock.

2.1.6 Riparian Communities

Riparian communities occur on the banks of creeks and drainages that seasonally flood and provide a perennial high water table. Riparian habitats in the Plan Area comprise 191 acres and are limited to the Salinas River, Toro Creek, Pilarcitos Canyon, and Merrill Ranch Canyon (Table 2-1). The riparian communities along the Salinas River and Toro Creek are mixed riparian forests supporting a variety of tree species. The communities in Pilarcitos and Merrill Ranch Canyons are oak riparian forests dominated by coast live oaks with a dense understory of annual grasses.

Riparian communities are important wildlife habitat because they typically support the highest diversity of wildlife and provide movement corridors between different communities. Riparian habitat provides important forage, cover, and water to resident black-tailed deer, and serves as travel corridors for predators such as mountain lions and coyotes. Other wildlife species associated with this community include Pacific tree frog (*Pseudacris regilla*), California slender salamander (*Batrachoseps attenuatus*), Wilson's warbler (*Wilsonia pusilla*), dark-eyed junco (*Junco hyemalis*), striped skunk (*Mephitis mephitis*), and coyote (*Canis latrans*).

Riparian communities provide important habitat for HCP species, including California tiger salamander and California red-legged frog (Table 2-2).

2.1.7 Wetland and Open Water Communities

Four major types of wetland and open water communities are scattered throughout the Plan Area: vernal pools, freshwater marshes, ephemeral drainages and artificial ponds. There are 127 acres of wetland and open water communities in the Plan Area (Table 2-1).

Vernal pools support plant and wildlife species specially adapted to live through winter and spring flooding and summer and fall drought. This community is most common on Antioch soils in isolated grassland patches within a matrix of maritime chaparral. Common plant species include common spikerush (*Eleocharis macrostachya*), hyssop loosestrife (*Lythrum hyssopifolium*) and Vasey's coyote thistle (*Eryngium vaseyi*). Common wildlife species include western spadefoot toad (*Spea hammondi*), garter snake (*Thamnophis sirtalis*), and northern rough-winged swallow (*Stelgidopteryx serripennis*).

Freshwater marshes are characterized by perennial, emergent plants that thrive in areas permanently flooded or saturated by fresh water. This community occurs around the perimeter of ponds and in patches in the channels of Toro Creek and the Salinas River. Common plants include water smartweed (*Polygonum amphibium*) and broad-leaved cattail (*Typha latifolia*). Common wildlife species include mallard (*Anas platyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), and marsh wren (*Cistothorus palustris*).

The Plan Area is bordered on the north by the Salinas River, which carries water year round. Most of the other drainages in the Plan Area are intermittent or ephemeral. Poorly defined drainages are dominated by upland plants including soft chess, Italian ryegrass (*Festuca perennis*), barley (*Hordeum vulgare*) and wild oats (*Avena fatua*). More well-defined drainages support more moisture-tolerant species such as rabbit foot grass (*Polypogon monspeliensis*) and Mediterranean barley (*Hordeum marinum* ssp. *gussonianum*). Deeply cut drainages that transport larger amounts of water support dense bank vegetation, including coast live oak, California blackberry (*Rubus ursinus*), and coyote bush. Wildlife species found in drainages with at least seasonal moisture are similar to those occurring in vernal pools and freshwater marshes.

Artificial ponds have been constructed throughout the Plan Area to provide water for livestock and wildlife. Most of these ponds occur in the southeast portion of Fort Ord within the grazing lease area. The immediate edges of most of these ponds are typically devoid of vegetation because of widely fluctuating water levels. When ponds and reservoirs are full, mallards, cinnamon teal (*Anas cyanoptera*), canvasback (*Aythya valisineria*), northern pintail (*Anas acuta*) and other waterfowl forage and rest in the open water. Other species that use freshwater marsh habitat around rivers and vernal pools will also use the limited marsh habitat available at ponds and reservoirs.

Water is the common denominator in all these communities. Both perennial and seasonal aquatic habitats are critical to the life cycle of several HCP species (Table 2-2). Vernal pools and ponds provide important aquatic habitat for wildlife including California linderiella (*Linderiella occidentalis*) and special status plants such as Contra Costa goldfields (*Lasthenia conjugens*). Two HCP wildlife species, California red-legged frog and California tiger salamander, are water dependent during their larval stages, and rely on aquatic habitat for breeding and other life history functions. Soil moisture along the edges of streams and ponds enables the establishment and growth of characteristic marsh vegetation. Marsh communities provide habitat diversity adjacent to aquatic systems, help stabilize ponds, and maintain water quality through filtration.

2.1.8 Marine Community

The marine environment of Monterey Bay is widely recognized as important habitat for an array of marine wildlife and has been approved for Federal protection as part of the Monterey Bay National Marine Sanctuary. Most species of marine mammals and seabirds that occur in the Monterey Bay occur as non-breeding residents or spring and fall migrants. Special-status birds may fly over the marine range area in the Plan Area or float in the open water, and southern sea otters may occasionally feed in the marine range area, but there are no important marine mammal haul-out or breeding areas or seabird nesting colonies in the Plan Area (EMC Planning Group and EDAW 1997). With the exception of the HCP species discussed above in association with the coastal strand and dune community, there are no HCP species associated with the marine community in the Plan Area.

2.2 HCP Species

Information on the listing status, ecological characteristics, range, and distribution of each of the species covered by this HCP is presented below. Maps indicating where these species occur in the Plan Area are provided in Appendix A. Table 2-3 summarizes the amount of habitat occupied by HCP plants by three categories of occurrence density. Table 2-4 summarizes the amount of occupied and potential wildlife species' habitat and occurrence points. Potential habitat comprises those areas that contain appropriate habitat for a certain species but are not currently known to contain the species. Some of these areas may have been surveyed in the past and many will be surveyed during HCP implementation.

The data presented below are based on survey methods and assumptions used in the Army's 1992 *Flora and Fauna Baseline Study of Fort Ord, California* (baseline studies) conducted by Jones & Stokes Associates (J&S). The parameters used in the baseline studies (e.g., size of polygons, scale of mapping, abundance and density criteria) were established for large-scale assessment. Survey methods involved dividing the base habitats into polygons of a few acres to several hundred acres in size and assigning the entire polygon as "occupied" if the species was found within it, at low (0 to 100s), medium (100s to 1,000s), or high (more than 1,000s) densities.

There are limitations associated with the methods used in the baseline studies. The coarseness of the mapping effort likely resulted in a substantial overestimate of occupied low-density habitat, as one occurrence of an HCP species within a several hundred acre polygon would result in an estimation of a few hundred acres of low density habitat for that species. Another limitation is the estimates of annual plant acreage. Because the baseline studies were conducted over the course of a single growing season, annual population fluctuations associated with weather, changing habitat conditions, and disturbances (such as fire) are not captured. An annual seedbank may exist in areas and would be expressed if fire or other activities created openings sufficient for growth and reproduction. These population fluctuations can substantially increase or decrease the estimated acreage of an annual population. Although these J&S baseline surveys were conducted in 1992, the survey results represent a good prediction of the current distribution and abundance of special-status plants in the Plan Area. In general, plant populations remain stable unless there are some drastic changes in the habitat, so it is expected that the HCP plant species are still present in the polygons where they were reported. There are some areas that have been altered by ordinance removal or by fire, but the habitat of these areas recovered afterwards (Robert Preston, J&S, pers. comm.). Plants would only be expected to be extirpated from a polygon if the polygon was converted to non-habitat. J&S staff has been to several sites that were impacted as a result of ordinance removal and were able to locate plants at these locations (Robert Preston, J&S, pers. comm.). It is unlikely that plant populations have migrated into other polygons because these populations have been in place for so long that all suitable habitat was likely colonized centuries ago; however, some HCP species are adapted to colonize recently disturbed areas (e.g., Monterey spineflower) and therefore may have re-established in these areas since their baseline establishment.

Some of the information on HCP species' occurrences has been updated from the baseline data. The J&S 1992 baseline polygon data were updated to include results from site-specific surveys conducted for various projects in the Plan Area up through 2014 for all HCP species. For HCP plant species, to make the new data comparable to the original baseline data, the more recent data were extrapolated to the polygon level using the J&S 1992 polygons. Where a post-1992 plant species

occurrence was recorded, the entire polygon in which it occurred was identified as a low, medium, or high density occurrence.

The assessment of the extent of Smith's blue butterfly in the Plan Area was habitat-based with the potential habitat determined from the extent of buckwheat host plants on FODSP as mapped in 1996, 1999, and 2002, and 2008 was considered potential habitat. In addition, data from various sources, including Fort Ord botanical experts Bruce Delgado and David Styer, were gathered to identify habitat patches east of Highway 1. Potential and known habitat for western snowy plover in the Plan Area was assessed from recent surveys and an estimate of potential habitat provided by the State Parks. The status of the California tiger salamander, including the extent of known and potential breeding and upland habitat, was summarized from information provided in the Army's request for consultation on Contra Costa goldfields critical habitat and request for conference on California tiger salamander dated July 19, 2004 (DENR/POM 2004) and Biological Opinion 1-8-04-F-25R (U.S. Fish and Wildlife Service 2005a). For California red-legged frog the HMP habitat map (1997) was updated to include current literature and occurrence records, as well as a 1-mile (1.6 km) radius around potential breeding sites to calculate potential upland habitat. A single species occurrence (larvae observed) at Pond 998 South in 2011 was added to the species habitat map.

Consequently, the species acreage data presented here will need to be refined with a more site-specific assessment to provide a standard (adjusted baseline) for long-term monitoring in the HMAs (Section 6.3.1, *Baseline Studies*). However, the acreages presented below are appropriate for the purposes of this analysis; any discrepancies between these data and the adjusted baseline should not substantially affect the overall concept of the habitat reserve and corridor system for the former base.

Table 2-3. Amount of Occupied Habitat for HCP Plant Species in the Plan Area

Plant Species		Amount of Occupied Habitat by Density of Occurrence Category (acres)			
		High	Medium	Low	Total
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>	sand gilia	337	1503	7,248	9,088
<i>Piperia yadonii</i>	Yadon's piperia ^a	0	0	2,420	2,420
<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey spineflower	1,157	4,149	7,672	12,978
<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i>	Seaside bird's beak	160	353	6,336	6,849

^a There are an estimated 1,511 individual known occurrences of Yadon's piperia in the Plan Area.

Table 2-4. HCP Animal Species Occupied and Potential Habitat and Occurrence Points^a

Scientific Name	Common Name	Occupied Habitat (acres) or occurrence points ^b	Potential Habitat (acres)
<i>Euphilotes enoptes smithi</i>	Smith's blue butterfly	388 occurrence points	110
<i>Charadrius nivosus ssp. nivosus</i>	western snowy plover	272 occurrence points	71
<i>Ambystoma californiense</i>	California tiger salamander		
	Upland	—	19,598
<i>Rana draytonii</i>	Breeding	70 acres; 36 occurrence points	19
	Upland	—	16,362
	Breeding	0.4 acre; 1 occurrence point	89

^a Wildlife occurrence points are locations where wildlife species were observed during surveys conducted by J&S in 1992 for the *Flora and Fauna Baseline Study of Fort Ord, California* (U.S. Army Corps of Engineers 1992) and subsequent surveys.

^b Note that for Smith's blue butterfly and western snowy plover, the amount of occupied habitat is not estimated. Rather, the Plan identifies occupied areas in terms of occurrence points. Occurrence points for western snowy plover represent nest locations.

2.2.1 Sand Gilia (*Gilia tenuiflora ssp. arenaria*)

Sand gilia (also commonly referred to as Monterey gilia) is a small, erect annual plant in the phlox family (Polemoniaceae), endemic to the Monterey Bay area of Monterey County, California. It was listed as Federally endangered on June 22, 1992 (57 Federal Register [FR] 27848) and it was listed by the State of California as threatened in January 1987. Critical habitat has not been proposed for the species. The following biological information is summarized from the Biological Opinion 1-8-04-F/C-22 to the BLM (U.S. Fish and Wildlife Service 2005b) and from the species' recovery plan (U.S. Fish and Wildlife Service 1998).



Sand gilia typically germinates from December to February. It is able to self-pollinate as well as outcross, and fruit is set from the end of April to the end of May (U.S. Fish and Wildlife Service 2005b). It produces small seeds that are dropped or shaken from their capsules and are then dispersed, likely by gravity or wind. The plant occurs along trails and roadsides, on the cut banks of sandy ephemeral drainages, in recently burned chaparral, and in other disturbed patches. It appears to do well on sites that have undergone recent substrate disturbance. Most populations are small and localized.

Sand gilia is generally found in the fog belt area, but extends to inland areas in the Plan Area as well. Along the coast, sand gilia is found on rear dunes, near the dune summit in level areas, and on depressions or slopes in wind-sheltered openings in low-growing dune scrub vegetation. It does not occur in areas exposed to strong winds and salt spray (U.S. Fish and Wildlife Service 2005b). On ancient dune soils, which extend inland 6–8 miles (9.7–12.9 km) in the Plan Area, it occurs in openings among maritime chaparral, coastal sage scrub, oak woodlands, grasslands, and where

other vegetative cover is low (Table 2-2). Sand gilia is distributed in discontinuous populations and its range extends from Spanish Bay on the Monterey Peninsula north to Sunset Beach State Park in Santa Cruz County (California Department of Fish and Game 2003). Most of these populations are on private land and are unprotected. At least half of the species' range occurs in the Plan Area, where extensive suitable habitat is found.

Many of the populations of sand gilia found in the Plan Area support individuals with characteristics intermediate with sand gilia and the related subspecies slender-flowered gilia (*Gilia tenuiflora* ssp. *tenuiflora*) (Dorrell-Canepa 1994). Slender-flowered gilia is an inland subspecies known to occur near the Plan Area in sandy washes of woodlands in the Salinas Valley. It is possible that the Plan Area is a zone of intergradation between these two subspecies.

The 1992 baseline studies reported that sand gilia occurred on 3,757 acres of land in the Plan Area. Based on data collected up to 2017, the revised total of sand gilia habitat in the Plan Area is 9,088 acres (Table 2-3; Appendix A, Figure A-1). At the request of CDFW, the occurrence of sand gilia was evaluated for three geographic areas in the Plan Area as illustrated on Figure A-1. Area 1 consists of the lands west of Highway 1, which are within the FODSP. Area 2 is comprised of lands in and around the City of Marina, including the FONR property. Area 3 encompasses the remainder of the Plan Area, including the Fort Ord National Monument (FONM). Area 1 supports about 2% of the sand gilia population in the Plan Area, Area 2 has 18% and Area 3 has 80% of the mapped occurrences.

The most extensive stands of high density sand gilia appear to occur on the FONR property within Area 2, but high density areas have also been observed following burns in the inland range areas of the base in Area 3. Area 3 contains the most extensive stands of low density sand gilia, occurring primarily within the undeveloped southern portion of the Plan Area. Within Area 1, only one small population of sand gilia was found in sand dune habitat prior to 1998, but between 1998 and 2003 State Parks has planted a total of 2,751 sand gilia individuals within the FODSP and have expanded the species extent in that area. In the developed portions of the Plan Area, some small patches of sand gilia are known to occur in sandy open areas, despite development and the introduction of African ice plant (*Carpobrotus edulis*).

The loss of populations of, and habitat for, sand gilia have resulted from coastal urban development and sand mining operations. Recreational users such as off-road vehicle users, hikers, and equestrians threaten populations and habitat. The introduction of the aggressive African ice plant and European beach grass for dune stabilization has altered habitats, resulting in unsuitable conditions for sand gilia. Commercial and residential development near Marina, Seaside, Sand City, and the Monterey Peninsula threaten remaining sand gilia populations.

2.2.2 Yadon's Piperia (*Piperia yadonii*)

Yadon's piperia is a slender perennial herb in the orchid family (Orchidaceae). The species was listed by USFWS as endangered on August 12, 1998 (63 FR 43100) and a proposed designation of critical habitat was published on October 18, 2006 (71 FR 61545). Occurrences of Yadon's piperia in the Plan Area were not included in the final critical habitat designation of October 24, 2007 (72 FR 60409). The following biological information is summarized from the listing document and the species' recovery plan (U.S. Fish and Wildlife Service 2004a).



Yadon's piperia grows from an underground caudex/corm from the early spring through summer and recedes into dormancy during the late summer through winter. Plants may produce only vegetative growth for several years before first producing flowers (Rasmussen 1995). The blooming season is fairly short, with the first flowers opening mid- to late-June and blooming generally completed by early August. Recent data suggest that only a small percentage (typically 2–5%) of individuals in a population may flower in any year (Allen 1996).

Yadon's piperia is easily mistaken for more common relatives and biologists have confirmed it impossible to identify Yadon's piperia based on morphology without mature flowers (U.S. Fish and Wildlife Service 2004a). Reproduction is accomplished through both outcrossing and insect-facilitated selfing.

The species is endemic to Monterey County and has been found in two primary habitat types, Monterey pine forest and chaparral, but is also found in coastal scrub and in grasslands mixed with planted Monterey pines in the Plan Area (Table 2-2). In Monterey pine forest habitat, the species appears to favor a predominantly herbaceous understory typically under the perimeter canopy of evergreen huckleberry (*Vaccinium ovatum*) and woollyleaf manzanita. In chaparral, the species is typically found on rocky outcroppings, in sandy areas or eroded ridgetops where the soil is shallow, growing beneath dwarfed Hooker's manzanita shrubs (Morgan and Ackerman 1990; Allen 1996). Overall, this species favors a well-drained sandy soil substrate that retains moisture during the rainy season but is not subject to inundation (U.S. Fish and Wildlife Service 2004a).

The recorded range of Yadon's piperia extends from the hills around Prunedale and in the Elkhorn Slough watershed, south to the Palo Colorado Canyon area of the Big Sur coast, in northern Monterey County, California. Its center of distribution appears to be the Monterey Peninsula, south of the Plan Area, where plants are found throughout the larger undeveloped tracts of the Del Monte Forest in Monterey pine forest. Additional data obtained since the listing of the species indicates that the piperia population, at least within the Del Monte Forest area, is much larger and more widespread than previously assumed. The Del Monte Forest has 184 acres of Yadon's piperia habitat (Beacham and Beetz 2000). Yearly fluctuations in flowering individuals make occupancy determination and population trends difficult to determine. At the time piperia was proposed for listing, the best available data indicated that the population of piperia within the Del Monte Forest was approximately 2,000 plants limited to selected areas. A piperia census that took place in 2004 documented 129,652 individual piperia plants (13.41 acres) occurring in the Del Monte Forest Preservation and Development Plan Area (Zander Associates and WWD Corporation 2004). A piperia census that took place in 2004 and 2005 documented 160,047 piperia plants occurring throughout the Del Monte Forest (Zander Associates and WWD Corporation 2004, 2005).

In the Plan Area there are approximately 1,511 known individual plant occurrences across 2,420 acres (Table 2-3; Appendix A, Figure A-2a through Figure A-2n). These occurrences occur within an area that represents less than 1% of the species range. Species locations are as follows.

- Marina Northwest Corner (HMA). There are 4-6 occurrences within Marina Northwest Corner. The species has been recorded from an area near the Imjin Parkway exit off Highway 1. The occurrences were first recorded in 1992 within a 9-acre polygon in the Marina Northwest Corner, but follow-up surveys conducted by Randall Morgan in 1993 and 1994 found the plant only within a limited area (1–2 acres) of the polygon. In subsequent surveys by J&S in 1995 and by David Allen in 1996 only flowering stalks of the more common Michael's piperia were identified in the polygon. In a 2006 survey, a single flower stalk of Yadon's piperia was identified within the polygon. 4-6 stalks were identified as Yadon's piperia by botanists participating in a

pilot study as part of the preparation of the salvage, propagation, and translocation plan (HCP Mitigation Measure-38) in 2017 and 2018 (Brett Hall pers. comm., 2018). Because Yadon's piperia can exhibit dormancy, it can be difficult to detect the actual extent and abundance of a population in any given year. For the purposes of this HCP, the occurrences of Yadon's piperia within Marina Northwest Corner are assumed to occur within a 5-acre area.

- City of Monterey Parcels along South Boundary Road (Parcels E29b.3.1, E29b.3, and E29e, all Designated Development Areas). There are 135 occurrences within these three parcels documented from 2002 to 2010. In 2002, a population of Yadon's piperia was discovered by a BLM volunteer in the City of Monterey, near South Boundary Road, along the southern boundary of the Plan Area (HMP development parcel E29b.3). Initial surveys indicated the population consisted of approximately seven flowering individuals within a larger population of Michael's piperia and covered less than 1 acre. The plants were located under a large Monterey pine tree within a fuel break that had been annually disked for many years.

The HMP development parcel E29b.3 has since been subdivided into two parcels, E29b.3 (28 acres) and E29b.3.1 (0.65 acres) containing the Yadon's piperia population. A 2008 survey identified 34 flowering plants within the 0.65 acre parcel (Base Realignment and Closure), Shaw Environmental 2009). Subsequent surveys (2010) identified 24 standing individuals plus 17–20 individuals knocked over (Erin Harwayne pers. comm.). The area where the plants were located received a lot of foot traffic and was considered a degraded site. Recent caging and identification of the species in the parcel (2017-2018) identified 120-130 standing individuals plus 20-30 individuals knocked over (Brett Hall, pers. comm. 2018). Since summer 2017, the population has been caged and a nearby access gate to the parcel has been locked, so foot traffic is much reduced.

In all, there are 52 documented occurrences of Yadon's piperia within parcel E29b.3.1. Eighty-two individuals have been documented in Parcel E29b.3 and one individual has been documented in Parcel E29e.

- Parcel S4.2.3 (Designated Development Area). Eleven individuals were documented in this parcel south of South Boundary Road in 2012.
- Parcel E15.1 (Designated Development Area). One individual was observed near the former Fort Ord main entrance adjacent to 1st Street underneath planted Monterey cypress (*Hesperocyparis macrocarpa*) trees during biological surveys conducted for The Main Gate Project (City of Seaside Final EIR, 2010).
- BLM FONM (HMA). Limited surveys have been conducted on BLM FONM and the Army Impact Area. Surveys along fuelbreaks and roads in the outer range area conducted by David Styer and Shirley Tudor between 2009 and 2016 have resulted in the identification of 1,364 individuals. The species was prevalent along firebreaks and roads.

The primary threats to Yadon's piperia are loss and fragmentation of habitat from commercial, agricultural, residential, and intensive recreational development (e.g., golf courses, manicured ball fields). Other identified threats include invasive non-native plant species and factors that reduce reproduction, such as herbivory, disease, and mowing for fuel reduction purposes.

2.2.3 Monterey Spineflower (*Chorizanthe pungens* var. *pungens*)

Monterey spineflower is a prostrate annual herb in the buckwheat family (Polygonaceae). The species was listed by USFWS as threatened on February 4, 1994 (54 FR 5499) and a designation of critical habitat was published on May 29, 2002 (67 FR 37498). The critical habitat ruling included 11,267 acres in the Plan Area. On January 9, 2008, USFWS revised the designated critical habitat area that resulted in a reduced critical habitat in the Plan Area to 10,160 acres, comprised of two units (73 FR 1525) (Appendix A, Figure A-3b). Unit 3 Marina is 881 acres, located just south of the mouth of the Salinas River, south of the city of Monterey in northern Monterey County. This unit is currently protected on State lands, including Marina State Beach and Monterey State Beach, and approximately 731 acres fall within the Plan Area on FODSP. Unit 8 Fort Ord is 9,429 acres, of which 605 acres are located on state lands (FONR), 654 acres are located on County and other jurisdictions, and 8,170 acres are managed by the BLM and the Army. In accordance with the conservation strategy, 250 acres of Monterey spineflower critical habitat will be targeted for restoration within the FODSP.



The following biological information is largely summarized from the listing document, the proposed critical habitat revision, and the USFWS 5-year review (2009a).

Monterey spineflower flowers from late-March through June and is likely self-pollinated in addition to being insect pollinated. It produces small seeds that are dropped or shaken by wind from their capsule and may then be dispersed with blowing sand or by fur-bearing animals to which the spiny fruits may attach and be carried. The species colonizes open sandy sites and tends to invade roadsides and firebreaks. It is found in maritime chaparral, coast live oak woodland, coastal scrub, grassland, and coastal dune habitats (Table 2-2). Monterey spineflower occurs along the coast of southern Santa Cruz and northern Monterey Counties and inland to the coastal plain of the Salinas Valley.

The Plan Area supports the largest known population of Monterey spineflower with occurrences that are not fragmented by developed, agricultural, or other unsuitable lands (U.S. Fish and Wildlife Service 2005b). In the Plan Area the species has been identified on 12,978 acres, located primarily within undeveloped areas of the western half of the former base (Table 2-3; Appendix A, Figure A-3a). The highest densities are in the central portion of the firing range, where disturbance has historically been the most frequent. Although studies were not conducted on factors that determine the pattern of distribution and the densities of the plant in the Plan Area, a correlation exists between open conditions resulting from activities that disturb habitat and high densities of the plant (54 FR 5499).

Urban development in coastal cities, and to a lesser extent in the Plan Area, has resulted in the loss of large portions of the range of Monterey spineflower. Introduction of non-native African ice plant and European beach grass for dune stabilization has altered typical Monterey spineflower habitat and made conditions unsuitable for the species. Historic occurrences in the Salinas Valley have been extirpated primarily because of conversion of natural habitat to agricultural land.

2.2.4 Seaside Bird's Beak (*Cordylanthus rigidus* ssp. *littoralis*)

Seaside bird's beak is a bushy annual herb in the figwort family (Scrophulariaceae). It was listed by the State of California as endangered in 1982. The species is hemiparasitic, acting as a parasite by attaching its roots to a host plant while producing some of its own chlorophyll. It flowers in the summer and is insect pollinated to produce small seeds that are dropped or shaken by wind from their capsule. This species grows in sandy soils of stabilized dunes covered by closed-cone pine forest, cismontane woodland, maritime chaparral, coastal shrub, and grasslands (Table 2-2). Plants thrive in areas of recent surface soil disturbance or in areas with reduced levels of competition from shrubs and herbaceous plants.



The California Natural Diversity Database (CNDDB) (California Department of Fish and Game 2016) reports that seaside bird's beak is known from 40 occurrences. The distribution of the species is restricted to northern Monterey County and Santa Barbara County. In Monterey County the species is generally found between Carmel and Elkhorn Slough, in the Plan Area, and at the Monterey Airport. In the Plan Area there are an estimated 6,849 acres of occupied seaside bird's beak habitat, based on data collected up through 2014 (Table 2-3; Appendix A, Figure A-4). At the request of CDFW, the occurrence of seaside bird's beak was evaluated for two geographic areas in the Plan Area as illustrated on Figure A-4. Area 1 consists of the seaside bird's beak occurrences north of Reservation Road, including the FONR, and contains 130 acres. Area 2 is the remainder of the Plan Area and contains 6,719 acres of seaside bird's beak habitat.

Occurrences of the species have declined as a result of coastal development and the destruction and fragmentation of its habitat. Additional losses of populations can be expected to occur as these development pressures continue to result in loss and fragmentation of habitat. High fire frequency and out-of-season burning may also be adversely affecting the species. Fires, ground-disturbing activities and recreational use contribute to the spread of invasive species like pampas grass, ice plant, and veldt grass, which are capable of overtaking bird's beak habitat. A recent study concludes that management will require managing competition with invasive plant species, small mammals herbivory, and moth larvae herbivory on seeds, and availability of host plants (Watts et al. 2010).

2.2.5 Smith's Blue Butterfly (*Euphilotes enoptes smithi*)

Smith's blue butterfly was listed by USFWS as endangered on June 1, 1976 (41 FR 22041). Critical habitat for Smith's blue butterfly was proposed in 1977 (42 FR 7972), but to date there has been no final designation. The following biological information is largely summarized from the species' recovery plan (U.S. Fish and Wildlife Service 1984) and the species' 5-year review document (U.S. Fish and Wildlife Service 2006).

Smith's blue butterfly is found in a number of inland and coastal sand dunes, serpentine grasslands, and cliffside chaparral plant communities along the central California coast. It is known to occur from the mouth of the Salinas River in Monterey County south to San Carpoforo Creek in northern San Luis Obispo County. Populations north of the Salinas River are considered to be a hybrid between Smith's blue butterfly and Tilden's blue butterfly. It is completely dependent upon its host plants, coast and seacliff buckwheat, during all life stages. During its 1-year lifespan, mate location,

copulation, oviposition, and pupae emergence all occur on the flowerheads of the buckwheat species during peak flowering season, June through September. The dormant pupal form takes place during non-flowering periods.

When it was listed in 1976, Smith's blue butterfly was known primarily from remnant, partially stabilized sand dunes around Monterey Bay.

Additional colonies have since been discovered in other locations and habitat types. The species recovery plan approved by USFWS in 1984 indicates that the discovery of these additional colonies may warrant reclassification of the species.¹

In the 5-year review document for Smith's blue butterfly, published in September 2006, USFWS recommends that the species be downlisted from endangered to threatened because of an expansion of the subspecies' known range from the time of listing, largely within the southern part of its range. However, USFWS remains concerned about extirpation of the species from parts of its northern range, including the Plan Area, because of habitat fragmentation from residential and industrial development, isolation from the species' larger southern populations, and habitat degradation from invasive non-native plants and industrial and recreational use. The recovery plan identifies the Plan Area as an important Smith's blue butterfly population site and recommends the following management actions: 1) Identify areas where habitat restoration is possible; 2) control off-road vehicle use of dunes; 3) remove exotic (non-native) plants and replace with native plants; and 4) revegetate existing blow-out areas with native plants.



The Smith's blue butterfly recovery plan was written before the decision to close Fort Ord and, therefore, assumed that most of the coastal area was not available for habitat restoration because of the presence and use of the coastal firing ranges. With the closure of the base and the establishment of the FODSP, native dune restoration has been initiated in many of the coastal areas, starting in 1998, and most of the former ranges are slated to be restored to native habitat.

In the Plan Area, Smith's blue butterfly occurs primarily within coastal strands and dunes; however, obligate host plants have been documented in coastal scrub and grassland habitats (Table 2-2). There are 110 acres of potential habitat for the species (i.e., areas that support coast or seacliff buckwheat plants), (Appendix A, Figure A-5a through A-5g). The distribution of Smith's blue butterfly was determined from the extent of the host plants (coast or seacliff buckwheat), as mapped and updated from 1995 through 2014. Within the Plan Area, the species is only known to occur within the FODSP west of Highway 1; however, potential habitat for this species is present within FODSP, FONR, County of Monterey, City of Seaside, and City of Marina lands. The small habitat patches found east of Highway 1 are found on HMA parcels and designated development areas. Potential habitat acreages or host plant counts on HMA parcels are 0.39 acre on FONR North (Appendix A, Figure A-5b), and two plants on Marina Northwest Corner (Appendix A, Figure A-5c).

¹ A more recent publication (*Systematics of Western North American Butterflies* 1998), segregates a new subspecies (*Euphilotes enoptes arenicola*) of Smith's blue butterfly based on preference of host plants (coast buckwheat versus seacliff buckwheat). Fort Ord, therefore, becomes an even more important part of the range because both buckwheat species occur together on the former base.

Habitat acreages or host plant counts on designated development areas are 0.02 acre adjacent to the east side of Blanco Road (Appendix A, Figure A-d), 0.004 acre near the Marina Municipal Airport (Appendix A, Figure A-5e), 0.01 acre on the CSUMB campus, and a few dozen plants (about 10 square feet) on a City of Seaside parcel. Presence-absence surveys have not been conducted in these areas, with the exception of the City of Seaside parcel which were negative, but will be included in the base-wide monitoring program (Chapter 6 and Appendix H).

Presence-absence surveys for Smith's Blue butterfly adults were conducted throughout the FODSP dunes in June and July of 2008 (Arnold 2008). A total of 654 adult Smith's Blue butterflies were observed, with 214 females and 440 males. Arnold noted that individuals are more abundant at the northern and southern ends of the dunes, and less so in the center. He attributed this to the fact that fewer buckwheat plants were flowering in this area, but overall buckwheat plants are less abundant in the central portion of the dunes (Appendix A, Figure A-5a).

2.2.6 Western Snowy Plover (*Charadrius nivosus ssp. nivosus*)

The western snowy plover was listed by USFWS as threatened on March 5, 1993 (58 FR 12864) and is considered a Species of Special Concern by CDFW. In December 1999, USFWS designated critical habitat for the species including 28 areas along the coasts of California, Oregon, and Washington and including the beaches of the Plan Area (64 FR 68508). Revised critical habitat for the species was proposed in March 2011 (76 FR 16046) and adopted in June 2012 (77 FR 36727). A total of 60 areas along the coasts of California, Oregon, and Washington are now designated as western snowy plover critical habitat. There is one unit of western snowy plover designated critical habitat overlapping the Plan Area: Unit CA 22 Monterey to Moss Landing is 959 acres, spanning 15 miles of coastline from Moss Landing and the mouth of Elkhorn Slough to the city of Monterey, of which 174 acres overlap FODSP (Appendix A, Figure A-6b).



Nesting sites for western snowy plovers are found along beaches and adjacent bare dunes of the Pacific Coast from Washington to Baja California. Within the Plan Area, western snowy plover occurs within the coastal strand and dune natural community (Table 2-2). The species also occurs along the shores of salt ponds and alkali or brackish inland lakes. Monterey Bay beaches are considered one of thirty-two critical coastal nesting habitat areas. Breeding and nesting occurs March through September and nests are found above the high tide level on sandy, open ground. They are monogamous by clutch and can have multiple clutches per year with 2–6 eggs per clutch. Both the male and female incubate the eggs. The young are precocial and will leave the nest within hours of hatching in search of food. Fledging requires 27–47 days but the young will rarely remain in the nesting territory until fledging. Typically males will continue to care for and feed the young while the female initiates a new nest. Western snowy plovers are highly sensitive to disturbance and may abandon their nests if disturbed.

Beach environments are highly volatile and the acres of available nesting habitat can vary from year-to-year. Weather plays a significant role in nesting success. There is often a decrease in the acres of nesting habitat as a result of more normal rainfall years. During the drought periods, the beaches in the Plan Area tended to be wider, calmer, and provide more physical space for nesting. Normal and above normal rainfall years increase wave action and typically narrow the beaches. High tides and strong winds damage, wash away, and bury nests. However, the relatively narrow, high energy beaches backed by steep dune bluffs including those in the Plan Area at former Fort Ord continue to support nesting habitat for the western snowy plover.

The beach in the Plan Area of former Fort Ord provides 71 acres of potential habitat for western snowy plover (Table 2-4; Appendix A, Figure A-6a).² This is the total dry sand area available along the length of the Natural Resource Zone within the FODSP. This strip of dry sand is approximately 4 miles long and varies greatly in width (as described in the paragraph above). Within this area of habitat, there were 272 known nest locations from 2005 through 2016. The species has been known to nest along the entire length of the beach in the Plan Area. An average of 18 adult males per year have nested on the FODSP beach from 2006 to 2015 (Page et al. 2006; Page et al. 2007; Page et al. 2008; Page et al. 2009; Page et al. 2010; Page et al. 2010; Page et al. 2011; Page et al. 2012; Page et al. 2014; Page et al. 2015; Page et al. 2016).

Since monitoring began in the late 1970s and early 1980s, population levels along this stretch of beach have been variable. The number of nesting attempts ranged between 16 and 30 during the late 1980s and into the early 1990s. The number of nesting attempts then declined through the 1990s and reached a low of very few to zero nesting attempts in the late 1990s through 2004 (Page et al. 2002; Page et al. 2003; Page et al. 2005). More recently the number of nesting attempts in Fort Ord has rebounded with the number of nesting attempts of 23, 18, 21, 13, 18, 33, and 58 in 2009, 2010, 2011, 2012, 2013, 2014, and 2015 respectively (Page et al. 2009; Page et al. 2010; Page et al. 2011; Page et al. 2012; Page et al. 2014; Page et al. 2015; Page et al. 2016).

The decline in breeding numbers from the early 1990s through 2004 appears to be related to above normal winter mortality and low survivorship during brood rearing. Disturbances from recreational use and predation can contribute to low survivorship during brood rearing for the Pacific Coast population of western snowy plovers (A. Palkovic pers. comm. 2009).

On Monterey Bay beaches, efforts to improve reproductive success through targeted predator control, nest exclosures, seasonal upper-beach closures, and nest monitoring have resulted in high hatch rates but the number of individuals that reach fledging age remains variable. Today, exclosures are used only as a last resort because they aid in depredation of nesting adults and vandalism of the nest (G. Page pers. comm. 2013). New chicks then use the habitat for foraging; however, the beach at Fort Ord is now much less isolated and easily accessed by humans since becoming a State Park. For example, the multi-use recreation trail, which extends the length of Beach Range Road, provides opportunities to shortcut to the beach through the dunes. Quality foraging habitat is as important as nesting habitat to western snowy plover survival.

As with many species, the mortality rate of western snowy plovers between hatching and successful fledging can be high. Because young are on the move during this part of their life cycle and are foraging along the wet sand, it can be difficult to ensure their safety from beach recreation activities. Enforcement of prohibited beach activities, educational programs, and predator control have shown

² State Parks estimates that there are approximately 71 acres of potential habitat for the western snowy plover.

some promise of reducing the pressures on western snowy plover broods (Lafferty et al. 2006). Fledging success on Monterey Bay beaches has been closely tied to both mammalian and avian predator management (U.S. Fish and Wildlife Service 2007). On Monterey Bay beaches, the chick fledging rate declined from 2009 through 2013, with 1.9, 1.4, 1.0, 0.8, and 0.6 young fledged per male in 2009, 2010, 2011, 2012, and 2013 respectively (Page et al. 2009, Page et al. 2010, Page et al. 2011, Page et al. 2012, Page et al. 2014). Since 2013, the number of young fledged per male has increased, with 1.1 and 1.3 young fledged per male in 2014 and 2015, respectively (Page et al. 2015, Page et al. 2016). The number of young fledged per male in 2015 was identical to the long-term average from 1999-2014. The reason for loss of chicks in FODSP is currently unknown, but increased monitoring is expected to expose the cause, allowing for adaptive management.

2.2.7 California Tiger Salamander (*Ambystoma californiense*)

California tiger salamander was listed by USFWS as threatened on August 4, 2004 (69 FR 47211) and was listed as state threatened in 2010. The 2004 Federal listing included populations within the entire range of the species, including the Sonoma County and Santa Barbara County distinct population segments (DPSS), which had previously been listed by USFWS as



endangered. On August 19, 2005, a U.S. district judge vacated USFWS's downlisting of the Sonoma County and Santa Barbara County populations from endangered to threatened, making the Sonoma County and Santa Barbara County populations once again listed as endangered, while the central California population, which includes the Plan Area, was listed as threatened. On August 10, 2004, USFWS proposed to designate critical habitat for the central California tiger salamander population, including 8,202 acres in the Plan Area (69 FR 48569). The final rule, published August 23, 2005, excluded lands in the Plan Area from the final critical habitat designation (70 FR 49379). The following biological information is largely summarized from the 2004 listing document and the 2005 critical habitat designation.

In 2017, the USFWS published the Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*) (U.S. Fish and Wildlife Service 2017). The Recovery Plan classified the range of the Central California Distinct Population Segment into four recovery units. The recovery units also include management units, which were created to ensure that the full genetic, geographic, and ecological range of each recovery unit is represented. The Plan Area occurs within the Central Coast Range Recovery Unit and the Fort Ord management unit. The primary threat to populations within this recovery unit is hybridization with non-native tiger salamanders. Maintaining the genetic integrity of California tiger salamanders within this recovery unit is a priority (U.S. Fish and Wildlife Service 2017).

California tiger salamander occurs only in California from the coastline to the Sierra Nevada crest and from Sonoma to Santa Barbara Counties. California tiger salamander favors open woodlands and grasslands but requires water for breeding (Table 2-2) and ground squirrel or other rodent burrows for summer dormancy. The adult salamanders may migrate up to 1.4 mile (2.2 km) from

their estivation sites to the breeding ponds (Orloff 2009), which may be vernal pools, stockponds, or other seasonal water bodies. The adults mate in the ponds and the females lay their eggs in the water (Twitty 1941; Shaffer et al. 1993; Petranks 1998). After breeding, adults leave the pool and return to the small mammal burrows (Loredo et al. 1996). When the amphibian larvae metamorphose into the terrestrial juvenile form they leave their ponds and eventually settle into their selected upland sites for the dry, hot summer months. Juveniles do not typically return to the breeding pools until they reach sexual maturity at several years of age (69 FR 47211). While individuals may survive for more than 10 years, many breed only once, and in some populations, less than 5% of marked juveniles survive to become breeding adults (69 FR 47211). With such low recruitment, isolated populations can decline greatly from unusual, randomly occurring natural events as well as from human caused factors that reduce breeding success and individual survival.

Potential and known breeding habitat includes wetland and open water habitats. Overall, the Plan Area contains 72 acres of occupied breeding habitat and 17 acres of potential breeding habitat. Potential upland habitat includes all non-developed, non-aquatic area within 1.4 miles (2.2 km) of occupied and potential breeding habitat. Overall, the Plan Area contains 19,598 acres of potential upland habitat (DENR/POM 2004; Denise Duffy & Associates, Inc., 2011) (Table 2-4; Appendix A, Figure A-7).

Of the locations known to support California tiger salamander populations in the Plan Area, 10 of these areas may represent a “metapopulation” in the Henneken’s Ranch Road area (Pools 5, 42, 56, 57, 58, 59, 60, Machine Gun Flats, 101 East, and 101 West)(68 FR 28647). A metapopulation is a set of local populations or breeding sites within an area where migration from one local population or breeding site to other areas containing suitable habitat is possible, but not routine (68 FR 28647). While the Plan Area contains less than 1% of the known range for California tiger salamander, it is an important site for the conservation of this species on the central coast, because it is one of the few known locations in Monterey County where a complex of breeding pools are connected by contiguous habitat.

2.2.7.1 History of California Tiger Salamander Hybridization

Numerous species of tiger salamanders are found throughout North America. Extensive genetic analysis has been conducted to better understand the relationship between the distinct species that are included in this tiger salamander complex. Within this complex that contains approximately fourteen species across North America, the California tiger salamander is the most distantly related. This is likely because of the large geographic separation, approximately 500 miles (804.7 km), caused by the Sierran uplift that created the Great Basin desert (Riley et al 2003, Shaffer and McKnight 1996).

Approximately 65 years ago (or 30–40 salamander generations), thousands of non-native Eastern or barred tiger salamanders (*Ambystoma tigrinum mavortium*) were introduced from Texas and other parts of the southwestern United States into California by commercial bait dealers. These introductions have been traced to a suspected 15 locations found primarily in the Salinas Valley (Fitzpatrick 2007b). The numbers and ranges of these non-native salamanders and their hybrid progeny have expanded since introduction, thus creating a challenge to those tasked with managing lands for the native California tiger salamander. In 2009, genetic research found that a small subset of three hybrid genes has rapidly moved through the native population, referred to as the super-invasive genes (Fitzpatrick et al. 2009). It has since been determined through improvements in genetic testing and increase of genetic data, that the three genes associated with hybrid CTS are no

longer assumed to be hybrid, rather are believed to be natural variations within native California tiger salamander (Shaffer, per comm. February 8, 2017). Ongoing research is being conducted to better understand the spread of non-native genes.

2.2.7.2 Factors and Effects of Hybridization

Hybridization between California tiger salamander and barred salamander is influenced by both environmental and biological factors. Native California tiger salamanders must metamorphose into terrestrial adult salamanders (metamorphs) to reproduce, but barred tiger salamanders in perennial ponds often breed prior to metamorphosis, as sexually mature aquatic larval forms referred to as paedomorphs (Fitzpatrick and Shaffer 2004). Paedomorphs often reach sexual maturity earlier than the native metamorphs, produce larger clutches, and may breed earlier in a given season, leading to higher reproductive success in perennial ponds (Fitzpatrick and Shaffer 2007a). Paedomorphs grow larger than metamorphs, and females produce more eggs (Rose and Armentrout 1976 cited in Fitzpatrick and Shaffer 2004; Petranksa 1998 cited in Fitzpatrick and Shaffer 2004). In addition, introduced barred tiger salamanders may be able to take better advantage of perennial ponds by breeding earlier in the fall, thereby giving their larvae a competitive head start over later breeding native California tiger salamanders (Fitzpatrick and Shaffer 2004). Ultimately these factors allow paedomorphs to outcompete metamorphs for the limited resources of a pond ecosystem.

Morphological and behavioral research has shown that most of the hybrid populations are larger and more aggressive than the native California tiger salamander. Where native and non-native salamanders co-occur, reduced survival and growth rates are seen in the native California tiger salamander larvae. In addition, it has been demonstrated that the presence of hybrid tiger salamanders reduces the survival of other pond species such as California newt (*Taricha torosa*), Pacific chorus frog (*Pseudacris regilla*), California red-legged frog (*Rana draytonii*), and Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*) (Ryan 2009).

The ongoing genetic research has shown a much higher frequency of hybrid occurrences in perennial ponds as compared to seasonal ponds. This pattern is one of the strongest found in the tiger salamander hybrid system. The influencing factors may include habitat choice or selection in later life history stages (Fitzpatrick 2007a).

2.2.7.3 Known Populations in the Plan Area

California tiger salamander potential upland and breeding habitat is distributed throughout the undeveloped lands within the Plan Area (Appendix A, Figure A-7). Of the 66 ponds found within the Plan Area, 39 known aquatic resources have been documented to support adult California tiger salamander or California tiger salamander breeding activities (Appendix A, Figure A-7.1). Genetic sampling efforts carried out by BLM and the Shaffer lab indicate that two ponds show some trace of non-native genes: Pond 998 South (aka Toro Pond) and Mudhen Lake (East). To date, the Fort Ord region is positioned at the northernmost edge of the hybrid swarm.

2.2.7.4 Known Populations Adjacent to the Plan Area

The distribution and presence of hybrid California tiger salamander genes within the areas surrounding the Plan Area is currently being studied and evaluated by the Shaffer Lab and other land managers such as BLM. Outside of BLM lands, information about the presence of California tiger

salamander on other adjacent lands is variable. Armstrong Ranch, located to the north of the Plan Area, is a known aquatic resource that supports a highly hybridized population of California tiger salamander. Information about the hybridization of California tiger salamander populations will expand as research continues to be conducted by adjacent land managers and research groups like the Shaffer lab.

2.2.8 California Red-Legged Frog (*Rana draytonii*)

The California red-legged frog was listed by USFWS as threatened on May 23, 1996 (61 FR 25813) and is considered a Species of Special Concern by CDFW. On March 17, 2010 USFWS designated 48 units from Butte County to Los Angeles County as critical habitat for California red-legged frog (75 FR 1281671). Lands in the Plan Area were not included in the critical habitat designation.



The California red-legged frog utilizes different habitats depending on their life stage and the season. The species typically requires a perennial water source with emergent vegetation and suitable upland areas such as riparian and grassland habitat (Table 2-2). Eggs are usually found attached to emergent vegetation in ponds or backwater pools in creeks. Young frogs can occur in slow moving, shallow riffle zones in creeks or along the margin of ponds. In the summer, older frogs are often close to a pond or a deep pool in a creek where there is emergent vegetation or other features which can provide refuge from predators. These frogs may also take shelter in small mammal burrows and other refugia on the banks up to several dozen meters from the water, or in moist places in a variety of upland settings. Adult frogs are frequently encountered in open grasslands occupying seeps, springs, and pools; such bodies may not be suitable for breeding but might function as foraging habitat or refugia for wandering frogs.

Although California red-legged frogs typically remain near streams or ponds, marked and radio-tagged frogs have been observed to move more than 2 miles (3.2 km) through upland habitat. These movements are typically made during wet weather and at night (U.S. Fish and Wildlife Service 2002).

California red-legged frogs are found along the coast and coastal mountain ranges from Humboldt to San Diego Counties, and in the Sierra Nevada from Butte to Fresno Counties. Suitable potential breeding habitat in the Plan Area includes cold-water ponds with emergent and submergent vegetation, and riparian vegetation along the edges. There are 89 acres of potential breeding habitat and 0.4 acre of occupied breeding habitat in the Plan Area. Potential upland habitat includes all non-developed, non-aquatic area (i.e., non-wetland habitats) within 1 mile (1.6 km) of known and potential breeding habitat. There are 16,362 acres of potential upland habitat for California red-legged frog in the Plan Area, the extent of which constitutes less than 1% of the known range for the species (Table 2-4; Appendix A, Figure A-8). Species occurrences are limited to a single location in the Plan Area—larvae were found in Pond 998 South within the FONM (B. Delgado pers. comm.).

2.3 Habitat Features and HCP Species by Habitat Management Area

The HMP habitat reserve areas and habitat corridors have been consolidated into 14 HMAs. The HMAs combine to create a habitat reserve system supporting the full range of HCP species and natural communities while allowing limited development on properties with lesser resource values. Natural lands protected in the non-Federal HMAs (Table 2-1) in the habitat reserve system serve as the mitigation lands for the impacts occurring in the Plan Area. Management actions (e.g., enhancement and restoration) provided (i.e., funded) by the Permittees occurring on BLM land will also mitigate for impacts of the taking of HCP species. It is on these lands that HCP required actions will be implemented to preserve, enhance, and restore the natural communities that serve as known and potential habitat for the HCP species. A general overview of the habitat features and HCP species found in each of the HMAs is provided below. Table 2-5 and Table 2-6 summarize the natural communities and HCP species found in each of the HMAs.

2.3.1 BLM—Fort Ord National Monument Area

Six habitat types occur within the BLM FONM (Table 2-1 and Table 2-5). The most abundant habitat type is maritime chaparral. Other dominant types include annual grasslands, coastal coast live oak woodland and savanna, including inland coast live oak woodland, and coastal scrub. Habitats of special interest within the FONM include riparian forests, perennial grasslands, and vernal pools.

Sand gilia, Monterey spineflower, seaside bird's beak, Yaden's piperia, California red-legged frog, and California tiger salamander are known to occur in the FONM (Table 2-6).

Table 2-5. Natural Communities in Each HMA

Habitat Management Area	Natural Community						Wetland and Open Water
	Coastal Strand and Dune	Maritime Chaparral	Coastal Scrub	Coast Live Oak and Savanna	Woodland	Grasslands	Riparian
BLM							
FONM		X	X	X		X	X
State Parks							
FODSP	X						
UC/NRS							
FONR		X	X	X		X	
Monterey County							
East Garrison North Reserve		X		X			
East Garrison South Reserve		X		X		X	X
Habitat Corridor/Travel Camp				X		X	X
Parker Flats Reserve		X		X		X	
Oak Oval Reserve				X		X	
Landfill Parcel		X		X		X	
Laguna Seca Recreation Expansion							
Lookout Ridge		X	X	X		X	X
Wolf Hill		X					X
City of Marina							
Salinas River Habitat Area				X		X	-
Marina Airport Habitat Reserve			X	X		X	
Marina Northwest Corner		X				X	
Monterey Peninsula College							
Range 45 Reserve		X					
Monterey Peninsula Regional Park District							
NAE		X		X			X

Table 2-6. Occupied or Potential Habitat for HCP Species in Each HMA

	Sand Gilia	Yadons Piperia	Monterey Spineflower	Seaside Birds Beak	Smiths Blue Butterfly	Western Snowy Plover	California Tiger Salamander		California Red-legged Frog	
							Upland	Breeding	Upland	Breeding
BLM										
FONM	X	X	X	X			X	X	X	X
State Parks										
FODSP	X		X		X	X				
UC/NRS										
FONR	X		X	X	X		X		X	
Monterey County										
East Garrison North Reserve	X		X				X		X	
East Garrison South Reserve	X		X	X			X	X	X	X
Habitat Corridor/Travel Camp	X		X				X	X	X	X
Parker Flats Reserve	X		X	X			X		X	
Oak Oval Reserve			X				X		X	
Landfill Parcel	X		X				X			
Laguna Seca Wolf Hill	X		X	X			X	X	X	X
Laguna Seca Lookout Ridge			X				X	X	X	X
City of Marina										
Salinas River Habitat Area			X				X		X	
Marina Airport Habitat Reserve	X		X				X			
Marina Northwest Corner	X	X	X		X					
Monterey Peninsula College										
Range 45 Reserve	X		X	X			X		X	
NAE			X	X			X	X	X	X

2.3.2 State Parks—Fort Ord Dunes State Park

FODSP supports three general vegetation zones: beaches, bluffs, blowouts; coastal dunes (Table 2-1 and Table 2-5); and invasive species dominant areas. In addition, FODSP includes developed areas that are devoid of vegetation (i.e., buildings and paved areas). Sand gilia, Monterey spineflower, Smith's blue butterfly, and western snowy plover are known to occur at FODSP (Table 2-6). The HMP reported that robust spineflower was also present in the area but that occurrence has not been reconfirmed (California Department of Parks and Recreation 2004). In addition, two species which did not exist on the property at the time of base closure now occur at FODSP. The Federally and state endangered Yadon's (Menzies') wallflower was planted by park staff in the last 10 years and at least one small stable population of the species occurs in the park. A nesting colony of the state threatened bank swallow was discovered in 2008. The swallows nest in the eroded, vertical banks of a gully along the ocean-facing bluffs in the park. Bank swallows have low site fidelity—the species did not nest at FODSP in 2014—and are not sensitive to moderate levels of indirect human disturbance.

2.3.3 UC/NRS—Fort Ord Natural Reserve

Four habitat types occur within FONR: maritime chaparral, coast live oak woodland, annual/perennial grassland, and coastal scrub (Table 2-1 and Table 2-5). Sand gilia and Monterey spineflower occur over much of FONR. Parts of the maritime chaparral community at FONR support mature, closed canopy vegetation, similar to the closed canopy that develops to the south in the FONM, while other parts consist of less continuous canopy with more openings. Some of the FONR maritime chaparral is interspersed within oak woodland. Seaside bird's beak and California tiger salamander also occur in FONR (Table 2-6). There is suitable habitat for Smith's blue butterfly and California red-legged frog; however, presence has not been detected.

2.3.4 Monterey County—East Garrison Reserve

The East Garrison Reserve is divided into North and South reserves. The East Garrison North Reserve supports primarily coast live oak woodland and maritime chaparral vegetation (Table 2-1 and Table 2-5). The East Garrison South Reserve contains oak woodland with open grasslands and maritime chaparral habitats. Sand gilia³ and Monterey spineflower are known to occur in the East Garrison North Reserve and sand gilia, Monterey spineflower and seaside bird's beak are known to occur in the East Garrison South Reserve (Table 2-6). Potential habitat is available for California tiger salamander (upland) and California red-legged frog (upland) in both reserves. There is also potential breeding for California tiger salamander and California red-legged frog in the East Garrison South Reserve.

³ The East Garrison North Reserve includes an existing population of sand gilia that was established as mitigation for the East Garrison Specific Plan covered under California Department of Fish and Game Incidental Take Permit No. 2081-2005-047-3.

2.3.5 Monterey County—Habitat Corridor/Travel Camp

Coastal coast live oak woodland occurs over the majority of the Habitat Corridor/Travel Camp with the balance either developed or annual grassland (Table 2-1 and Table 2-5). There is also wetland and open water within the Travel Camp HMA. Monterey spineflower and sand gilia are known to occur in the parcel (Table 2-6). Potential breeding and upland habitat also occurs for California tiger salamander and California red-legged frog.

2.3.6 Monterey County—Parker Flats Reserve

The Parker Flats Reserve contains oak woodland, maritime chaparral, and grassland habitats (Table 2-1 and Table 2-5). It lies in a transition area between oak woodland and maritime chaparral. Monterey spineflower, sand gilia, and seaside bird's beak are known to occur in the reserve (Table 2-6). The oak woodlands in the parcel are considered potential habitat for the California tiger salamander (upland) and California red-legged frog (upland).

2.3.7 Monterey County—Oak Oval Reserve

Oak woodland and grasslands are present in the Oak Oval Reserve and Monterey spineflower is known to occur here (Table 2-1, Table 2-5, and Table 2-6). There is potential habitat for California tiger salamander (upland) and California red-legged frog (upland).

2.3.8 Monterey County—Landfill Parcel

Three habitat types occur within the Landfill Parcel (Table 2-1 and Table 2-5). The most abundant habitat type is coast live oak woodland. Other habitat types include annual grassland and maritime chaparral. Sand gilia and Monterey spineflower are known to occur in the Landfill Parcel (Table 2-6). Potential habitat is available in the parcel for California tiger salamander (upland).

2.3.9 Monterey County—Laguna Seca Recreation Expansion

The Laguna Seca Recreation Expansion contains Lookout Ridge and Wolf Hill. Lookout Ridge contains maritime chaparral, coastal scrub, wetlands and open water, annual grasslands with inclusions of coast live oak savanna and inland coast live oak woodland, (Table 2-1 and Table 2-5). Wolf Hill contains maritime chaparral and wetlands and open water.

Two small ponds at the base of Lookout Ridge along Barloy Canyon Road are known breeding sites for California tiger salamander (Ponds 33 N and 33 S, DENR/POM 2004). These ponds are adjacent to Barloy Canyon Road and are within 100 feet of each other. Two ponds on the FONM adjacent to Wolf Hill (a portion of one of the ponds lies within Wolf Hill) are also known breeding habitat for California tiger salamander (Appendix A, Figure A-7). These ponds also provide potential breeding habitat for California red-legged frog; both HMAs contain suitable upland habitat for California red-legged frog and California tiger salamander. Sand gilia is known to be present on Wolf Hill.

2.3.10 City of Marina—Salinas River Habitat Area

The southern segment of the Salinas River Habitat Area contains inland coast live oak woodland, and small amounts of annual grassland habitat (Table 2-1 and Table 2-5). Some riparian habitat occurs at the base of the slope where the Salinas River passes near the north-eastern part of the property. Monterey spineflower is known to occur in the area. Potential habitat is available for California red-legged frog in the Salinas River and riparian habitat within the HMA (Table 2-6). There is also potential habitat for California tiger salamander (upland).

2.3.11 City of Marina—Marina Airport Habitat Reserve

This parcel is dominated by annual grassland habitat with small inclusions of coastal scrub and coast live oak woodland and savanna in the southern and central portions of the area (Table 2-1 and Table 2-5). Sand gilia and Monterey spineflower are present in the reserve (Table 2-6). There is potential habitat for California tiger salamander (upland) and California red-legged frog (upland).

2.3.12 City of Marina—Marina Northwest Corner

Most of the Marina Northwest Corner parcel supports sand hill maritime chaparral habitat (Table 2-1 and Table 2-5). Grasslands also occur. Sand gilia and Monterey spineflower occur in the parcel. A small group of Yadon's piperia (approximately six plants) was recorded from the northern portion of the parcel in 1992 and one plant was surveyed in 2006 (see Figure 3-17 for polygon boundary of recorded location). Potential habitat is available for Smith's blue butterfly.

2.3.13 Monterey Peninsula College—Range 45 Reserve

The Range 45 Reserve contains maritime chaparral (Table 2-1 and Table 2-5). Sand gilia, seaside bird's beak, and Monterey spineflower are known to occur in this parcel (Table 2-6). Potential California tiger salamander upland and California red-legged frog (upland) habitat is also present.

2.3.14 Monterey Peninsula Regional Park District—Natural Area Expansion

The NAE parcel is dominated by maritime chaparral habitat (Table 2-1 and Table 2-5). The ephemeral drainage that feeds the Frog Pond Wetland Preserve passes through the NAE parcel and supports some willow riparian habitat. A small amount of oak woodland habitat also occurs in the NAE, but it was not mapped as part of the baseline studies. Monterey spineflower is found throughout the parcel (Table 2-6). A population of seaside bird's beak occurs along General Jim Moore Boulevard in the northern portion of the NAE parcel. The Army identified the ephemeral drainage and/or the adjacent Frog pond as potential breeding habitat for California tiger salamander and these areas could provide habitat for California red-legged frog.

Chapter 3

Covered Activities

This chapter provides background on the development of the HCP, HCP land use designations, and the activities covered under the HCP. Section 3.1, *Background*, explains the relationship between the HMP, the Fort Ord Reuse Plan, and the HCP to provide the context for existing land use conditions, land use designations, future development, and habitat management. Section 3.2, *HCP Land Use Designations*, provides an overview of the major land use designations as developed by the HMP and Fort Ord Reuse Plan. The description of land use provides the necessary context for the covered activities upon which the impact analysis, Chapter 4, *Impact Assessment and Levels of Take*, is based. Finally, Section 3.3, *Covered Activities*, describes the projects and activities in the Plan Area that are proposed for coverage under a Section 10(a)(1)(B) incidental take permit from USFWS for all species in the Plan and a Section 2081 permit from CDFW for all state-listed species in the Plan.

3.1 Background

This section describes the HMP (Section 7 requirement for the Army Biological Opinion [1997]), *Fort Ord Reuse Plan* (1997) and subsequent updates¹ and their relationship to the HCP. The project addressed in this HCP is the reuse and development of the former Fort Ord military base as presented in the HMP (1997), *Fort Ord Reuse Plan* (1997), and subsequent updates. Both the base reuse plan and the HMP were the result of years of planning, environmental review, and land conveyance decisions relative to the closure, disposal, and reuse of former Fort Ord; they establish the template for ultimate land uses on the former base that designates developable areas and HMAs.

The *Fort Ord Reuse Plan* and the HMP assume a program of development and redevelopment on former Fort Ord. Under this HCP, base reuse would result in the rehabilitation and construction of roads, utilities, and other infrastructure to support new research/educational, residential, commercial, light industrial, recreational, and other development. As a result, of the 27,832 acres in the Plan Area, 4,241 acres of existing developed areas on the former base would be redeveloped and about 5,051 acres of existing vegetation and wildlife habitat would be removed for new development. Impacts to HCP species resulting from base redevelopment would be minimized and fully mitigated through the preservation and management of 3,895 acres on non-Federal HMAs of HCP species, their habitat, and natural communities and management of habitat on 14,645 acres of HCP species, their habitat, and natural communities on Bureau of Land Management (BLM) (see Table 2-1).

It is estimated that 12,000 dwelling units (including units for California State University, Monterey Bay [CSUMB] on-campus housing), 18,000 jobs, and a build-out population of approximately 37,370 would occur on Fort Ord development parcels. In addition, CSUMB on-campus traditional student enrollment is projected to reach 8,500 full-time equivalent (FTE) students with an additional 3,500 FTE non-traditional primarily off-campus students, for a total of 12,000 FTE at buildout (Year 2025).

¹ Subsequent updates to these plans include changes resulting from land use modifications in the East Garrison and Parker Flats areas, relocation of the multi-modal transportation corridor, the Seaside/State Parks land swap, and other changes since the HMP and the base reuse plan were finalized.

The reuse plan also designates about two-thirds (18,540 acres) of former Fort Ord to be managed consistent with the base-wide habitat management program described in the HMP. BLM would manage 14,645 acres and the remainder would be managed by State Parks, the UC/NRS, Monterey County, and the City of Marina². A relatively small (19 acres) HMA would also be managed by the MPRPD and 206 acres of land surrounding its development parcel would be managed by MPC. The Army would retain 876 acres (3%) as a military enclave (i.e., Presidio of Monterey (POM) annex, reserve center).

The HMP establishes a habitat conservation area and corridor system and parcel-specific land use categories and management requirements for all lands on former Fort Ord. The designation of habitat reserve lands is based on a habitat conservation area and corridor system that was initially developed following widely accepted ecological concepts such as size, shape, location, connectivity, and management considerations for the establishment and maintenance of habitat reserve areas and corridors. In its early stages, the conservation area and corridor system relied on maximum preservation of high and medium density locations of HMP species, species richness, and habitat connectivity. Subsequent iterations incorporated changes in response to existing and potential land uses, the Army's landfill remediation requirements, additional habitat restoration and enhancement opportunities, and other factors. Adjustments were made with the acknowledgment that some loss of HMP species habitat could be mitigated by managing, expanding, and restoring similar habitat in other areas and by establishing clear, manageable boundaries along the urban/wildland interface. The resulting conservation program was formalized in the April 1997 HMP.

The HMP assigns six principal land use categories for parcels or groups of parcels as follows: 1) habitat reserve areas, 2) habitat corridors, 3) development with reserve areas or restrictions, 4) development, 5) Borderlands, and 6) future road corridors, easements, and rights-of-way. The relationship between the HMP land use categories and the HCP land use designations is described in Section 3.2, *HCP Land Use Designations*. Parcels under each category are shown on Figure 1-3. Resource conservation and management requirements for these parcels are based on the main management goal for each category. The habitat reserve areas are lands that are set aside from development to protect biologically important habitat for species targeted in the HMP. The main management goal for the habitat reserve category is the conservation and enhancement of these species and natural communities. Habitat corridor areas require management strategies that promote maintenance of connections between habitat reserve areas. Development with reserve areas or restrictions are parcels that are slated for development but that have inholdings of habitat reserve land or require development restrictions to protect habitat within or adjacent to the parcel.

Lands designated as development have no management requirements related to the target species, unless they are designated Borderlands. Borderlands, as defined in the HMP, are designated development and HMA parcels at the urban/wildland interface where specific planning and design considerations and management activities are required. Future road corridors, easements, and rights-of-way are designated within some of the habitat reserves and these areas are to be managed as part of the reserve until such time that they are developed or if specific management activities are required to maintain facilities such as utilities.

² The Cooperative will implement HCP required activities in lands owned by Monterey County, City of Marina, Monterey Peninsula Regional Park District, and MPC.

Since the HMP was finalized in 1997, changes have been made and additional details have become available with respect to land uses on certain parcels. For example, the land use modifications for the East Garrison and Parker Flats areas clarified land use boundaries and added new habitat areas to the original HMP reserve configuration; the proposed multi-modal transportation corridor (MMTC) through the UC's South Reserve has been relocated; the final general plan for the Fort Ord Dunes State Park was approved by State Parks in 2004 and BLM approved an RMP covering current and future lands that it manages at Fort Ord in 2007; and interim use of the Laguna Seca Recreational Expansion has better defined activities in those parcels. The CRMP program's recommendation to expand the Borderlands category to cover all areas at the urban/wildland interface has been incorporated into this HCP along with the changes, recommendations, and additional information described above.

Habitat and species management requirements under the HMP have been incorporated into the conservation strategy (Chapter 5, *Conservation Strategy*). The HCP adds to and codifies the HMP to meet the Federal and state incidental take permit issuance criteria. The required actions under the HMP must be implemented as required under existing land transfer agreements. Upon issuance of the state and Federal incidental take permits, if the HCP requires additional actions, then the HCP must be followed to ensure permit compliance.

3.2 HCP Land Use Designations

HCP land use designations are based on those used in the HMP and Fort Ord Reuse Plan. As such, the roles and responsibilities of the land owner as outlined and agreed to under these plans are further codified in the HCP. Table 3-1 provides the relationship between the HMP land use descriptions and those used in the HCP. Figure 3-1 shows the land use designations assigned to parcels in this HCP. Table 3-2 identifies each land use designation by land recipient.

Table 3-1. Relationship between HMP Land Use Descriptions and Terms Used in the HCP

HMP Land Use Descriptions	HCP Land Use Category
Development	Designated Development Areas
Borderland Development Areas along FONM Interface	Borderlands Category 1 (Equivalent to Borderlands as Defined in HMP)
No Equivalent	Borderlands Category 2 (Designated Development Areas at Urban/Wildland Interface)
No Equivalent	Borderlands Category 3 (Designated Development Areas within HMAs)
No Equivalent	Borderlands Category 4 (HMAs Adjacent to Existing Development)
Future Road Corridor	Future Road Corridors in HMAs, Future Road Corridors
Habitat Reserve	HMA
Habitat Corridor	HMA
Development with Reserve Areas or Development with Restrictions	Allowable Development in HMAs

The revised designations better address the more detailed planning and other changes that have occurred since the HMP was finalized. Each of the HCP land use designations has specific allowances and requirements, but there is also overlap among them (e.g., some development is allowable in all categories; interim management requirements apply in some Borderland and designated development areas; an individual parcel may be classified as a Borderland parcel and designated development parcel or HMA). These allowances and requirements are the basis of the covered activities described in Section 3.3, *Covered Activities*. Each of the HCP land use categories is described in the following subsections.

Parcel designations used by the Army in the HMP are occasionally referenced in this HCP. However, in recognition that these parcel designations would eventually fade from use and that parcels are usually managed as a group when under the same land manager, this HCP assigns commonly recognized names to parcels or groups of parcels that combined, make up a single land use or management area. This is particularly relevant for HMP parcels designated as habitat reserve areas, habitat corridors, and development with reserve areas or restrictions.

Table 3-2. HCP Land Use Designations by Land Recipient

Land Recipient	HCP Land Use Designation						
	Designated Development Areas				Habitat Management Areas		
	Currently Developed Areas	Natural Lands	Borderlands (Category)				Habitat Management
			1	2	3	4 ^a	
State Parks	X	X				X	X
Board of Trustees of California State University (on behalf of the Monterey Bay Campus)	X	X	X	X			
<i>UC Regents</i>							
UC/NRS						X	X
UC MBEST	X	X		X			
County of Monterey	X	X	X	X	X	X	X
City of Marina	X	X		X	X	X	X
City of Seaside	X	X	X				
City of Del Rey Oaks	X	X	X	X			
City of Monterey	X	X	X				
MPC	X	X	X		X		X
MCWD	X	X				X	
MPRPD					X		X
BLM	X	X			X	X	X

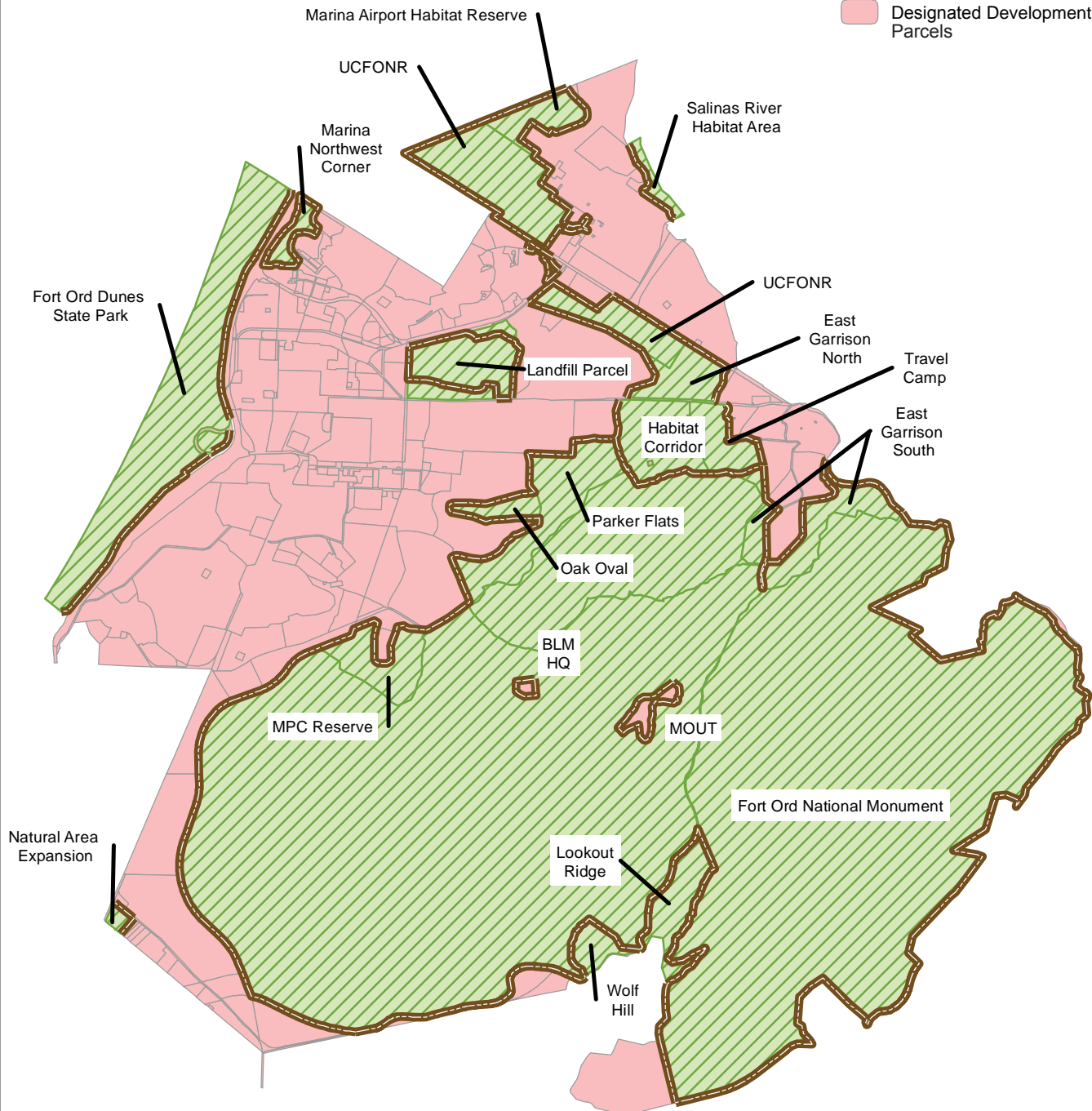
^a Category 4 Borderlands are located on HMAs.

3.2.1 Designated Development Areas

The designated development areas include all parcels that the HMP designates as development and encompasses 9,292 acres. These areas include both currently developed lands (i.e., lands with existing structures), as well as natural lands (i.e., lands with vegetation). Natural lands are lands that

Legend

-  Borderlands
-  Habitat Management Areas
-  Designated Development Parcels



Source: Fort Ord Reuse Authority

Figure 3-1
HCP Land Use Designations

would be developed during the permit term, but some have interim land management responsibilities until they are developed (i.e., the Category 1 Borderlands). Lands designated as development under the HMP had no management restrictions. Biological resources on these parcels were not considered essential to the long-term preservation of sensitive species in the Plan Area. The HCP calls this land use category “designated development parcels,” or collectively as “designated development areas.” Within this land use category, there are designated development areas with currently developed lands and those with natural lands (Table 3-3). In addition, some designated development areas may also be categorized as Borderlands (Section 3.2.2, *Borderlands*).

Table 3-3. Land Use Designation Area or Length

Land Use Designation	Acres	Miles
Designated Development Areas		
Currently Disturbed Areas (Developed Lands)	4,241	
Natural Lands	5,051	
Subtotal	9,292	
Borderlands		
Category 1		14.9
Category 2		14.3
Category 3		2.3
Category 4		27.7
Subtotal		59.2
Habitat Management Areas		
Allowable Development	777	
Road Corridors and Infrastructure ¹	106	
Habitat Management	17,657	
Subtotal	18,540	
Total	27,832	59.2

¹Includes Inter-Garrison road widening, Marina Coast Water District, Fort Ord Recreational Trail and Greenway, and City of Marina Airport Master Plan Expansion Impacts.

Currently developed lands are designated development parcels with negligible resource values; they were developed and previously used for military purposes over the years when former Fort Ord was an active installation and remain developed and/or disturbed today. These existing disturbed/developed areas on the former base span 4,241 acres of the designated development parcels. Within the designated development areas, 5,051 acres remain undeveloped. These lands support a range of species, including HCP species and natural communities, and are referred to as natural lands. While there are no development restrictions for this land use category, lands categorized as designated development under the HCP would have to comply with HCP required actions as identified in Chapter 5. Parcel management prior to development and the pace of development would have to comply with the stay-ahead provision (Section 7.6, *Stay-Ahead Provision*).

3.2.2 Borderlands

Borderlands are designated development parcels or HMA parcels at the urban/wildland interface where specific design considerations and management activities are required to minimize effects of development on HCP species and natural communities (Figure 3-2). This land use designation overlaps with designated development areas and HMAs. That is, an individual parcel can be categorized as a designated development parcel or HMA and also a Borderland parcel. The Borderland designation applies to the entire parcel. This borderland designation is used to identify parcels that abut the urban/wildland interface. However, specific Borderland avoidance and minimization measures (AMMs) may or may not apply to an entire Borderland parcel. In the HMP, the Borderlands designation was limited to development parcels adjacent to the main central habitat reserve, the FONM, and adjoining habitat areas. The HMP definition was expanded for the HCP to identify management responsibilities for additional boundary situations. The term “Borderlands” is used broadly to refer to all Borderland parcels, regardless of their category.

The HCP identifies four Borderland categories based on anticipated conditions at the urban/wildland interface (Figure 3-2, Table 3-4, and Table 3-5). Category 1, 2, and 3 Borderlands apply to designated development parcels in the Plan Area that share a border with an HMA (see Section 3.2.2.1, *Category 1: Equivalent to Borderlands as Defined in the HMP*; Section 3.2.2.2, *Category 2: Designated Development Parcels at Urban/Wildland Interface*; and Section 3.2.2.3, *Category 3: Designated Development Parcels in HMAs*, for definition). Category 4 Borderlands applies to HMAs that abut areas of existing development in the Plan Area or areas of development outside of the Plan Area (see Section 3.2.2.4, *Category 4: HMAs Adjacent to Existing Development*, for definition).

Borderlands design consideration and management activities are specified in HCP required AMMs (Chapter 5). All AMMs focus on minimizing effects on HCP species from development adjacent to HMAs. Table 3-4 summarizes the Borderland length because AMMs are generally required at or near the boundary of the parcel adjacent to an HMA (for Categories 1 through 3). For Category 4 Borderlands, AMMs are required along the HMA boundary with existing development in the Plan Area, existing development not in the Plan Area, or parcels in the Plan Area that are not party to the HCP. In some cases, a single parcel may be assigned more than one Borderland category. This occurs when an HMA parcel borders both existing development and a designated development parcel. In these instances, AMMs would be applied on the designated development parcel when the HMA borders a designated development parcel and on the HMA parcel when the Category 4 Borderlands conditions are met.

Most Borderlands are designated on designated development parcels with natural lands. As land owners develop these parcels, they will be responsible for implementing AMMs related to the development design elements, access controls (through design), and fire-wise planning consistent with the HCP. Prior to issuance of state and Federal permits, the Permittees will execute a Joint Exercise of Powers Agreement to create the Fort Ord Regional Habitat Cooperative (Cooperative), the entity responsible for ensuring HCP implementation. The Cooperative will be responsible for Borderland required AMMs related to ongoing invasive species control, erosion control, fuelbreak maintenance, and access control to address the urban/wildland interface and protect the species and habitats within the HMAs. Chapter 5 describes each of the AMMs in detail and identifies the entity responsible for their implementation.

The Cooperative will use revenue generated from the HCP Endowment Fund to pay for Borderland required AMMs that are ongoing for all Borderland categories (see Chapter 9, *Cost and Funding*).

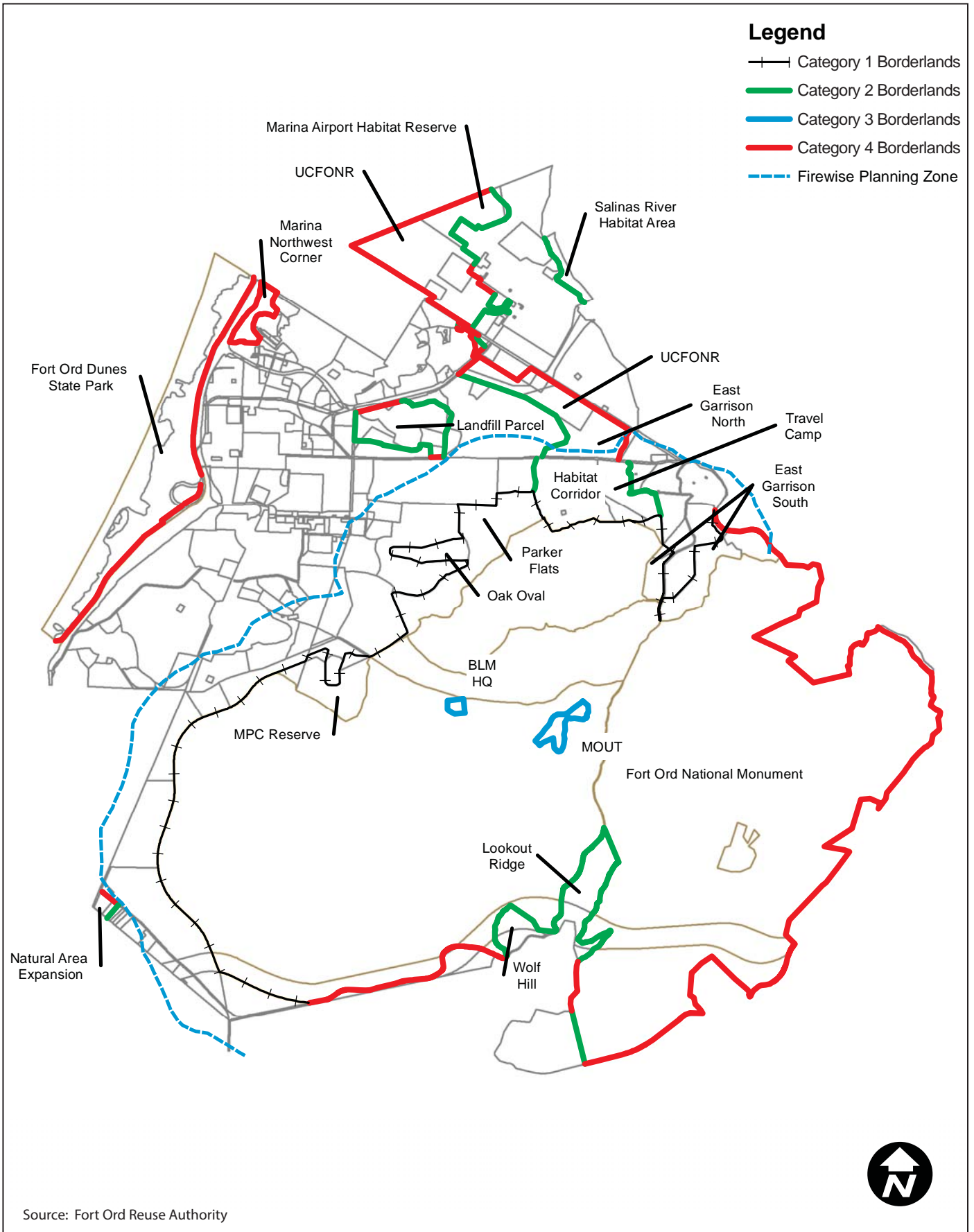


Figure 3-2
Borderland Categories

Table 3-4. Borderland Parcel Boundary Length at the Urban/Wildland Interface by Land Recipient

Land Recipient	Borderlands Category (miles)				Total (miles)
	1	2	3	4	
State Parks	-	-	-	4.1	4.1
Board of Trustees of California State University (on behalf of the Monterey Bay Campus)	0.5	1.6	-	-	2.1
UC Regents					
UC/NRS	-	-	-	4.8	4.8
UC MBEST	-	1.1	-	-	1.1
County of Monterey	8.2	8.9	-	2.2	19.3
City of Marina	-	2.5	-	2.6	5.1
City of Seaside	2.8	-	-	-	2.8
City of Del Rey Oaks	1.2	0.2	-	-	1.4
City of Monterey	0.1	-	-	-	0.1
Monterey Peninsula College (MPC)	2.1	-	1.7	-	3.8
Marina Coast Water District (MCWD)	-	-	-	-	-
Monterey Peninsula Regional Park District (MPRPD)	-	-	-	0.2	0.2
BLM	-	-	0.6	13.8	14.4
Total	14.9	14.3	2.3	27.7	59.2

Table 3-5. Parcels designated as Borderlands by Land Recipient

Land Recipient	Parcel	Borderlands (Category) ^a			
		1	2	3	4
State Parks	S3.1.1, S3.1.3				X
Board of Trustees of California State University (on behalf of the Monterey Bay Campus)	S1.3.2	X			
	L7.2, S1.2.1, S1.2.2		X		
UC Regents	S2.1.2, S2.1.3, S2.1.5, S2.3.1.2, S2.3.1.4, S2.3.2.1, S2.3.2.2, S2.3.2.3, S2.3.2.4, S2.4				X
UC/NRS					
UC MBEST	S2.1.1, S2.1.4.1, S2.1.7, S2.5.1.2, S2.5.2.2		X		
	E11b.8, E19a.3, L3.2, L5.7, L20.2.1, L20.2.2, L20.2.3.1, L23.3.2.2, L23.3.3.1, L23.3.3.2, L20.18	X			
County of Monterey	E8a.1.2, E8a.1.4, E8a.1.1.2, E11b.1, L5.7, L20.3.1, L20.3.2, L20.5.1, L20.5.2, L20.5.3, L20.6, L23.3.1, L23.3.3.1		X		
	E8a.1.1.1, E8a.1.1.2, E8a.1.3, E8a.1.4, E11a, E11b.7.2, L20.10.3, E11b.7.1.2				X

Land Recipient	Parcel	Borderlands (Category) ^a			
		1	2	3	4
City of Marina	E5a.1, E5b, L5.1, L5.1.3, L5.1.8		X		
	E2a, L5.1.11				X
City of Seaside	E23.1, E23.2, E24, E34	X			
	E29a, E29b.1	X			
City of Del Rey Oaks	E36, E31a, E31b, E31c		X		
	L6.1, L6.2				X
City of Monterey	E29b.2	X			
	E19a.5, E21b.3, E40	X			
MPC	F1.7.2			X	
	F1.12			X	
BLM	F1.1.1, F1.1.2, F1.1.3, F1.7.4, F1.13.1, F1.13				X

^a A single parcel may be assigned more than one Borderlands category depending on the boundary conditions.

On parcels identified as Category 4 Borderlands, the HMA manager will evaluate conditions at the border with existing development and incorporate appropriate management actions to address potential threats to HCP species or natural communities in the HMA. Descriptions of these activities are included in the AMMs and mitigation measures for the HMA(s) where they apply (see Chapter 5, *Conservation Strategy*). Implementation of Borderlands requirements is required as part of permit compliance and will be tracked and reported in the annual report (Chapter 7, *HCP Implementation*).

For all Borderland parcels, fire protection planning is required by State law. State of California Dept. of Forestry and Fire Protection defensible space requirements, Public Resources Code Section 4291, states there should be a 100 foot [fuel break] between structures and wildlands (http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_codes.php).

Designated development parcels that are also designated as Borderlands have interim management requirements because it may take many years before development occurs in them. In order to prevent potential conflicts between the interim use of these parcels before their development and habitat management activities in the adjacent habitat area, FORA, local jurisdictions, or other recipients of the land will arrange for interim management of the land from the time of transfer until the land is developed. Management actions defined in Section 5.4, *Measures to Avoid and Minimize Impacts*, must also be applied as interim management actions prior to development.

FORA and/or the recipient of the land will be responsible for implementing the interim management requirements, which are consistent with Item C of the terms in the Development of the Revised Fort Ord Habitat Management Plan signed by the Army, USFWS, UC, and FORA in April 1996 (copy included in Appendix C). Some of the land recipients have entered into an agreement with FORA to implement their Borderland responsibilities (see Chapter 7, *HCP Implementation*).

3.2.2.1 Category 1: Equivalent to Borderlands as Defined in the HMP

This category follows the Borderlands designation included in the HMP, as revised through the East Garrison–Parker Flats land use modifications. The designation applies to development parcels adjacent to the FONM and adjoining habitat areas in the Parker Flats and East Garrison areas that are currently undeveloped. It also applies to the parcels with boundaries between the Habitat Corridor/Travel Camp and the FONM. Special management of the boundaries between designated

development areas and the FONM are required by agreements between USFWS, BLM, UC, FORA, and the Army (Appendix C). The design and management requirements presented in Chapter 5 apply to all Borderlands parcels in this category. Recipients of parcels designated as Category 1 Borderlands include FORA (as interim land manager), the, County of Monterey, City of Seaside, City of Del Rey Oaks, City of Monterey, and MPC (Table 3-4 and Figure 3-2).

3.2.2.2 Category 2: Designated Development Parcels at Urban/Wildland Interface

This category expands the HMP Borderlands definition to include other designated development parcels that are adjacent to designated HMAs. These are undeveloped or partially developed parcels that abut the FONR, Marina Airport Habitat Reserve and Salinas River Habitat Area, East Garrison North Reserve, Habitat Corridor/Travel Camp, and the Landfill Parcel (Figure 3-2). In addition, the HCP includes the Del Rey Oaks Office Park, which has very specific HMP management requirements, as a Category 2 Borderlands. Land recipients with Category 2 Borderlands include FORA (as interim land manager), CSUMB, UCMBEST, County of Monterey, City of Marina, and City of Del Rey Oaks (Table 3-4 and Figure 3-2).

Most of the Category 2 Borderlands abut relatively small and isolated habitat areas that already have existing developed areas along other sections of their perimeters. Unlike Category 1 Borderlands, they are not adjacent to a large contiguous block of habitat like the FONM.

3.2.2.2.1 Del Rey Oaks Office Park

The 12-acre Del Rey Oaks Office Park development area (Figure 3-3), comprised of three separate parcels (HMP parcels E31a–c), is included in the group of parcels designated as Development with Reserve Areas or Development with Restrictions in the HMP. The Del Rey Oaks Office Park parcel is not an HMA, but it does have land use restrictions to protect the adjacent Monterey Peninsula Regional Parks Natural Area Expansion (NAE) and therefore it is included as a Category 2 Borderlands in the HCP. In an agreement reached with the MPRPD (May 12, 1999), certain land use designations were assigned to each of the three parcels. For Parcel E31a (Parcel 2 in the agreement) allowable uses are limited to picnic areas, trailheads, interpretive signage, drainage facilities, and City of Del Rey Oaks or MPRPD parking. No buildings or roadways are allowed in this parcel, designated as the Primary Buffer Zone. Parcel E31b is the Secondary Buffer Zone (Parcel 3 in the agreement) and allowable uses include everything allowed in the Primary Buffer Zone plus roads, parking, and buildings sited to minimize visual impact on the adjacent park lands. Covered activities in Parcel E31c include development of a campus style office park similar to Ryan Ranch, including all buildings, parking, access and infrastructure improvements necessary for such development.

3.2.2.3 Category 3: Designated Development Parcels in HMAs

Only two parcels comprising 64 acres fall within this category—the Military Operations on Urban Terrain (MOUT) (51 acres) and BLM Headquarters (13 acres). Land recipients with Category 3 Borderlands include FORA (as interim land manager), MPC, and BLM (Table 3-4 and Figure 3-2).

The MOUT is a purpose-built mock village used by the military for urban warfare training. It is completely surrounded by the FONM. Under the direction of MPC, the MOUT would continue to be used for law enforcement training and no significant changes in use are anticipated. The BLM Headquarters parcel currently houses BLM ancillary facilities.

3.2.2.4 Category 4: HMAs Adjacent to Existing Development

This category includes HMAs that share a border with existing development in the Plan Area, existing development not in the Plan Area, or parcels in the Plan Area that are not party to the HCP (California Department of Transportation [Caltrans] Highway 1 Corridor). Consequently, AMMs required for Category 4 Borderlands must be applied in addition to mitigation measures because there is no mechanism for enforcing AMMs on adjacent parcels. Land recipients of parcels designated as Category 4 Borderlands include FORA (as interim land manager), State Parks, UC/NRS, County of Monterey, City of Marina and BLM (Table 3-4 and Figure 3-2).

The location of the urban/wildland interface may shift as development occurs in Category 4 Borderlands that are also designated as *Allowable Development in HMAs*. In these cases, the entity responsible for and the location of AMM implementation will shift from the HMA manager to the developer. These border situations will be evaluated by the Cooperative during project review (see Section 7.5, *Providing Take Authorization under the HCP*) to ensure HCP required AMMs continue to be implemented during and after development takes place.

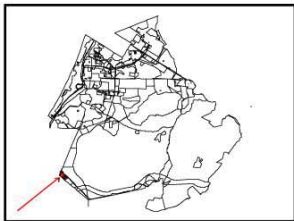
3.2.3 Habitat Management Areas

Land designated as HMAs in the HCP include groups of HMP parcels that were designated habitat reserves, habitat corridors, and development with reserves or restrictions in the HMP and total 18,540 acres. The HMP land use descriptions are as follows.

- **Habitat Reserve.** This category is the core to achieving the goals of the HMP. These lands are set aside from development to protect biologically important habitat for the HMP target species. The main management goal for this category is the conservation and enhancement of threatened and endangered species.
- **Habitat Corridor.** These areas require management strategies that promote maintenance of connections between conservation areas. Minor expansion or maintenance of existing facilities may be allowed in these areas as long as the lands are managed to protect existing sensitive species in perpetuity and remain viable to support the dynamics of the ecological systems in the Plan Area.
- **Development with Reserve Areas or Development with Restrictions.** These lands are slated for development but contain inholdings of habitat reserve land or require development restrictions to protect habitat within or adjacent to the parcel. For designated development areas that have habitat reserve areas within their boundaries, the management practices must be consistent with the maintenance of the reserves.

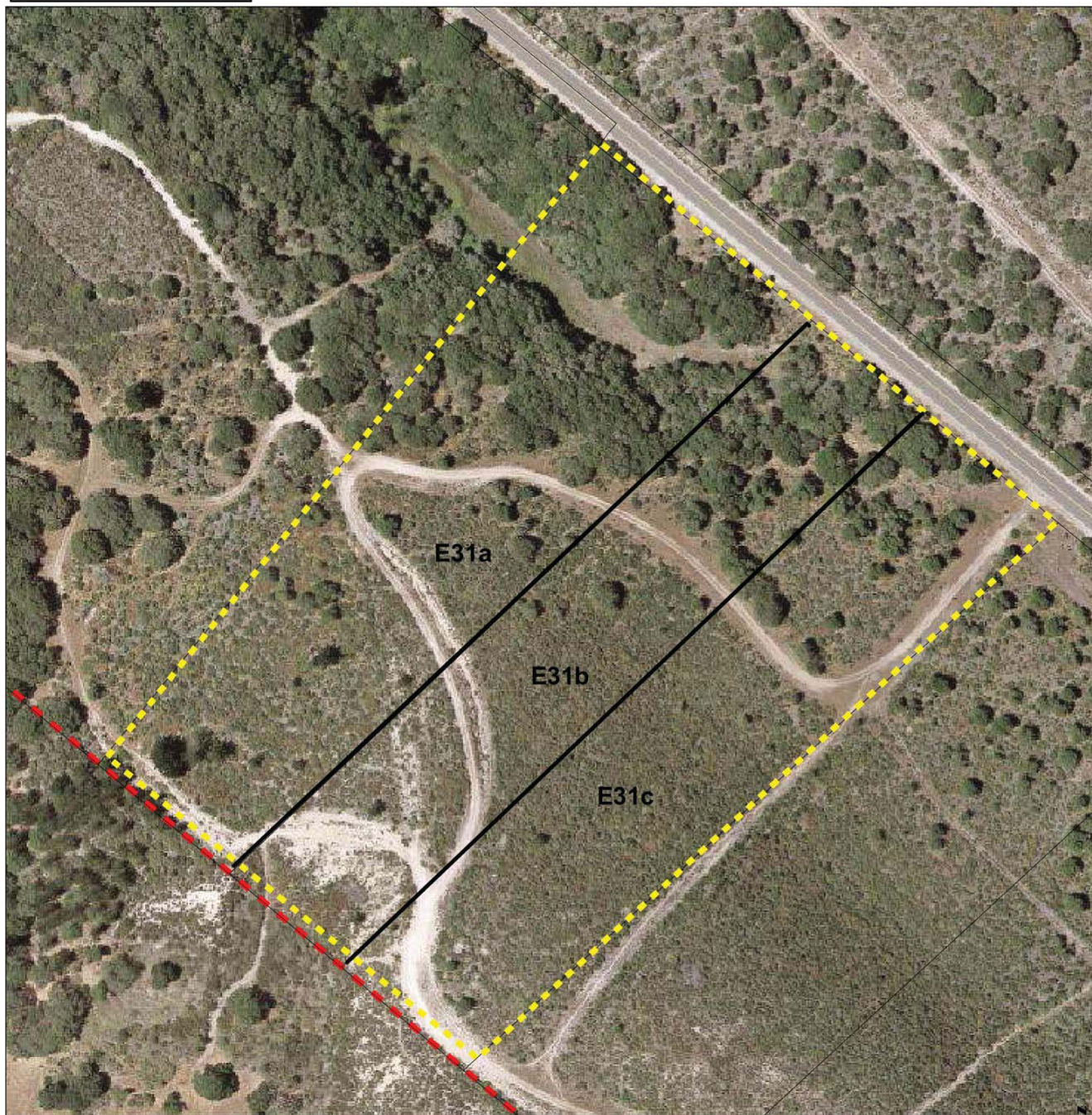
For the purposes of HCP land use designations, the HMP designations refer to areas within the HMAs that allow development with restrictions or require habitat management. All HMA parcels have habitat management requirements. With the exception of East Garrison (North and South), Parker Flats, Salinas River, Marina Airport, Range 45 Reserve and MPRPD, the HMA parcels also allow development with restrictions. The specific covered activities covered in the HMAs are discussed in Section 3.3, *Covered Activities*. Figure 3-1 shows the land use designations assigned to parcels in this HCP.

The HMAs contain groups of parcels that, when combined, constitute contiguous series of properties. These properties will be managed by BLM, State Parks, UC/NRS, and the Cooperative in a coordinated and cooperative manner. BLM will manage the public land properties under its



Legend

-  Plan Area Boundary
-  Parcel Boundary
- E31a HMP Parcel Number



Source: Zander Associates

jurisdiction, referred to in this document as the FONM, in accordance with its authorities as described in Section 1.9.3, *Role of Bureau of Land Management*. These parcels have certain allowances for or restrictions on development but most are primarily to be maintained and managed for the preservation and enhancement of HCP species and natural communities. Table 3-6 lists the HMP parcels that constitute each HMA, and Figure 3-1 identifies the location of the management areas.

BLM is responsible for the largest habitat area, the FONM, with 14,645 acres that will be managed as a public resource for open space recreation and the conservation of biological resources.

State Parks will manage the 979-acre FODSP west of Highway 1, also for public recreation with a minimum of 700 acres of the park designated as open space and native habitat.

The UC/NRS is responsible for the 606-acre FONR in the northern portion of the former base. UC/NRS does not intend to provide general public access, but rather intends to foster education and research targeted to address species and habitat management issues of base-wide relevance.

Table 3-6. HMAs and HMP Parcels

Land Recipient	Habitat Management Area	Acreage	HMP (Army) Parcel Designations
BLM	FONM	14,645	F1.1.1, F1.1.2, F1.1.3, F1.1.3, F1.13.1, F1.2, F1.3, F1.7.4, L20.4
State Parks	FODSP	979	S3.1.1, S3.1.2, S3.1.3, S3.1.4 S2.1.1.1, S2.1.1.2, S2.1.2, S2.1.3, S2.1.5, S2.3.1.4, S2.3.1.2, S2.3.2.1, S2.3.2.2, S2.3.2.3, S2.3.2.4, S2.4, S2.3.1.3
UC	FONR	606	
County of Monterey	East Garrison Reserve North	148	E11a
	South	275	E11b.6.1, E11b.6.2, E11b.6.3, E11b.7.1.1, E11b.7.1.2, E11b.7.2
	Habitat Corridor/Travel Camp	398	L20.2.1, L20.2.2, L20.2.3.1
	Oak Oval Reserve	73	E19a.2
	Parker Flats Reserve	372	E19a.4
	Landfill Parcel	308	E8a.1.1.1, E8a.1.1.2, E8a.1.2, E8a.1.3, E8a.1.4, E8a.1.5, E8a.2
	Laguna Seca Recreational Expansion		
	Wolf Hill	79	L20.3.1, L20.3.2
	Lookout Ridge	196	L20.5.1, L20.5.2, L20.5.3
	Salinas River Habitat Area	43	L5.1.12
City of Marina	Marina Airport Habitat Reserve	130	L5.1.11
	Marina Northwest Corner	63	E2a
MPC	Range 45 Reserve	206	E38, E39, E41, E42
MPRPD	NAE	19	L6.1, L6.2
Total		18,540	

Other HMAs include smaller parcels situated around the periphery of BLM lands and parcels that maintain a connection between this central reserve and the FONR (Figure 3-1). The Laguna Seca Recreation Expansion parcels are designated as HMAs (i.e., Wolf Hill and Lookout Ridge) because

there are parcel-specific restrictions on development and required management responsibilities to protect adjacent biological resource values.

Covered activity descriptions for each HMA are provided in Section 3.3.2, *Allowable Development in HMAs*. These descriptions include the nature and extent of anticipated development, types of public use that would be allowed, teaching activities that would be conducted, and a summary of the resource conservation and management actions that would be undertaken. All of these are considered covered activities under the HCP and their effects are considered in the impact assessment described in Chapter 4, *Impact Assessment and Levels of Take*. BLM will manage the FONM in accordance with its authorities (Section 1.9.3, *Role of Bureau of Land Management*). HCP required actions (Section 3.3.5, *HCP Required Actions that may Result in Take*) are designed to meet the biological goals and objectives of the conservation strategy described in Chapter 5.

The Cooperative will be responsible for the implementation of all the management activities summarized in Section 3.3.2, *Allowable Development in HMAs*, on the behalf of Monterey County, City of Marina, MPC, and MPRPD. The Cooperative may conduct the actions itself as the HMA manager, partner with other HMA managers within the HCP (e.g., BLM, State Parks, UC), or contract with a third party, as needed.

Section 3.3.2, *Allowable Development in HMAs*, provides a general description of the allowable development for each HMA and a discussion of other development—road corridors and utilities, easements and rights-of-way—that are considered covered activities under the HCP.

3.3 Covered Activities

This section describes the type and extent of covered activities in the Plan Area that would be covered by the final permits and for which the HCP would provide avoidance, minimization, and mitigation for impacts to HCP species. All covered activities described in this chapter apply to the two permits (CDFW and USFWS) with one exception. The use of herbicides and pesticides (including rodenticides), is not covered by the Federal permits because USFWS does not have sufficient information to fully analyze the effects on specific wildlife species and as a result, USFWS cannot reach a permit determination. Listed below are the covered activities for which incidental take authorization from the Wildlife Agencies is sought (Table 3-7a and Table 3-7b).

- Development in designated development areas and Borderlands
- Allowable development in HMAs
- Operations and management activities in HMAs
- Road corridors and infrastructure construction, operations, and maintenance in HMAs
- HCP required actions that may result in take

Table 3-7a. Covered Activities by Land Recipient

Land Recipient ^a	Covered Activities			
	Designated Development Areas	HMA ^s		
		Allowable Development ^b	Road Corridors and Infrastructure Construction and O&M	O&M Activities and HCP Required Actions that may Result in Take
State Parks		X	X	X
Board of Trustees of California State University (on behalf of the Monterey Bay Campus)	X			
UC Regents				
UC/NRS		X	X	X
UCMBEST	X			
County of Monterey	X	X	X	X
City of Marina	X	X	X	X
City of Seaside	X			
City of Del Rey Oaks	X			
City of Monterey	X			
MPC	X			X
MCWD	X			
MPRPD			X	X
BLM ^c	X ^d	X	X	X

^a A total of 876 acres (3%) of former Fort Ord will stay under Army jurisdiction as a military enclave (i.e., POM annex, reserve center). FORA may temporarily hold parcels after their transfer from the Army and prior to the designated land recipient to implement the Environmental Services Cooperative Agreement (ESCA) and the Capital Improvement Program (CIP), which includes transportation/transit, potable water augmentation, storm drainage, habitat management, public facility (fire station) improvements, and building removal.

^b Development with restrictions is allowed in HMA parcels to support public recreation and open space uses or teaching activities.

^c BLM is not receiving take authorization for any activities described herein via the HCP and is not currently requesting consultation under the ESA's Section 7. The description of BLM activities are generally consistent with those actions approved by BLM through its RMP, Activity-Level Plans, and individual implementation plans referred to in Section 1.9.3, *Role of the Bureau of Land Management*. These activities are not considered "covered activities" as defined in Section 1.5, *Covered Activities*, as BLM is not a permittee, and are included to provide a comprehensive description of activities within the Plan Area.

^d BLM ancillary facilities are located in an unrestricted development parcel.

Table 3-7b. FORA and Marina Capital Improvement Program Covered Activities

Project #	Description
Regional Improvements	
R3	Highway 1—Sand City limits to Seaside limits—Widen Highway 1 from Fremont Avenue to at least Canyon Del Rey Avenue and make interchange and related local road improvements in the vicinity of Canyon Del Rey and Fremont Avenues (only a portion of this is in the Plan Area)
R10	Hwy 1-Monterey Rd. Interchange—Construct new interchange at Monterey Road.
Offsite Improvements	
10	Del Monte Blvd Extension—Connection between Del Monte and intersection at Imjin/2nd Ave.
Onsite Improvements	
F02	Abrams Drive (2nd Avenue to Crescent Avenue)—Construct a new two-lane arterial from intersection with 2nd Avenue easterly to the intersection with Crescent Court extension.
F05	8th Street (2nd Avenue to Inter-Garrison Road)—Upgrade/construct new two-lane arterial from 2nd Avenue to connection with Inter-Garrison Road.
F06	Inter-Garrison Road (Eastside Road to Reservation Road)—Upgrade to a four-lane arterial from Eastside Road easterly to Reservation Road.
F07	Gigling (General Jim Moore Boulevard to Eastside Road)—Upgrade/construct new four-lane arterial from General Jim Moore Boulevard easterly to Eastside Road.
F09B (Ph-II)	GJM Blvd-Normandy to McClure—Widen from 2 to 4 lanes from Normandy Rd to McClure.
F09B (Ph-III) [1]	GJM Blvd-s/o McClure to s/o Coe—Widen from 2 to 4 lanes from McClure to Coe.
F09C	GJM Blvd-s/o Coe to S Boundary—Widen from 2 to 4 lanes from s/o Coe to South Boundary Rd.
F011	Salinas Avenue (Reservation Road to Abrams Drive)—Construct new two-lane arterial from Reservation Road southerly to Abrams Drive.
F012	Eucalyptus Rd—Upgrade to 2 lane collector from General Jim Moore Blvd to Eastside Rd to Parker Flats cut-off.
F013B	Eastside Road (new alignment) (Eucalyptus Road to Inter-Garrison Road)—Construct new two-lane arterial from Eucalyptus Road to Inter-Garrison Road.
F014	South Boundary Road upgrade (General Jim Moore Boulevard to Rancho Saucito Drive)—Upgrade to a two-lane arterial.
R 46 B	Imjin Parkway —Reservation Road to Imjin Road —Widen road to four lanes.
Transit Capital Improvements	
T22	Intermodal Centers — PFIP T-31) includes 3 elements: 1. Intermodal Transportation Center @ 1st. Avenue South of 8th. Street 2. Park and Ride Facility @ 12th Street and Imjin, and 3. Park and Ride Facility @ 8th. Street and Gigling.

All parties seeking coverage for covered activities under the HCP must obtain approval from the Permittees with jurisdiction over the location where the covered activity is proposed for implementation (Section 7.5, *Providing Take Authorization under the HCP*, describes the approval process). Any uncertainties regarding whether a type of covered activity can receive coverage under this HCP will be resolved by the Cooperative. An activity would be covered under the HCP if it meets the following.

- Does not preclude achieving the biological goals and objectives of the HCP (Chapter 5, *Conservation Strategy*).
- Is conducted by, or is subject to the jurisdiction of, one of the Permittees.
- Is a type of impact evaluated in Chapter 4, *Impact Assessment and Levels of Take*.
- Is consistent with the amount of take coverage assumed by the HCP and sufficient take coverage under the permits remains available for other covered activities.

All covered activities must incorporate the relevant avoidance and minimization measures described in Chapter 5 to avoid or minimize impacts to HCP species. Part of the HCP concurrence for parties seeking coverage under the HCP is demonstration that the avoidance and minimization measures have been incorporated or will be incorporated properly into proposed projects.

3.3.1 Development in Designated Development Areas

Covered activities in designated development areas include development projects and activities that would result in the removal of biological resources. The resources found on these parcels would be lost as a result of reuse but are not considered essential to the long-term habitat conservation goal of this HCP. Development in designated development areas would be required to maintain compliance with the stay-ahead provision (Section 7.6, *Stay-Ahead Provision*). Depending on the location, development in these areas would have to include HCP required avoidance and minimization measures as identified in Chapter 5.

There are wide ranging land uses proposed for these designated development parcels by the cities of Marina, Seaside, Monterey and Del Rey Oaks and the County of Monterey. The types of uses include residential, office, research and development, commercial, mixed use, recreation (golf course), and visitor services. Major development projects include the UC MBEST Center, California State University, Monterey Bay Campus, and the MPC Public Safety Officer Training Center. The City of Marina has established the Marina Airport on the former Fritzsche Field in the northern portion of the former base.

In addition, several CIP projects would span multiple parcels in the designated development areas (Figure 3-4). CIPs include major transportation infrastructure implemented by FORA (Table 3-7b). Major transportation infrastructure passing through HMAs is identified in Section 3.3.4, *Road Corridors and Infrastructure Construction, Operations and Maintenance in HMAs*. Additionally, CIPs proposed by the Marina Coast Water District are discussed in Section 3.3.4.2.1, *Marina Coast Water District Facilities*.

3.3.2 Allowable Development in HMAs

HMA-specific development allowances are included as covered activities under this HCP (Table 3-8). Recreational or educational use is a covered activity for all HMAs. Although the primary focus in most of the HMAs is the implementation of HCP required mitigation and monitoring actions (Chapter 5 and Chapter 6), development with restrictions is included as a covered activity in these parcels to support public recreation and open space uses or teaching activities (Table 3-7a and Table 3-9). Private access will be permitted on all HMAs, with permission from the land owner. Public access is only currently permitted at the FONM and FODSP along designated trails. Several other HMAs also anticipate allowing future public access along designated trails. (See Chapter 5, Section 5.4.4 for avoidance and minimization measures for public use in HMAs.) Development

restrictions in the HMAs derive from the HMP, County, or are self-imposed. For each of the HMAs, there is a summary of the existing and designated development with restrictions covered under the HCP. The Landfill Parcel and Marina Northwest Corner are designated as mixed-use parcels that include both a designated development area and HMA. As such, development covered activities in portions of these parcels would be consistent with the FORA Base Reuse Plan and local area plans. Required avoidance and minimization measures are identified in Chapter 5.

In addition to the HMA-specific development allowances, proposed future road corridors and infrastructure projects in HMAs are also covered activities in this HCP, as described in the following sections. Covered activity descriptions for future road corridors and infrastructure are discussed in Section 3.3.4, *Road Corridors and Infrastructure Construction and Operations and Maintenance in HMAs*. The allowable development identified in Table 3-8 includes the acres impacted by road corridors and infrastructure projects. These impacts are summarized in Chapter 4, *Impact Assessment and Levels of Take*. Refer to Chapter 5, Sections 5.4.5 and 5.4.6, for operations and maintenance of road and trails and recreational uses, which are avoidance and minimization measures required for all HMAs.

Habitat-level and species-level mitigation measures include requirements for habitat revegetation, restoration, and enhancement, prescribed burning and alternative vegetative management, non-native invasive species control, erosion control for habitat restoration and enhancement, and evaluation of alternatives to burning. Habitat revegetation, restoration, and enhancement is a covered activity that is anticipated in all HMAs. See Chapter 5, Section 5.4.8, for a description of those measures. Non-native invasive species control is a covered activity anticipated in all HMAs. See Chapter 5, Section 5.4.10, for a description of habitat restoration, enhancement, and management measures. Erosion control is a covered activity that is anticipated in all HMAs. Avoidance and minimization measures for erosion control are described in Chapter 5, Section 5.4.7. Prescribed burns and alternatives to burning is a covered activity that is anticipated in all HMAs except FODSP and the Landfill. Avoidance and minimization measures for prescribed burns and alternatives to burning erosion control are described in Chapter 5, Section 5.4.9. Evaluation of alternatives to burning is also a covered activity that is anticipated in the FONM and FONR. See Chapter 5, Section 5.4.11, for avoidance and minimization measures for monitoring.

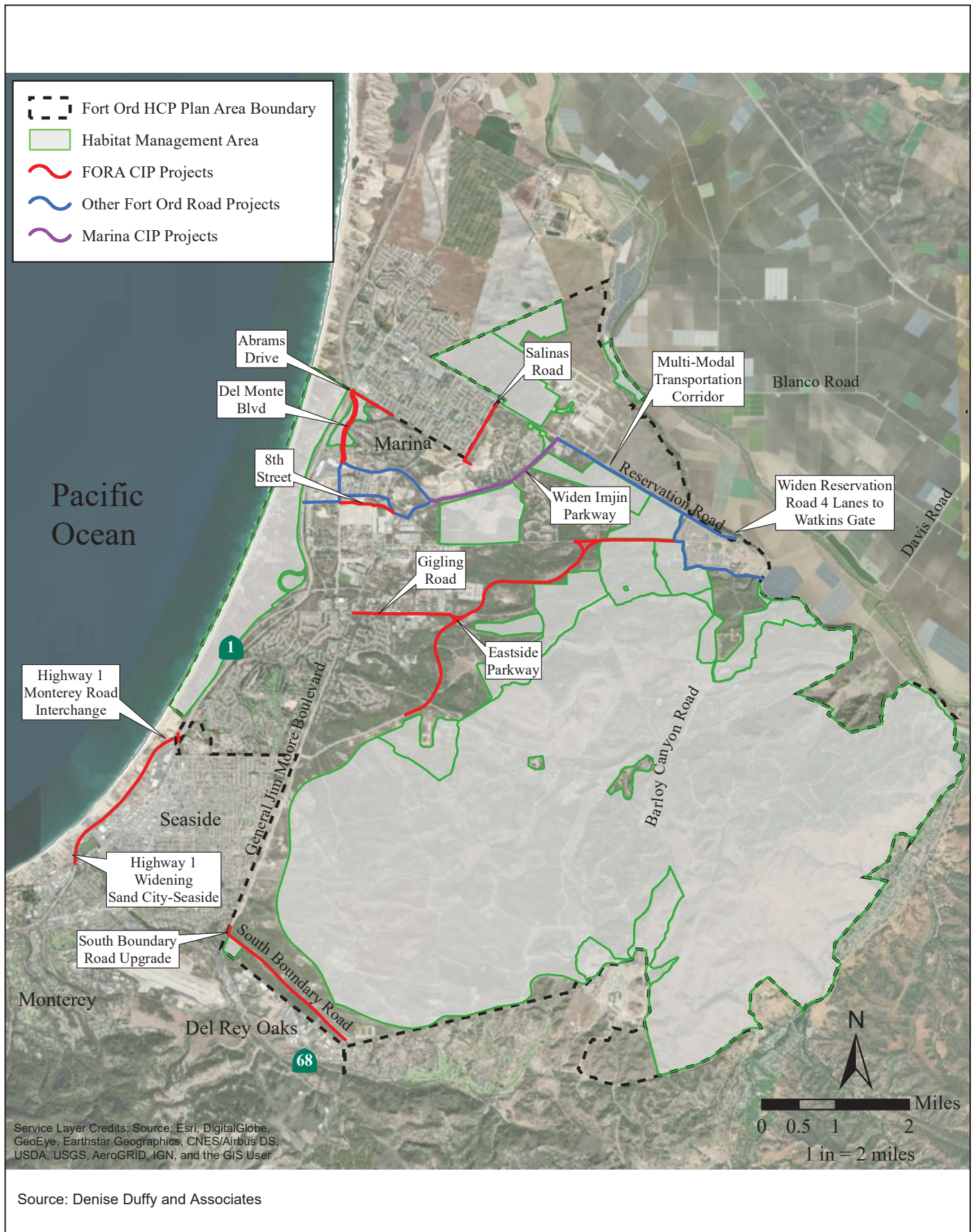


Figure 3-4
Future Road Corridors

Table 3-8. HMA Allowable Development, Road Corridors and Infrastructure, and Preserved for Habitat Management

Land Recipient	Habitat Management Area	Total Area (acres)	Allowable Development (acres)	Road Corridors and Infrastructure (acres)		Marina Airport Expansion Activities	Fort Ord Rec Trail and Greenway (FORTAG) Alignment	Preserved for Habitat Management (acres)
				Road ^a	MCWD			
BLM	FONM	14,645	292	–	0.5 ^b	–	–	14,353
State Parks	FODSP	979	142	–	2.6	–	–	834
UC/NRS	Fort Ord Natural Reserve	606	8	–	0.5	–	– ^c	598
Monterey County	East Garrison Reserve—North	148	–	7.5	1.1	–	3.5	136
	East Garrison Reserve—South	275	–	–	–	–	–	275
	Habitat Corridor/Travel Camp	398	52	10.5	30.9	–	3.3 ^d	301
	Oak Oval Reserve	73	4	–	–	–	–	69
	Parker Flats Reserve	372	–	–	–	–	–	372
	Landfill Parcel	308	81	–	–	–	6.5	219 ^e
	Laguna Seca Recreational Expansion—Wolf Hill	79	30	–	–	–	–	49
	Laguna Seca Recreational Expansion—Lookout Ridge	196	110	–	–	–	–	86

Land Recipient	Habitat Management Area	Total Area (acres)	Allowable Development (acres)	Road Corridors and Infrastructure (acres)		Marina Airport Expansion Activities	Fort Ord Rec Trail and Greenway (FORTAG) Alignment	Preserved for Habitat Management (acres)
				Road ^a	MCWD			
City of Marina	Salinas River Habitat Area	43	–	–	–	3	0.5	39.5
	Marina Airport Habitat Reserve	130	–	–	–	30	4.4	95.6
	Marina Northwest Corner	63	58	–	–	–	– ^f	5 ^h
MPC	Range 45 Reserve	206	–	–	–	–	–	206
MPRPD	NAE	19	–	–	–	–	1.1	18
Non-Federal Total		3,895	485	18	35.5	33	19	3,304.5
Total		18,540	777	18	36	33	19	17,657

^a This includes impacts from the widening of Inter-Garrison Road.

^b Potential MCWD development is not part of BLM's 2% development allowance.

^c The conceptual alignment is proposed within Category 4 Borderlands buffer area along fuelbreak so impacts are not included here to avoid double-counting.

^d The conceptual alignment is proposed within the Habitat Corridor HMA.

^e 150 acres is the landfill cap that will be managed as part of the Conservation Strategy. The Landfill MOA describes the site-specific mitigation that will take place.

^f The conceptual alignment is proposed within the development area within this HMA.

^h The acreage and configuration is to be determined once the boundaries of the Yadon's piperia population on the site have been identified; however, 5 acres is provided here to provide an estimate of species habitat that will be preserved (see Chapter 5).

Table 3-9. Covered Activities by HMA

HMA	Covered Activities											
	HCP Required Actions that may Result in Take ^a						O&M Activities				HMA Allowable Development Future Road Corridors and Infrastructure	
	Revegetation, Restoration and Enhancement	Prescribed burning/Alternative Management	Non-Native Invasive Species Control	Erosion Control	Evaluate Alternatives to Burning	Monitoring	Road and Trail Maintenance	Fuelbreak Maintenance	Beach Management	Recreational and Educational Use		
BLM ^b												
Fort Ord National Monument	X	X	X	X	X	X	X	X		X	X	X
State Parks												
Fort Ord Dunes State Park	X		X	X		X	X		X	X	X	X
UC/NRS												
Fort Ord Natural Reserve	X	X	X	X	X	X	X	X		X	X	
Monterey County												
East Garrison Reserve (North and South)	X	X ^c	X	X		X	X	X		X		X
Habitat Corridor/Travel Camp	X	X	X	X		X	X			X	X	X
Oak Oval Reserve	X	X	X	X		X	X	X		X	X	
Parker Flats Reserve	X	X	X	X		X	X	X		X		
Landfill Parcel	X		X	X		X	X			X	X	X
Laguna Seca Recreational Expansion (Wolf Hill and Lookout Ridge)	X	X	X	X		X	X			X	X	
City of Marina												
Salinas River Habitat Area	X	X	X	X		X	X			X		
Marina Airport Habitat Reserve	X	X	X	X		X	X	X		X		X
Marina Northwest Corner	X	X	X	X		X	X			X	X	X

HMA	Covered Activities											
	HCP Required Actions that may Result in Take ^a						O&M Activities				HMA Allowable Development Future Road Corridors and Infrastructure	
	Revegetation, Restoration and Enhancement	Prescribed burning/Alternative Management	Non-Native Invasive Species Control	Erosion Control	Evaluate Alternatives to Burning	Monitoring	Road and Trail Maintenance	Fuelbreak Maintenance	Beach Management	Recreational and Educational Use		
Monterey Peninsula College												
Range 45 Reserve	X	X	X	X		X	X	X		X		
Monterey Peninsula Regional Park District												
Natural Area Expansion	X	X	X	X		X	X			X		

X = Covered activity takes place within HMA and there is potential for take. Impact analysis (Chapter 4) provides qualitative or quantitative impact description.

^a Covered activity may result in temporary impacts but provides long-term net benefit to HCP species.

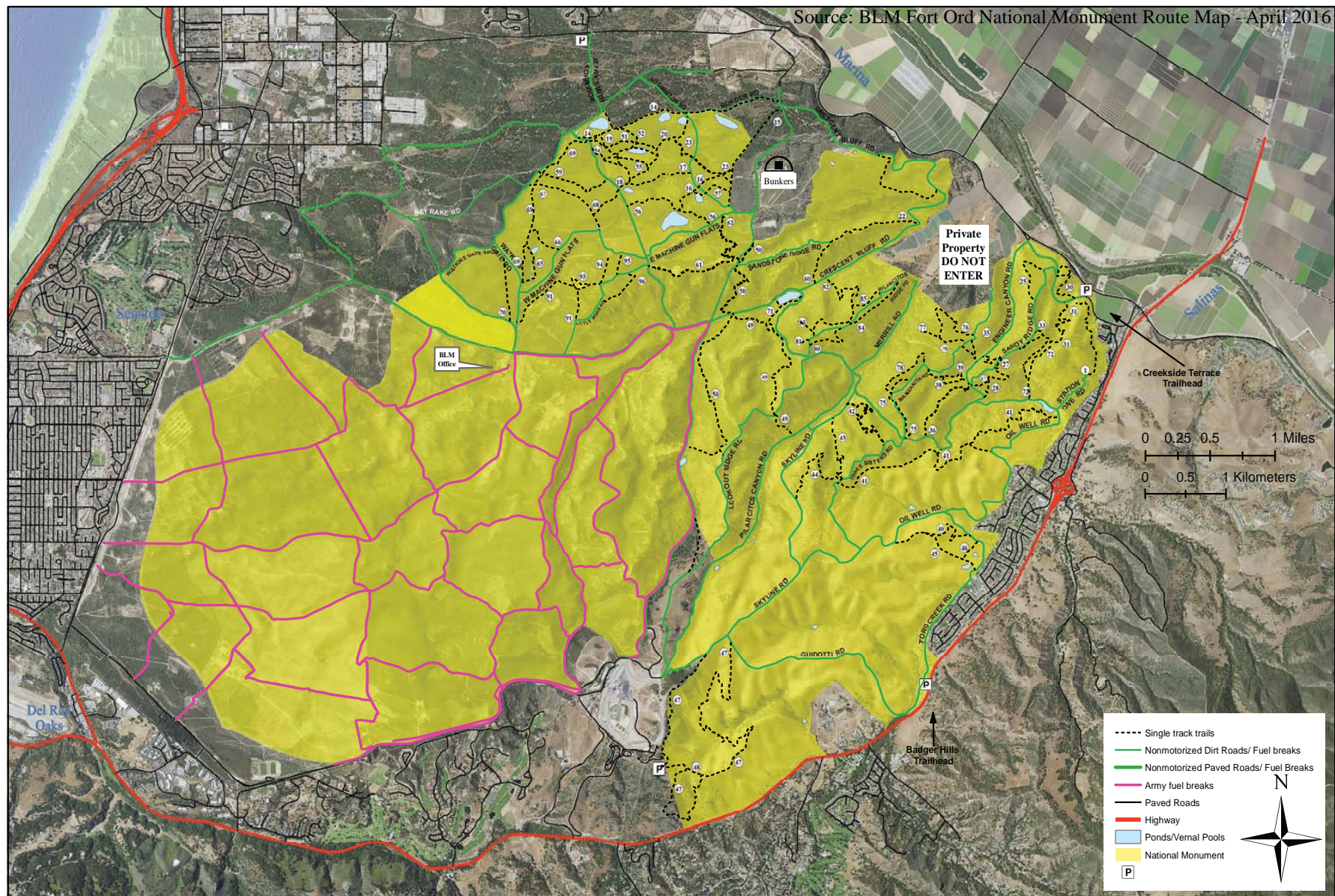
^b BLM is not receiving take authorization for any activities described herein via the HCP and is not currently requesting consultation under the ESA's Section 7. BLM's activities are not considered "covered activities" as defined in Section 1.5, *Covered Activities*, as BLM is not a permittee, and are included to provide a comprehensive description of activities within the Plan Area.

^c Prescribed burning is a covered activity in this HMA. However, MEC cleanup activities are not covered under this HCP and instead are covered by USFWS, Army, and FORA under separate authorizations.

3.3.2.1 BLM—Fort Ord National Monument

There are 14,645 acres within the Plan Area identified as the FONM, which comprises the largest habitat reserve on the former base, supporting a diversity of plant communities and wide range of habitat types important to the preservation of HCP species. This acreage includes existing roads and trails (Figure 3-5), former munitions ranges, former military training and administrative areas, and 647 acres designated as a study corridor for the proposed Caltrans State Route 68 (SR 68) realignment within the HMP. The portion of this study corridor that could be developed includes a 300-foot-wide area through the FONM. Any work proposed by Caltrans on this study corridor is not a covered activity, is not proposed as part of this HCP, and is not included in the amount of allowable development within the FONM (Section 3.3.6, *Activities Not Covered by the HCP*). Impacts to listed species resulting from work by Caltrans would need coverage under a separate ESA Section 7 consultation.

As of April 7, 2015, BLM manages 7,212 acres of this land (known as the Fort Ord Public Lands). BLM manages these lands pursuant to the national monument and Area of Critical Environmental Concern (ACEC) designation, RMP, Step Down, Activity-Level Plans, and individual project implementation plans referred to in Section 1.9.3, *Role of Bureau of Land Management*. Over the next two decades, the Army plans to transfer 7,433 additional acres of the FONM to BLM. In the meantime, the Army must complete its pre-disposal actions associated with the clean-up of contaminated sites and munitions and explosives of concern (MEC) investigations under CERCLA. Through the Army's remediation and restoration process, vegetation must be cleared and MEC must be located, identified, and removed from future HMAs. These pre-disposal Munitions Response actions cannot undermine the goals of species and habitat preservation described in the 1997 HMP. The remaining FONM lands eventually transferred to BLM will likely have been subjected to



Source: Denise Duffy and Associates

Figure 3-5
BLM Roads, Trails, and Fuelbreaks

prescribed burns and/or otherwise manipulated, but will remain undeveloped and suitable for long-term management as an HMA.

The following description of activities are generally consistent with those actions approved by BLM through its RMP, Activity-Level Plans, and individual project implementation plans referred to in Section 1.9.3, *Role of Bureau of Land Management*. In the event BLM determines that a provision of the HCP is inconsistent with the August 31, 2007 Record of Decision for the RMP, other activity-level or project implementation plan or another official decision document approved by BLM, the provisions of the ROD shall control the activity as overseen by BLM.

Per the BLM's 2007 ROD for its current RMP and this HCP, allowable development in the FONM is limited to no more than 2% of the areas supporting native vegetation (292 acres). The former Range Control compound (12.9 acres, HMP Parcel F1.12) that currently serves as the BLM Project Office is already developed and is not included in this 2% development allowance in the FONM. Any development that may occur in the 647-acre Caltrans Transportation study corridor that passes through the FONM is also not included in this 2% development allowance. A possible development of a highway realignment by Caltrans within the study corridor is not a covered activity under this HCP; no rights have been granted to Caltrans for such purposes by the Army and/or BLM. Development of a highway realignment in the FONM would require a consistency determination by the BLM (in relation to how it would affect the national monument) and additional mitigation (Appendix B).

Under BLM Manual 6220- National Monuments, National Conservation Areas, and Similar Designations (Public), it is the BLM's policy "to the greatest extent possible, subject to applicable law, that BLM should, through land use planning and project-level processes and decisions, avoid granting new ROWs in Monuments and NCAs and similar designations." BLM intends to manage public land resources in the FONM consistent with the conservation of biological resources. A Natural Resources Management Plan will be developed and implemented for the area by BLM (Section 5.5.2, *Development of Resource Management Plans for specific HMAs and Base-Wide Management Strategies*).

BLM is not receiving take authorization for the development allowance via the HCP and is not currently requesting consultation under the ESA's Section 7 process because the specific development locations and impacts are unknown at this time. As BLM is able to identify the type and location of the proposed development, consistent with its approved RMP, the ACEC and national monument designations, step-down and activity level implementation plan decisions, and the provisions of the HMP and HCP, BLM will consult with USFWS under Section 7 in those cases where it determines the proposed development may affect listed species. BLM will track all development project acreage (not just those that affect listed species), to ensure the total does not exceed the 2% allowance.

BLM's development in the Plan Area would be in accordance with its approved RMP, ACEC and national monument designations, step-down and activity level implementation plan decisions. BLM intends that its development would generally be limited to buildings and/or facilities that would contribute to the furtherance of goals and objectives outlined in this HCP, or would not substantially detract from the furtherance of those goals. These facilities may include visitor centers, visitor contact stations, roads, trails, public access locations, administrative support buildings or warehouses, and utility lines (i.e., water, electrical, telecommunications). In addition to these facilities, BLM is obligated under the Federal Land Policy and Management Act (43 USC 1761-1771)

and Mineral Leasing Act (43 USC 185) to consider requests for rights-of-way for a wide variety of public benefit facilities and infrastructures. Development permitted for these facilities would be within the 2% development allowance. These facilities may include proposals for new roads, development and expansion of communication sites, water storage tanks and well sites. All development proposals would be evaluated in accordance with NEPA and based on their direct, indirect, and cumulative effects. In its NEPA evaluations, BLM will take into consideration biological goals and objectives outlined within this HCP. All development projects would be sited to avoid or minimize impacts, or otherwise protect the values of the national monument for which the components of the system were designated, including species of plants and animals. Pursuant to the BLM's RMP, no development would take place within occupied Contra Costa goldfields (*Lasthenia conjugens*) habitat or known or potential breeding habitat for California tiger salamander (*Ambystoma californiense*) or California red-legged frog (*Rana draytonii*).

Pursuant to the BLM's RMP, the types of activities that occur in the FONM include: route, road and trail management and maintenance, habitat enhancement, fuelbreak construction and management, use of administrative areas, aquatic monitoring and habitat enhancement (Figure 3-5).

Recreational access is allowed on established routes within BLM's current RMP. Pursuant to the BLM's RMP, no public motorized use on these routes would be allowed. During special events such as bicycle or equestrian races, motorized use of some trails may be allowed for equipment staging, safety purposes and/or emergency access. Vehicles may also be allowed on some trails for scientific research projects.

BLM intends to develop, manage, and maintain a system of roads and trails necessary for land management purposes and compatible public access in the FONM. The exact location, number, and configuration of the new road and trails cannot be delineated at this time; however, the location of existing roads and trails are known and mapped (Figure 3-5). As a matter of current management, BLM would manage and maintain about 100–110 miles of existing drivable road (administrative purposes), and 50–75 miles of existing recreational trails. This would encumber about 330–355 acres of existing road/trail surface and sparsely vegetated road/trail shoulder.

According to the BLM's RMP, reroute development would either be offset by restoration of the existing unwanted portions of the road (Section 5.5.2, *Development of Resource Management Plans for specific HMAs and Base-Wide Management Strategies*), or, if it is not offset via restoration and is actually a new route, it would be counted against the 2% development allowance. New route development (including administrative access roads, fuelbreak roads, recreation trails) would be included in the 2% development allowance. According to the BLM's RMP, BLM would not count against the 2% allowable development any reroutes of trails or roads that involved closing and restoring certain route segments and opening alternative route segments to lessen overall impacts to sensitive resources in a given area. Development of routes in BLM's Fort Ord Project Office development parcel would also not be counted against the 2% allowable development on FONM habitat parcels.

BLM is currently restoring or has restored between 100 to 150 acres of degraded habitat. This road and trail retirement estimate includes restoration that has already been conducted by BLM since land transfer of 7,200 acres in 1996. Since 1996, BLM has restored over 100 acres of hardstand and other degraded areas into productive natural habitat as part of their implementation of the HMP and RMP. At least 27 acres remains to be restored to meet the 100 to 150-acre restoration target. Please

refer to table 9-9 Additional Mitigation Measures on FONM for specific Permittee-funded restoration targets.

3.3.2.2 California Department of Parks and Recreation—Fort Ord Dunes State Park

FODSP totals 979 acres and spans about 4 miles of ocean beach in an unincorporated portion of Monterey County west of Highway 1. The Army's HMP identifies two zones and three parcels on the west side of Highway 1 as the future responsibility of State Parks: the Coastal Dune Zone (parcel S3.1.2) and the Disturbed Habitat Zone (parcels S3.1.1 and S3.1.3). In light of knowledge and experience gained and planning decisions made over the years since base closure, those parcel and zone boundaries are no longer relevant to management of the property and, therefore, FODSP is combined into a single parcel. This parcel is designated for development with reserve areas and restrictions in its entirety to accommodate State Parks plans as described below.

The HMP requires State Parks to restore large areas in FODSP to native vegetation and HMP species habitat. That requirement is essential to the conservation strategy for the HCP. Restoration and management activities will target coastal strand and dune habitats, western snowy plover (*Charadrius nivosus nivosus*), Smith's blue butterfly (*Euphilotes enoptes smithi*), Monterey spineflower (*Chorizanthe pungens* var. *pungens*), and sand gilia (*Gilia tenuiflora* ssp. *arenaria*). These actions are described in detail in the discussion of biological goals and objectives in the conservation strategy (Chapter 5, *Conservation Strategy*).

FODSP will be managed for preservation of existing and restored coastal dune habitats and for public use. Existing and proposed facilities managed and maintained under the Plan are identified in Table 3-10. Public facilities would include recreation trails, interpretive displays, picnic areas, and a campground (see Management Zone sections below for detailed description of new public facilities). Visitor use infrastructure and support facilities will be sited, to the extent possible, to avoid areas currently supporting sensitive resources and will be designed to prevent degradation of adjacent habitat. The Final General Plan for the FODSP (September 2004) identifies five management zones (Figure 3-6a): Natural Resource Zone, 8th Street Zone, 1st Street Zone, Storage Bunker Zone, and Park Support/Administrative Zone.

Circulation patterns in the park would emphasize non-motorized forms of transportation and include approximately 6 miles of paved and unpaved pedestrian trails. Vehicle access to FODSP is currently provided via 8th Street. Vehicular access to the proposed campground would utilize the existing roadway alignment of Beach Range Road from the 1st Street undercrossing. The 8th Street entry would be used for operational access and as day use entry. Directional signage would direct visitors to the entrance and minimize traffic on existing local roadways. Within the park, public vehicles would be limited to the area between 8th Street and the Storage Bunker Zone. A Class I Recreation Trail, a component of the Monterey Bay Sanctuary Trail, is proposed to extend the entire length of the park from north to south (Figure 3-6a). Visitors will access the beach at three locations. The 8th Street zone will include a beach access trail that empties onto the beach in the Natural Resource Zone. Two additional beach access points will be located in the Natural Resource Zone, one at the north end of the Park and one that is centrally located, which is currently used by walk-in visitors. The latter access location will also be used as the beach access route from the campground and will include a new 2,250-linear-foot trail.

AMMs will be integrated into trail design and route designation. Trail design will incorporate guide cable or railings, fences, walls, and/or boardwalks for pedestrian control. Public use in the dunes would be limited to designated routes. Enforcement of public use restrictions is described in Section 5.4.4, *Avoidance and Minimization Measures for Public Use in HMAs and Property Ownership of Borderlands*. For example, regular security patrols will be maintained and access controls will be installed and maintained to regulate use (AMM-27). Displays and exhibits would be provided to interpret the natural and cultural resources of the park for the public (AMM-32). Public use would be controlled and use of the dunes would be limited to pedestrian access on designated beach access routes.

All existing and proposed facilities would be open for year-round public use. Based on full attendance year-round (average of 2.5 people per site), FODSP could have approximately 100,375 campers per year, with 54,750 overnight vehicles and 116,800 day-use visitors per year with 58,400 vehicles. However, full occupancy may be unrealistic because of weather conditions, economic pressures of gas prices, and other factors such as a new park not being “discovered” by the outdoor recreation community like established parks, which are well known to domestic and foreign travelers. Using statistical data for visitor use at a comparable state park (New Brighton State Beach) with similar facilities, FODSP is estimated to have a 40% year-round day use occupancy rate of 46,720 day use guests per year in 23,360 vehicles. Overnight guests are estimated at approximately 40,000 campers per year in 21,900 vehicles. The Bay Sanctuary Trail provides additional day-use visitors not captured in these numbers. For the Bay Sanctuary Trail, weekends and sunny, warm weekdays experience the highest use. Under these conditions, an average of an additional 1,200 people per day at full park build out is possible.³

Seasonality is a major factor in determining park use numbers. Visitor usage can be expected to increase during the warmer months and decrease during the colder months. Monterey County is also home to several large events throughout the year drawing visitors from across the country. Visitor usage would likely increase during these events as visitors to the area look for recreation and lodging options. Multiple scenarios and trends could be calculated and run in order to provide use numbers. For each year the park is open, day use and camping numbers will be collected and reported to the planning division. These numbers will be represented in the annual Statistical Report and reported to the Cooperative for inclusion in the Annual Report (see Chapter 7, *Implementation*). Utilizing actual data will provide a clear picture of overall use trends for each year.

State Park’s proposed facilities use a 700-foot setback to avoid effects from coastal erosion. During the 50-year permit term coastal erosion is expected to continue its present trend, reducing the size of the park. Over the 4 miles of shoreline within the park, with every foot of coastal erosion that occurs, 0.48 acre of the park is lost. A study prepared for the MCWD estimates the rate of erosion over the last 63 years at 4.2 feet per year. The study also stated that during the period 1984 to 2000 the rate of erosion was 5.5 feet per year. State Parks used a rate of 7 feet per year for facilities planning purposes in its general plan. Using these estimates, 102 to 170 acres of the land area of the park are expected to be lost over 50 years. The 834 acres of open space and habitat shown in Table 3-10 could be reduced to between 667 and 735 acres after 50 years; however, it is anticipated that

³ None of the above bike path values account for or consider full build out of neighboring and former Fort Ord lands as the extent of this development is not yet known. One can assume that free day use (walk-ins, bike-ins) could double at full build out and day use parking could see an order of magnitude increase.

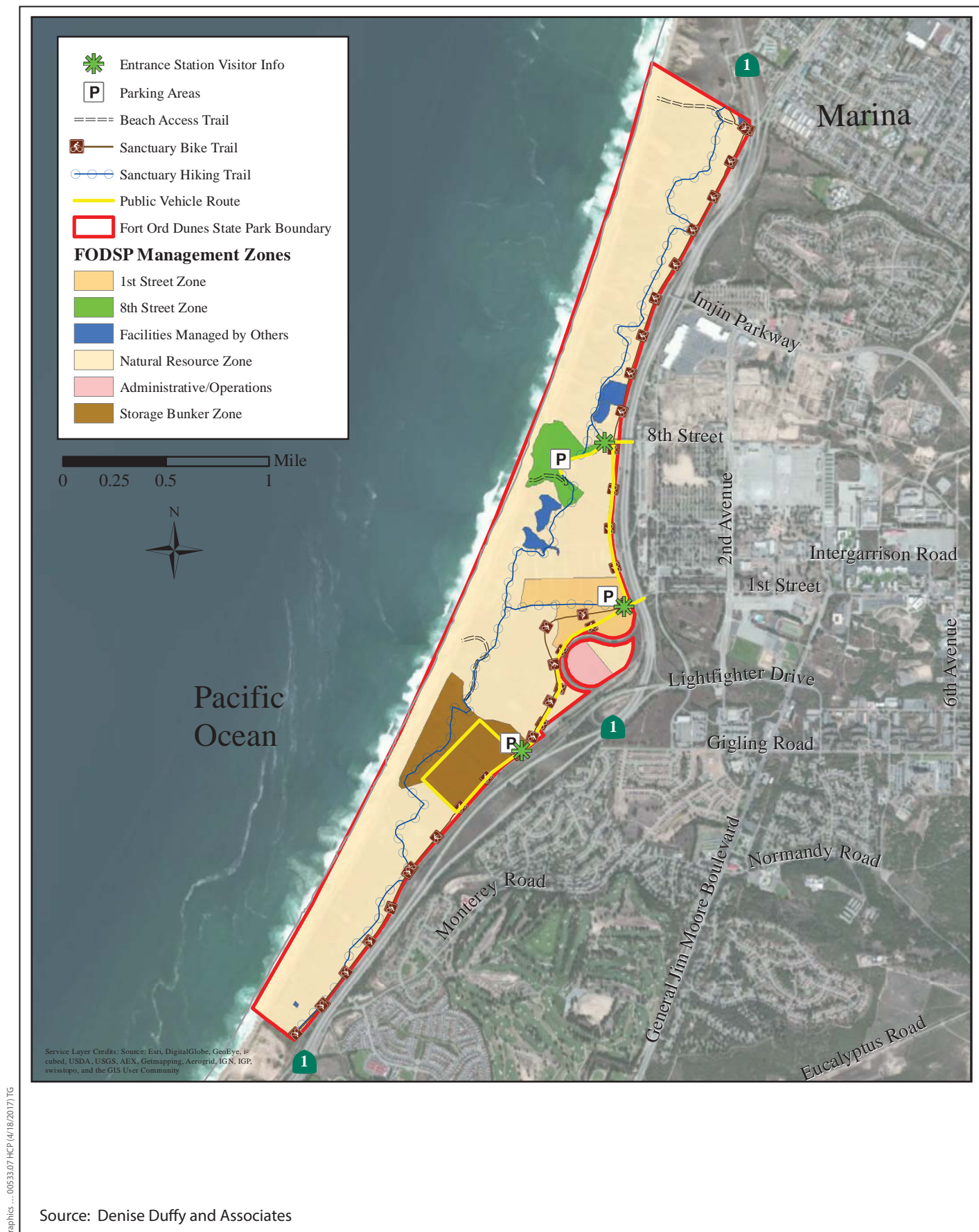
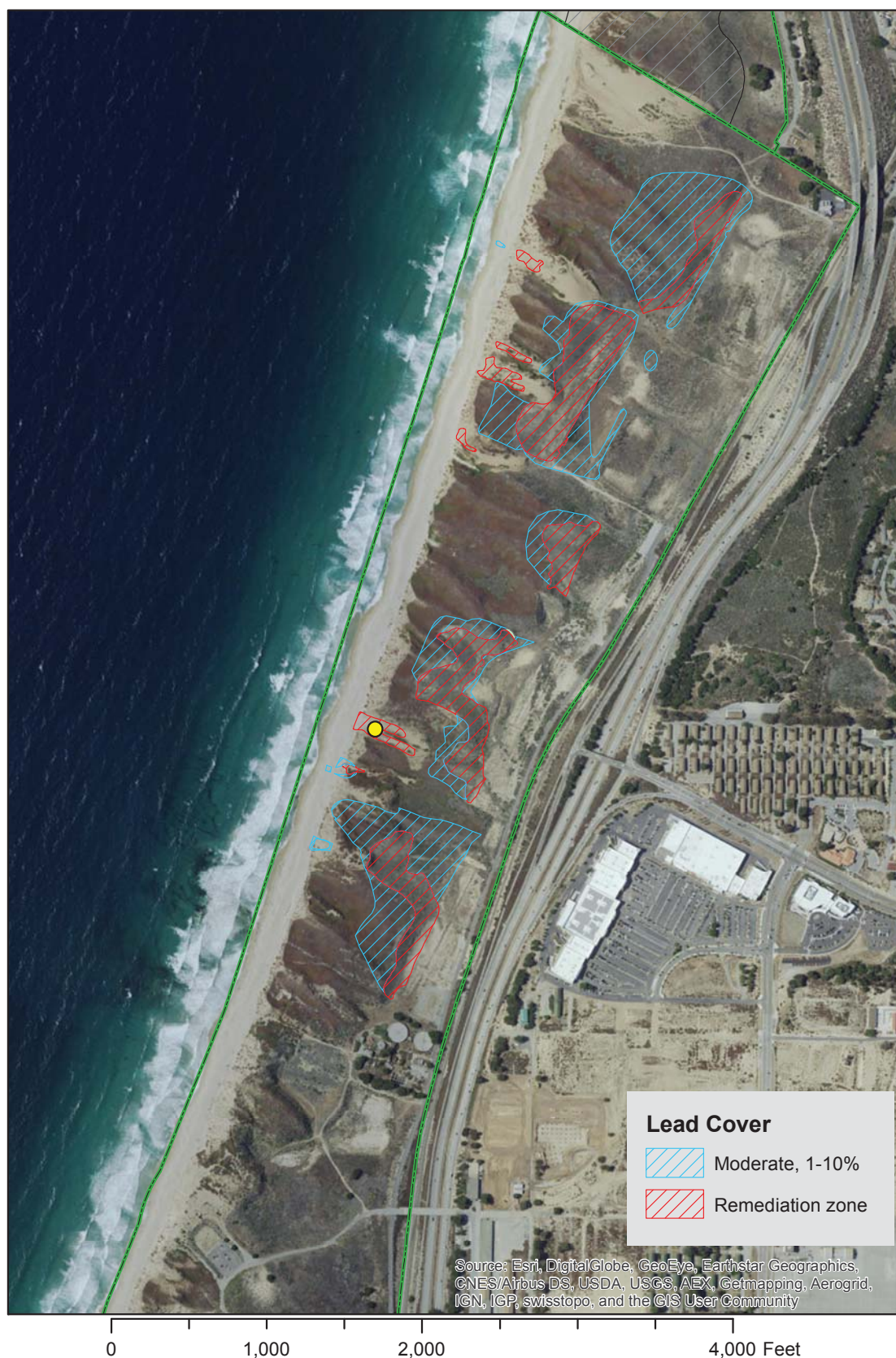


Figure 3-6a
Fort Ord Dunes State Park Management Zones



Source: State Parks



Figure 3-6b
Fort Ord Dunes State Park Lead Cover, North Area



Source: State Parks

0 1,000

2,000

4,000 Feet



Source: State Parks

coastal erosion would still leave beach habitat, as bluffs would erode down to the beach (see Section 8.1.1.2.5, *Coastal Erosion*).

State Parks, US Army, and the DTSC have signed agreements on future lead cleanup on property owned by State Parks. Future surface lead removal on State Parks' property is an HCP covered activity. Known locations of surface lead contamination are shown on Figures 3-6b through 3-6d. In areas where HCP species could be present on FODSP, to the extent feasible, measures will be taken to limit the effect on HCP species. When accumulations of lead bullets are found at the surface of the soil, these bullets would be collected by hand and/or with rakes or similar tools to sift them from the sand. The sifted sand would be left on site, and the bullets would be placed in buckets and transported offsite for recycling or disposal. Bullet collection would not take place within western snowy plover breeding habitat during the western snowy plover breeding season. To avoid/minimize disturbance of Monterey spineflower and sand gilia, bullet collection would not take place under/among these species during their live growth period. To avoid/minimize disturbance to Smith's blue butterfly, bullet collection around buckwheat plants would be conducted carefully to avoid disturbance of buckwheat plants. If duff around/under buckwheat plants is disturbed during bullet collection, it would be deliberately placed back around/under the buckwheat plants. If HCP species are present, then remediation sites would be limited to less than 0.5 acre. DTSC's surface lead removal guidelines are included as Appendix P.

While covered activities are described in this chapter, measures to avoid and minimize impacts are described in Chapter 5, section 4. Chapter 6 described monitoring and adaptive management measures for each HCP species. The following subsections provide a description of the proposed uses in each of these zones and their relationship to the natural communities and HCP species that will be enhanced, managed, or restored in each of the five management zones.

3.3.2.2.1 Natural Resource Management Zone

This zone consists of 782 acres that would remain undeveloped except for existing facilities and the proposed new roads, a single beach access trail, a Class I multi-use recreational trail (Monterey Bay Sanctuary Scenic Trail), and minor support facilities, all totaling less than 30 acres of development (Table 3-10). A minimum of 700 acres within this zone would be managed as open space and native habitat and, for the purposes of this HCP, would be considered the minimum required Conserved Habitat Area in the coastal zone. Of this 700-acre minimum, approximately 50% would be managed to support annual species including sand gilia and Monterey spineflower. At least 700 acres of the park, including existing degraded areas, would be restored to native habitats within the 50-year permit term. Seventy-one acres of this zone is dry sand habitat, between the high-tide line and the vegetation margin, which provides habitat for nesting and wintering western snowy plovers. In addition, the wet sand (tidal) zone provides important foraging habitat for adults and young. Habitat restoration would be accomplished by applying techniques successfully utilized to restore similar habitats in nearby park units such as Asilomar and Marina State Beaches. These include dune stabilization, exotic vegetation removal, and application of native seed or installation of native plant propagules.

The beach access trail from the campground will be in the Natural Resource Zone. It will be an Americans with Disabilities Act (ADA) compliant beach access point and connecting trail. This beach access point would accommodate pedestrian and emergency vehicle access (e.g. ATVs) and would involve approximately 100 cubic yards of grading. An approximately 2,250-linear-foot trail would connect the beach access point with the campground facility.

The Monterey Bay Sanctuary Scenic Trail (MBSST) is an existing trail in the Natural Resource Management Zone. The MBSST is a multi-jurisdictional regional trail system from Santa Cruz to Monterey. The MBSST runs from the north to the south end of FODSP. The MBSST currently utilizes the old Beach Range Road paved roadway that was already on the property when State Park acquired it. When the Campground is constructed the portion of the existing MBSST between the First Street underpass and the entrance to the campground (near the bunkers) will be rerouted so cars will use the existing Beach Range Road/MBSST corridor and the pedestrians and bikes will have a new separated Class I Bike Lane running parallel to the existing road.

The Natural Resource Management Zone will also include a portion of this new pedestrian/bike trail. The trail which will connect the 1st Street entrance to the Storage Bunker Zone is approximately 2,600 feet through the Natural Resource Management Zone.

3.3.2.2.2 8th Street Zone

This zone comprises 30 acres of existing disturbed and developed areas that would be modified to accommodate coastal access parking, visitor overlooks, information and interpretive facilities, and access routes (Table 3-10). Parking in this zone would be accommodated at an existing paved area near the former Stilwell Hall site. The maximum parking capacity would be 60 vehicles. Within this zone, a maximum of 10 acres would be occupied by existing and/or new facilities. Locations not proposed for development would be restored to natural conditions.

3.3.2.2.3 1st Street Zone

This zone consists of 45 acres and contains the most intact remnants of the former military firing ranges, which would be preserved and interpreted (Table 3-10). An entrance station building near the 1st Street underpass would be constructed to serve the campground. The entrance station, which may be manned or unmanned depending on campground operations, would include office space, restroom facilities, and storage. A maximum of 10 acres would be occupied by existing and/or new facilities. Areas in this zone not proposed for interpretation or other park facilities (Table 3-10) that include entrance kiosks, signs, and entrance station parking areas would be restored to natural conditions. There will also be a new pedestrian/bike trail through the 1st street zone that connects the entrance at 1st Street to the Storage bunker zone. The portion within the 1st Street Zone will be approximately 2,000 feet.

3.3.2.2.4 Storage Bunker Zone

This zone is 80 acres (Table 3-10). The twelve underground bunkers in this zone would be preserved, restored, or reused for interpretation and storage purposes. Previously developed areas may be modified to accommodate camping, interpretive facilities, parking, and access roads. Construction of a new campground and associated facilities are proposed for this zone. New facilities include the construction of up to 100 campsites, including a maximum of 47 electric and water hook-up sites (e.g., RV compatible) and 53 tent sites without hook-ups.⁴ The project would provide paved parking to accommodate 40 vehicles at a new community building with an additional unpaved, overflow parking lot to accommodate up to 40 additional vehicles. A portion (500 feet) of

⁴ The tent sites would be able to accommodate up to 10 hike/bike/walk-in sites. Each campground site would contain limited improvements, including picnic facilities, a fire ring, and a level tent pad site. The full hook-up sites would contain connections for water and electricity; these sites would be paved and contain level parking spurs in order to accommodate large RVs. The tent sites would also include paved areas and level parking spurs to accommodate traditional vehicles; the 10 hike/bike/walk-in sites would have limited remote parking.

the new pedestrian/bike trail will be included in the Storage Bunker Zone. The entire trail connects the new Storage Zone parking area to the 1st Street entrance. Four new public combination buildings, which include restrooms and showers, would be constructed to provide facilities for campground use. In addition, an approximately 1,800-square-foot multi-purpose building would be constructed. The project also entails improved outdoor facilities (e.g., campfire center, interpretation areas, and viewing area).

An existing bunker would also be improved for interpretative purposes and separate bunkers may be used for storage. Other facilities proposed in connection with the new campground and associated facilities include three modular operations/security structures for Park personnel (e.g., residences, operations, security), a storage structure and maintenance area, improved beach access, a single plumbed restroom with outdoor pole shower, internal campground trail network, trail improvements and reroutes, roadway improvements, off-site utilities (e.g., distribution mains, pump stations), and other miscellaneous improvements (e.g., fencing, restoration, signage, maintenance, dump station).

Day use parking capacity would be 100 vehicles in two parking areas, 40 parking spaces at the community building and capacity for 60 vehicles at the existing day-use zone. A maximum of 60 acres would be occupied by existing and/or new facilities. Locations not proposed for development would be restored to a natural condition.

3.3.2.2.5 Administrative/Operations Zone

This zone is 14 acres. A maximum of 7 acres would be occupied by existing and/or new facilities. This zone has been determined to consist of areas with lower natural resource values and lacks significant aesthetic character. This zone provides the potential for development of support facilities including a park office, maintenance yard, and employee housing. Locations not proposed for development would be restored to a natural condition.

The park management zones do not include existing facilities managed by other agencies such as percolation basins (managed by FORA), the wastewater treatment plant, and the 3-acre wastewater pump station (managed by MCWD). These areas make up 28 acres of the park.

Table 3-10. Fort Ord Dunes State Park Management Zones

Management Zone	Potential and Existing Development (acres) ^a	Minimum Open Space and Habitat (acres)	Total (acres)
Natural Resource ^b	30	752	782
8 th Street	10	20	30
1 st Street	10	35	45
Storage Bunker	60	20	80
Admin/Operations	7	7	14
Facilities Managed by Others	28	0	28
Total Acres	145	834	979

^a The total acres of potential and existing development represents the estimated extent of development within the State Park. This includes the construction, operations and maintenance of MCWD facilities within FODSP. State Parks formally committed to preserving 700 acres under the HMP; however, State Parks does not anticipate impact acreages in addition to what is shown in this table.

^b FODSP has allowable development on 142 acres; the total of 145 acres includes the 3-acre wastewater pump station.

3.3.2.3 University of California Natural Reserve System—Fort Ord Natural Reserve

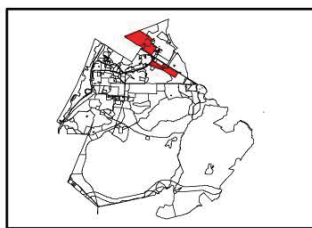
As outlined in the 1997 HMP and amended in 1999, the UC will manage three habitat reserve areas, which includes one “development with reserves” parcel that constitutes the FONR HMA. The three habitat reserve areas (606 acres) are located in and adjacent to the city of Marina in the County of Monterey (Figure 3-7). The three areas are referred to as the North Reserve (NR), the South Reserve (SR), and the Corridor Reserve (CR). The “development with reserves” parcel is an approximately 5-acre parcel situated between the FONR NR and UC MBEST development parcels. FONR is administered under the auspices of the UC/NRS and is managed by UC, Santa Cruz (UCSC).

The management is focused on maintaining the biodiversity of the reserve and supporting legitimate uses in it. There are two goals for management of FONR: 1) to comply with the terms of the legally binding documents pertaining to conservation of habitat reserve by UC in the Plan Area and 2) to operate a natural reserve in support of teaching, and public service as appropriate for a UC/NRS reserve. As the conservation of natural systems is common to both, management requirements for the two purposes are generally compatible.

There are no facilities within the FONR HMA except a small parking lot at the northwest end of Neeson Road and a portion of a parking lot near the intersection of Imjin Road and Neeson Road, but the HCP proposes development of 1% (6 acres) of the land for the purpose of supporting the HMA operations. In addition to the 1% development proposed, 1.89 acres of development would be allowed within the FONR extension. The FONR extension is the “development with reserves” parcel of approximately 5 acres situated between the FONR North Reserve and UC MBEST development parcels. The remaining lands of FONR would be protected and managed to conserve listed species and were configured to maintain insofar as possible, part of the corridor of high quality, natural habitat connecting to the FONM in the interior of the Plan Area.

Development of facilities and infrastructure on the FONR would be in support of activities including habitat management, teaching, public education, horticulture, and other activities consistent with the mission of a UC/NRS reserve and the requirements of the HCP. Such facilities on FONR would include construction of buildings, accessory structures, access routes, and parking areas. Buildings would provide secure vehicle and tool storage, overnight and work space for staff and users, and bathroom and shower facilities. Parking areas would be constructed for staff and approved users. Facilities would be sited in areas such as non-native grassland, previously disturbed parking areas or other locations to avoid or minimize impact of HCP plant species. It is anticipated that any weather station(s) or other equipment for data acquisition or transmission (collectively referred to as Research Equipment) required would go in a developed area, but it might be necessary to place one or more stations and/or pieces of Research Equipment inside the reserve habitats for adequate coverage. In such cases, placement would avoid impacts on HCP species. UCSC would perform all appropriate environmental reviews prior to any development.

Access to FONR is limited to persons having business on the reserve for management, teaching, emergencies, or special needs (e.g., Army, USFWS, contractors, Pacific Gas and Electric Company [PG&E]). There is no open public access planned. Some public education may be implemented in the form of guided tours or educational panels placed along the boundary, especially in the interests of promoting actions in the community that would aid in preservation of native habitats and species. Teaching activities that avoid take of HCP species are also planned to occur in this area. Each activity would require an approved UC/NRS application that assures adherence to the terms of this HCP. A



Legend

 HMA Boundary



Source: Zander Associates and Denise Duffy and Associates

Figure 3-7
UC FONR Habitat Management Area

clear statement of terms and conditions of use of the FONR would be prepared and posted as part of the application process. Each user would receive an orientation to the terms and conditions of use and would be held responsible for adhering to those terms and conditions including specific access routes and standards of care (see *FONR Authorized User Guidelines* in Appendix F). Teaching projects involving take of HCP species must include mitigation for such take as part of a detailed project plan as reviewed and approved by the UC/NRS application process. Access would be controlled in accordance with AMMs (Chapter 5). Both Category 2 and Category 4 Borderlands are adjacent to or on FONR. As required by the HMP, CSUMB will be responsible for implementation of Category 2 Borderland requirements on their lands adjacent to FONR, while UC/NRS will be responsible for implementing the Category 4 Borderlands requirements as part of their conservation strategy (Chapter 5).

All users of UC/NRS reserves are required to file an application through the UC/NRS system that will be reviewed by FONR administration to assure compliance with all of the terms of this HCP and to assure that all users are informed regarding regulations associated with their use

Authorized personnel (see *FONR Authorized User Guidelines* in Appendix F) or their contractors would be allowed to conduct surveys for HCP species, vegetation communities, and other resources within the reserves on a regular basis for monitoring and adaptive management purposes. Authorized personnel will minimize take of listed species whenever possible; however, surveys may require physical capture and inspection of specimens to determine identity, mark individuals, or measure physical features, all of which are considered take under the ESA and CESA. All such survey activity consistent with the HCP would be covered by the permits issued pursuant to the HCP.⁵

Research activities that avoid take of HCP species are also planned to occur in this area and would require an approved UC/NRS application that assures adherence to the terms of this HCP (see *FONR Authorized User Guidelines* in Appendix F). Research activities involving seed or plant part collection on HCP species and conducted by FONR personnel or their contractors or researchers approved by the UC/NRS application process on FONR is not covered by the permit(s) issued pursuant to this HCP. These projects will be required to be discussed with USFWS and CDFW before approval. Depending on the project type, a Federal Recovery Permit under Section 10(a)(1)(A) of the ESA or State Scientific, Educational, or Management Permit under Section 2081(a) of the Fish and Game Code may be needed. Under these authorizations, all collection of seed or plant material of HCP species shall follow the guidelines of the CNPS and be limited to less than 2% of any occurrence. If impacts on plants are anticipated a baseline survey shall be conducted. If impacts on plants occur, the site shall be monitored for three years to assure full recovery to preexisting numbers (corrected for differences in annual production due to differences in temperature and precipitation). UC would assume responsibility for full mitigation of any documented take. The designated PI would be held responsible for adherence to the project as approved. Student research projects, graduate, undergraduate, or postdoctoral students would require a faculty sponsor who would be held responsible for adherence to the project as approved. The PI would provide an annual report and a final report for review through the Cooperative. UC/NRS would attempt to attract research projects that add to the information available for the protection and management of HCP species and habitats and control of actual or potential impacts (e.g., weed invasions).

⁵ These projects are required to be discussed with USFWS and CDFW before approval. Depending on the project type a Federal recovery permit may be needed. At issue is whether such take would be "incidental" and therefore appropriate for coverage under the ITP.

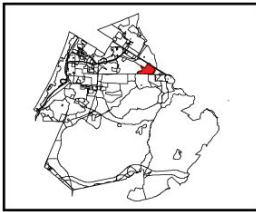
To the extent feasible, given the land use designations of the FONR and surrounding parcels, UC will manage the reserve to optimize the corridor function between FONR and the inland HMAs without increasing risks associated with road mortality. Vehicular traffic is limited to the designated routes, generally the perimeter roads and Old County Road with the exception of activities beyond the control of the UC/NRS, such as Army-related (e.g., OU1) remediation activities and emergencies. Vehicular access on interior access roads is by special permission for demonstrated needs or emergency access only. UC/NRS anticipates that education and management use would, on average, include less than one trip per day on the perimeter roads and one or two trips per month on the interior access roads. UC/NRS cannot control Army related groundwater cleanup traffic and activities nor anticipate its levels and will not be held responsible for any impacts of that activity. Additionally, FONR would not be responsible for impacts that result from the Army's road use and cleanup activities of contaminated groundwater on FONR. The Old County Road may be kept as an emergency access route and fire buffer through the South Reserve area; however, this is at the discretion of FONR. On the North Reserve, the perimeter road also serves as part of the fire buffer system. On the South Reserve the major access road is the Old County Road. There is no road access on the Corridor Reserve, only foot trails. Portions of FONR would be fenced and gated to protect against trespass.

3.3.2.4 County of Monterey—East Garrison Reserve (North and South)

The East Garrison Reserve is in the northeastern portion of the Plan Area and consists of two separate areas, north and south of Inter-Garrison Road. The East Garrison North Reserve (parcel E11a) is 148 acres and borders the south side of Reservation Road (Figure 3-8). The East Garrison South Reserve consists of 275 acres surrounding the designated development areas in the southern portion of East Garrison (Figure 3-9). In conformance with the conditions of the approved modifications in the East Garrison area, the connector road between Reservation Road and Inter-Garrison Road (HMP "Future Road Corridor") has been designed to avoid isolating and fragmenting the habitat in the East Garrison North Reserve and constructed within the East Garrison Development. No allowable development is proposed within the East Garrison Reserve (North and South) (Table 3-8). In addition to road, trail, and fuelbreak maintenance activities in the East Garrison Reserve (North and South), covered activities within the East Garrison North Reserve include a future road corridor (i.e., Inter-Garrison Road widening), MCWD facilities, and a portion of the Fort Ord Recreational Trail and Greenway (Section 3.3.4.3, *Fort Ord Recreational Trail and Greenway*). The Cooperative would be responsible for ensuring that all conservation and management requirements for these parcels are fulfilled on behalf of Monterey County.

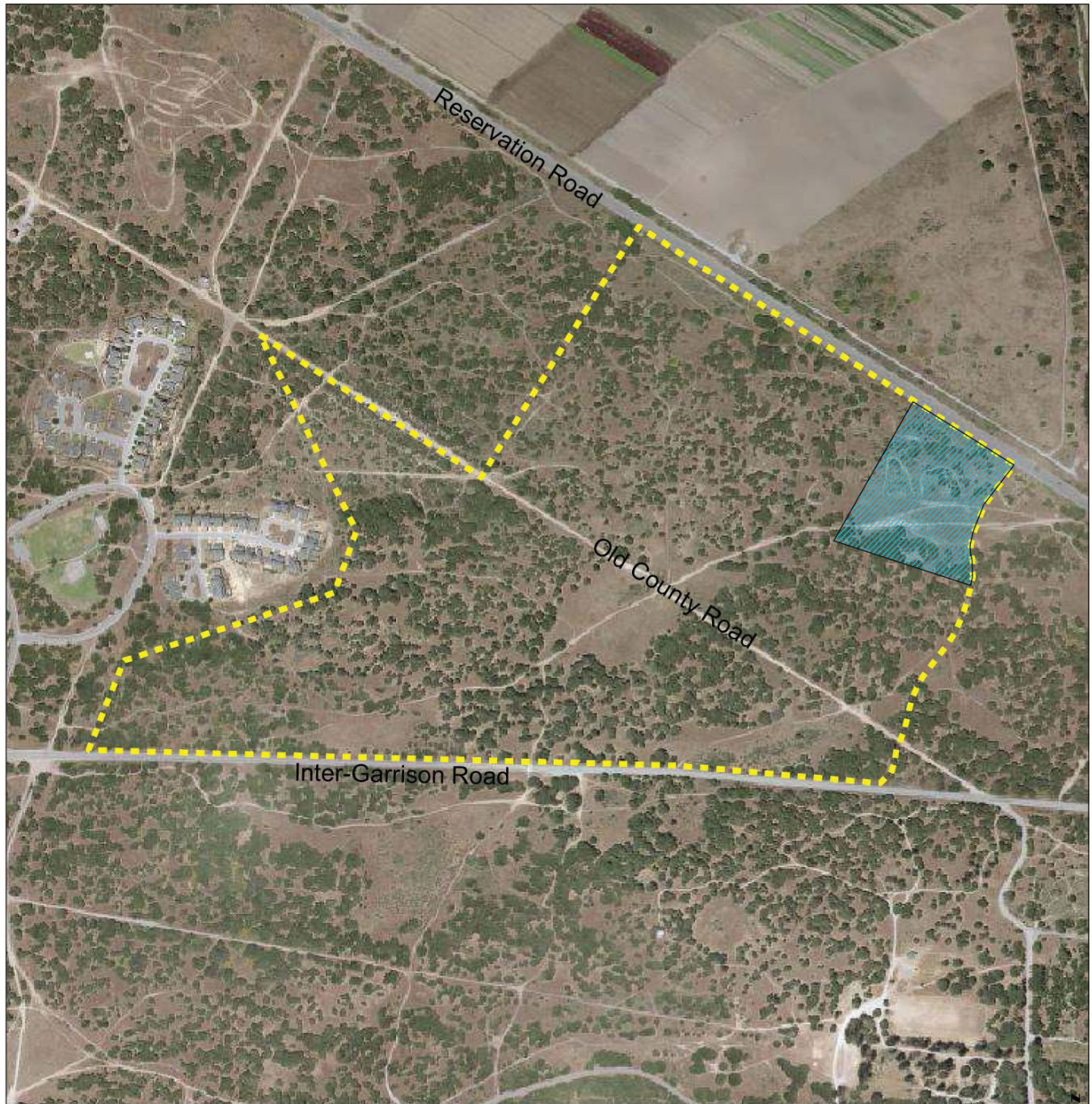
The East Garrison South Reserve is an area the Army had identified for MEC cleanup using prescribed fire to clear vegetation. However, due to limiting factors in the terrain, the Munitions Response team used alternative vegetation management instead. Fire-dependent species such as Toro manzanita were left standing, while the rest was cut down for MEC remediation activities. Therefore, maritime chaparral vegetation should be at a mixed seral stage at the time of transfer. However, the Cooperative will need to conduct a habitat burn on the East Garrison South Reserve prior to Phase II development of East Garrison (Chapter 5). Prescribed burns are covered activities in the HCP; however, MEC cleanup activities are covered under separate authorizations between USFWS, Army, and FORA.

Two paved roads, Barloy Canyon Road and Watkins Gate Road, and several unpaved roads pass through or along the boundary of the East Garrison Reserve and lead into adjacent habitat areas in the FONM. Barloy Canyon Road serves as an access route to Laguna Seca during events; BLM



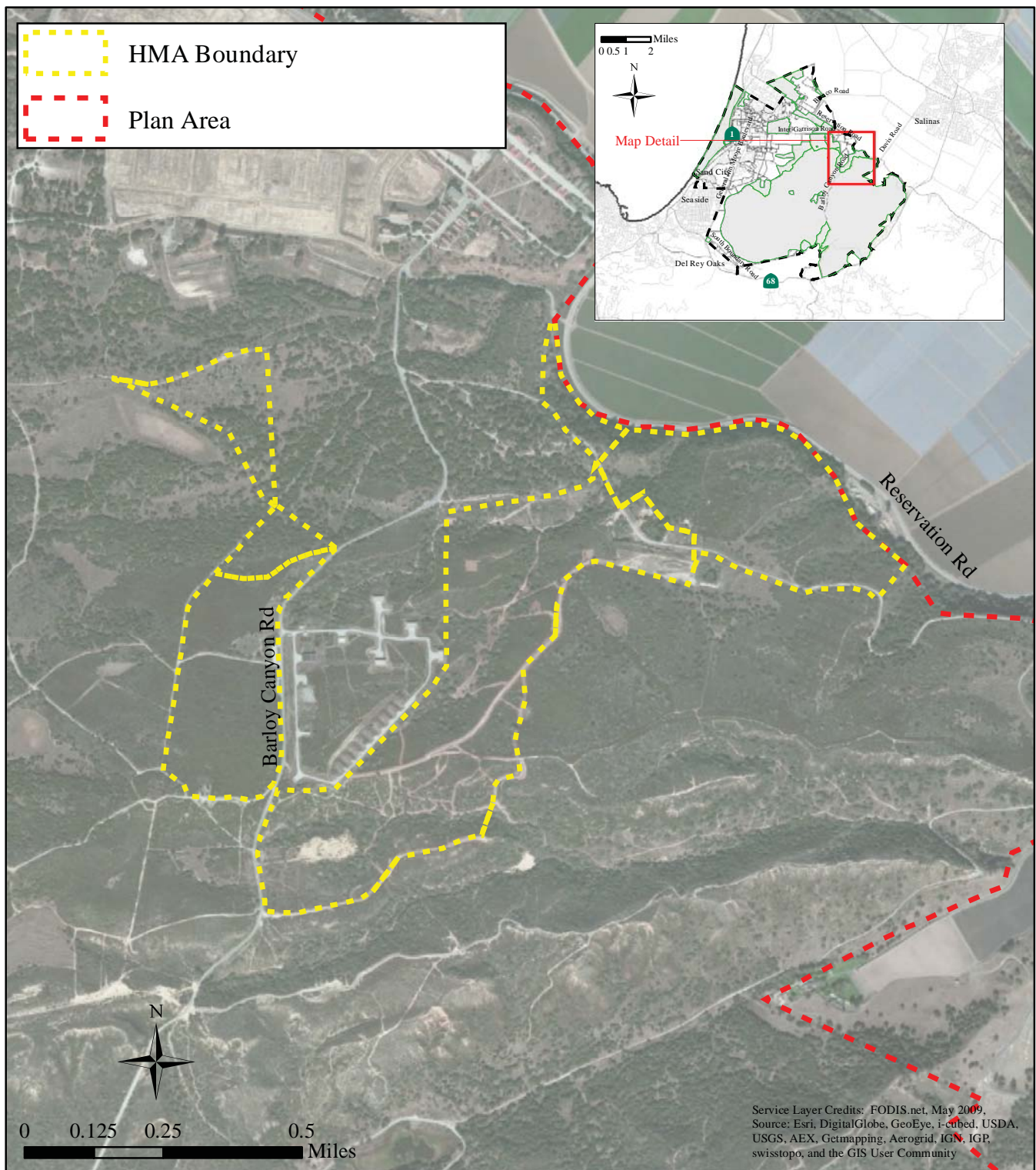
Legend

-  Reserve Boundary
-  Sand Gilia Mitigation Parcel



Source: Zander Associates

Figure 3-8
East Garrison North Reserve



Source: Denise Duffy and Associates

Figure 3-9
East Garrison South Reserve

maintains a locked gate along Barloy Canyon Road and will continue to do so in the future. However, the location of the gate may be moved to the southern edge of the allowable development area at East Garrison as these lands are transferred. Other roads leading out of East Garrison into adjacent habitat areas may be closed, realigned, used as fuelbreaks or otherwise managed to reduce impacts to California tiger salamander and other HCP species in conformance with the conditions of the East Garrison/Parker Flats Land Use Modifications (Zander Associates 2002) (Section 5.4, *Measures to Avoid and Minimize Impacts*). The ultimate disposition of these roads would be addressed through the Cooperative in consultation with the CRMP program (Chapter 7, *HCP Implementation*). As part of the baseline studies, the current and anticipated levels and types of uses would be described in the resource management plan (Chapter 5). Except for emergency use and required management and maintenance, motorized vehicles would be prohibited in the East Garrison Reserve. Public access would be permitted in the East Garrison Reserve (North and South). (See Chapter 5, Section 5.4.4 for avoidance and minimization measures for public use in HMAs.)

Using an appropriately sandy substrate within a 9-acre parcel, the East Garrison North Reserve would be managed to support sand gilia populations as specified in the Section 2081 Permit issued for the East Garrison Specific Plan (Permit No. 2081-2005-047-3). A candidate establishment area of 1 acre has been identified within this parcel and sand gilia will be introduced to provide a minimum of 225 square feet of new occupied habitat. Plant material will be introduced as seedlings and as salvaged soil. Specific activities involved in the establishment of sand gilia in this area include mowing and hand pulling of weeds; removal of shrubs, herbs, and grasses and scoring of soil to a depth of 0.5 inch within the soil salvage deposition area; out-planting of 500 propagated plants; and monitoring and maintenance for three years following implementation. This area will be protected in perpetuity through a conservation easement issued in favor of the CDFW.

3.3.2.5 County of Monterey—Habitat Corridor/Travel Camp

The Habitat Corridor/Travel Camp HMA comprises 398 acres just west of the former East Garrison (Figure 3-10). The Cooperative would be responsible for ensuring that all conservation and management requirements are fulfilled on behalf of the County of Monterey.

The eastern portion of the HMA is designated as the Travel Camp and covers 145 acres that includes the former Army RV park/family camp. The western portion of the HMA is the Habitat Corridor that provides for a connection between the HMAs to the north and south. Two existing water tanks are located in this corridor area and were designated as separate parcels by the Army (HMP parcels E17b.1 and E17b.2). The parcels with the water tanks are designated development areas; mitigation measures required for the Habitat Corridor/Travel Camp do not apply to the water tank areas.

Up to 52 acres of allowable development are permitted within the Habitat Corridor/Travel Camp HMA. Development will be contained within the Travel Camp area, and will be concentrated on existing use areas to the extent possible. The Travel Camp area will be used to provide outdoor recreation opportunities, connectivity and safe access to the regional trail networks for a diverse range of user groups (e.g. hikers, bicyclists, equestrian).

3.3.2.6 County of Monterey—Parker Flats Reserve

The Parker Flats Reserve (Figure 3-11) consists of 372 acres between the FONM and designated development areas. The reserve has both oak woodland and maritime chaparral habitat and is one of the first non-ordnance areas in the Plan Area subjected to mechanical clearing and a prescribed

burn program with specified restoration goals. Future management of the reserve would be determined based on the results of the burn program as determined through post-burn monitoring and assessment. Any trails and courses through the reserve would use existing or realigned roads and trails; public and equestrian use would be permitted. Covered activities do not include buildings, grandstands, corrals, parking areas, or other developments in the reserve. No new development would be permitted. The Cooperative will be responsible for ensuring that all conservation and management requirements are fulfilled on behalf of the County of Monterey.

3.3.2.7 County of Monterey—Oak Oval Reserve

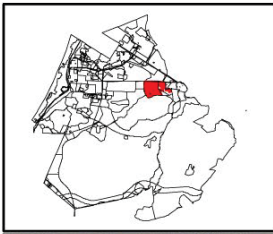
The Oak Oval Reserve (Figure 3-11) is 73 acres of oak woodland habitat adjacent to the Parker Flats HMA and designated development areas. Public and equestrian use would be permitted. Covered activities include construction and subsequent use of a 150-foot wide section of a cross-country equestrian course through the eastern end of the reserve (up to four acres of development). The course would be sited and designed to minimize vegetation removal and maintain wildlife movement corridors between HMAs. Any other trails and courses through this HMA would use existing or realigned roads and trails. Covered activities do not include buildings, grandstands, corrals, parking areas, or other developments in the reserve. The siting, design, and use of any proposed Horse Park trails and courses through any HMAs would require approval by USFWS, CDFW and BLM through the TAC program (see Chapter 7, *HCP Implementation*). The Cooperative would be responsible for ensuring that all conservation and management requirements are fulfilled on behalf of the County of Monterey.

3.3.2.8 County of Monterey—Landfill Parcel

This 308-acre “parcel” is generally northeast of the main CSUMB campus, south of Imjin Parkway and north of Inter-Garrison Road (Figure 3-12).⁶ The Landfill Parcel is mostly undeveloped and is designated for habitat management (227 acres) and planned development as a mixed use district (81 acres) by the Fort Ord Base Reuse Plan, and as development with reserve areas/restrictions by the Army’s HMP. Development of these 81 acres is included as a covered activity under the HCP. The HCP proposes no development restrictions for these areas, apart from incorporating appropriate measures into boundary design to preserve and protect adjacent habitat areas (Section 5.4, *Measures to Avoid and Minimize Impacts*). The remainder of the landfill (227 acres) would be managed as an HMA. This includes 81 acres of capped landfill, another 42 acres of disturbed area, and 104 acres of native habitat (includes dirt roads). The Cooperative will be responsible for implementation of HCP required AMMs for Borderland parcels and mitigation measures on behalf of the County of Monterey. Public access would be permitted.

Included within the HMA are those parcels identified in the *Memorandum of Agreement Regarding Habitat Management on Portions of the Landfill Site at the Former Fort Ord, California* (MOA). The MOA specifies that portions of parcels E8a.1.1.1, E8a.4, and E8a.1.1.2, and all of parcel E8a.1.3 (totaling 58.8 acres) will be preserved and managed in perpetuity for sand gilia and maritime chaparral habitat values. Within the 58.8 acres, 14.5 acres (parcel E8a.1.1.1) will be restored to provide sand gilia habitat. Management and restoration of the MOA specified parcels, as identified in the *Marina Heights Sand Gilia Mitigation Plan* (Attachment A of the MOA), will be funded by a \$350,000 endowment paid by Cypress Marina Heights, L.P.

⁶ The Landfill Parcel is comprised of seven HMP parcels; please refer to Table 3-6.



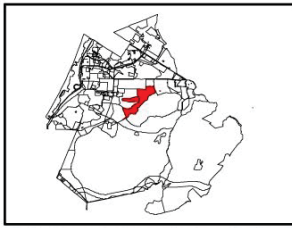
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- Travel Camp Boundary
- Habitat Corridor
- Plan Area



Source: Zander Associates

Figure 3-10
Habitat Corridor and Travel Camp Parcel

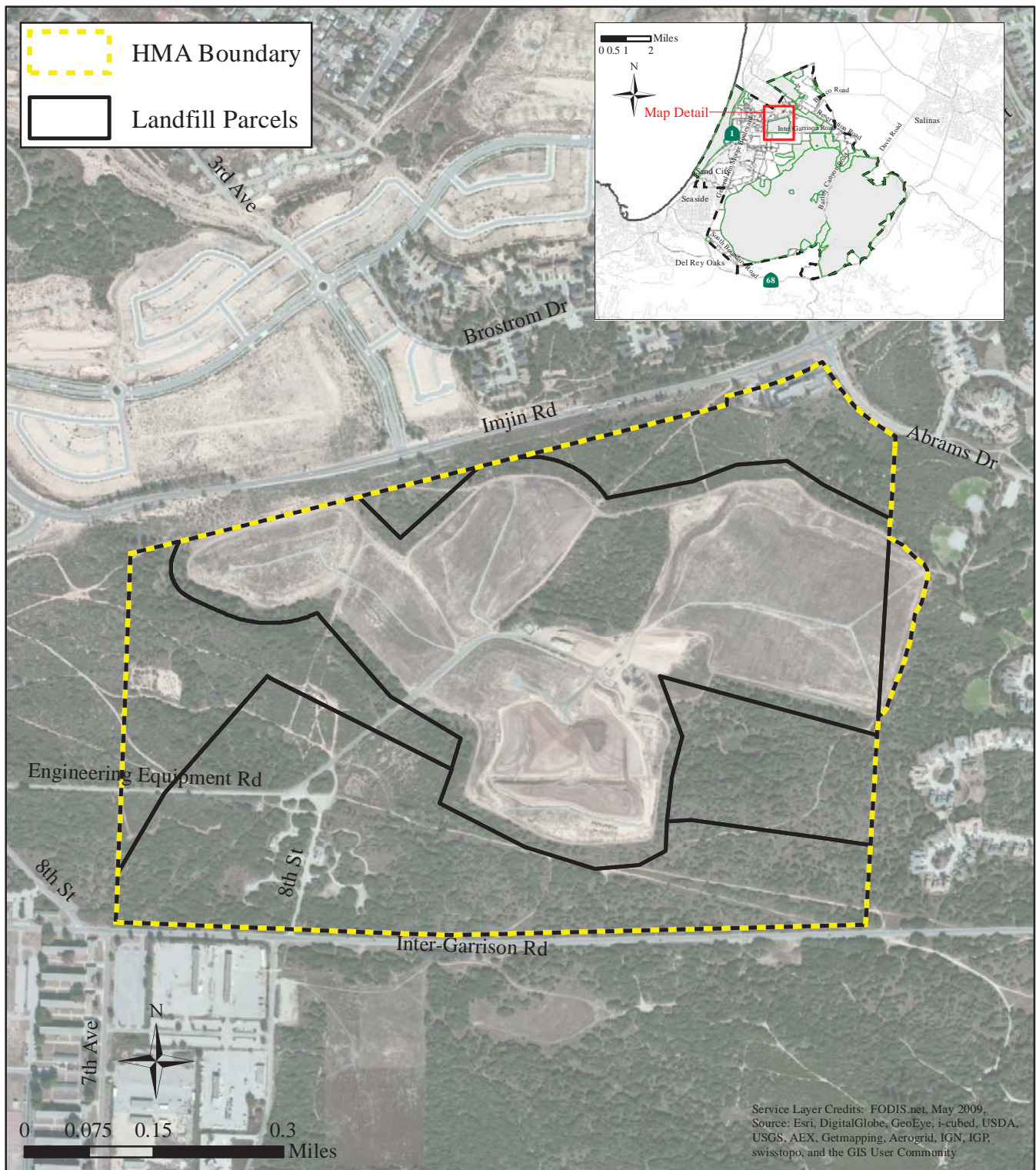


Legend

-  Parker Flats Reserve Boundary
-  Oak Oval Reserve Boundary



Source: Zander Associates



Source: Denise Duffy and Associates

Figure 3-12
Proposed Landfill Development Parcels

Past use of the landfill area resulted in substantial disturbance from waste disposal and related activities as well as from more recent landfill remediation and closure activities (126 acres). However, many areas peripheral to the disturbance remain as native habitat (182 acres). Outside of the designated development parcels, remaining natural areas would be preserved and managed to promote the conservation of HCP species and natural communities. Disturbed areas of the landfill, including the capped areas, also provide opportunities for restoration, experimentation with restoration techniques, translocation of species, and other experimental habitat management-related activities. However, the Army retains the right (and is obligated) to implement any remedial measures in the landfill area based on long-term monitoring associated with the landfill closure program.

The Cooperative will encourage researchers and others to use the landfill cap areas to gain a better understanding of the potential for long-term restoration of these areas. Should certain methods provide favorable biological results that do not conflict with the Army's long-term commitment to maintain the capped areas, these methods may be applied over larger areas when economical. All revegetation and restoration of the landfill, including the capped areas, will utilize regionally appropriate native species. The Cooperative will not continue to use treatments if results indicate they are not favorable to HCP species or they compromise the Army's ability to maintain the landfill caps.

3.3.2.9 County of Monterey—Laguna Seca Recreation Expansion

The Laguna Seca Recreation Expansion is comprised of two separate areas located along the southern boundary of the Plan Area adjacent to the Laguna Seca Raceway. Wolf Hill (HMP parcels L20.3.1 and L20.3.2) is 79 acres and Lookout Ridge (HMP parcels L20.5.1, L20.5.2, and L20.5.3) is 196 acres. These parcels are designated as development with reserve and/or restrictions in the HMP and must be managed so that the adjacent habitat areas are not adversely affected. They would be used for parking, camping, special events and other recreational activities associated with the Laguna Seca Raceway. The Cooperative would be responsible for ensuring that all conservation and management requirements are fulfilled on behalf of the County of Monterey.

Both areas are currently being used under an interim lease arrangement with the Army. Wolf Hill is used as a primary parking area for Laguna Seca Raceway special events up to nine times per year and Lookout Ridge is only used as needed to accommodate overflow parking. These uses could expand over time to include additional parking, overflow camping, or special event use. Restrooms or other recreation-related facilities and associated utilities may be constructed in these areas. The maximum footprint for the amount of habitat to be converted would be limited to 30 acres of Wolf Hill (Figure 3-13) and 110 acres of Lookout Ridge (Figure 3-14). However, taking into account the current Army use of the areas, avoidance and minimization measures require that facilities do not expand beyond those areas already disturbed by Army activities. In addition, no barriers would be constructed that would impede or entrap California tiger salamanders as they cross the site (e.g., curbs, walls, drainage gutters) (Section 5.4, *Measures to Avoid and Minimize Impacts*). The loop road in Wolf Hill has a decomposed granite surface and provides fire truck access. The access road on Lookout Ridge is not surfaced and occasionally needs to be bladed to maintain drivability. The parking areas are seeded with native grasses and are mowed, as necessary prior to the first spring or summer event, depending on conditions.

3.3.2.10 City of Marina—Salinas River Habitat Area

The 43-acre Salinas River Habitat Area (Figure 3-15) is located on the east central edge of the Marina Municipal Airport. It consists of sloping ground from the bluffs of the airport property down to the westerly alluvial terrace of the Salinas River. The City of Marina will have jurisdiction over this parcel; however, the Cooperative would be responsible for ensuring that existing habitat values are retained on the behalf of the City of Marina. While no allowable development is permitted within the HMA, the covered activities would include the Fort Ord Recreational Trail and Greenway (FORTAG) (Section 3.3.4.3, *Fort Ord Recreational Trail and Greenway*) and facilities associated with the City of Marina Airport Master Plan Update (Section 3.3.4.4, *City of Marina – Airport Master Plan Update*) (see Figure 3-30). These covered activities were not specifically addressed in the HMP and Base Reuse Plan. However, similar activities such as a proposed local Hiker/Biker Trail is described in the Base Reuse Plan (see Figure 3.6-3 in the Base Reuse Plan) as crossing the Salinas River Habitat Reserve and a proposed roadway is described in the same figure as crossing the Marina Airport Habitat Reserve.

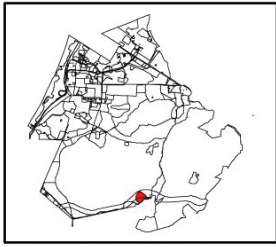
3.3.2.11 City of Marina—Marina Airport Habitat Reserve

The Marina Airport Habitat Reserve (Figure 3-16) is a 130-acre area (HMP parcel L5.1.11) that occurs at the westerly end of the main Marina Municipal Airport runway. The site is north of and directly adjacent to the FONR. The City of Marina would have jurisdiction over this parcel. The Cooperative would be responsible for the implementation of all the HCP required actions on the behalf of City of Marina.

Covered activities in the reserve include utility lines (following existing unpaved roads), fencing, patrol of existing unpaved access roads and other minor security-related improvements and uses. Any future major Federal Aviation Administration-required airport support facilities (e.g., navigational aids) are not included as covered activities in this parcel. Less than two percent of the land area would be affected by any of these uses and/or improvements. FORTAG and the airport expansion are included as covered activities in this HCP although they were not addressed in the HMP and Base Reuse Plan. However, similar activities such as a proposed local Hiker/Biker Trail is described in the Base Reuse Plan (see Figure 3.6-3 in the Base Reuse Plan) as crossing the Salinas River Habitat Reserve and a proposed roadway is described in the same figure as crossing the Marina Airport Habitat Reserve.

The parcel was the subject of an early transfer to the City of Marina and the deed for the property (and the Army's December 1996 HMP Map) allows construction of a six lane arterial roadway ("Future Road Corridor") through the parcel at an undetermined location. The text of the Army's April 1997 HMP (documented in Appendix C of the HMP) provided for post-transfer modifications that moved the proposed roadway to the northerly edge of the parcel outside of the parcel boundary. The road corridor would be located on the adjacent parcel in a designated development area. It would be 120 feet wide and no habitat disturbance or fragmentation would occur in the Marina Airport Habitat Reserve as a result of new road construction.

The 2017 Marina Airport Master Plan update includes construction of runway extensions, corresponding modified taxiways, and runway safety zones. Runway 11-29 is planned to be extended from 3,483 feet to 5,800 feet in the long term. While the current runway length is adequate to meet the needs of current users, to accommodate more activity by larger turboprop and small business jet, a runway length of 4,000 to 5,000 feet would be needed. An ultimate runway length of



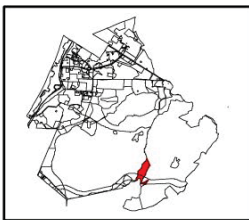
Legend

- Approximate Expansion Area
- Parcel Boundary
- Plan Area
- Ponds/Vernal Pools



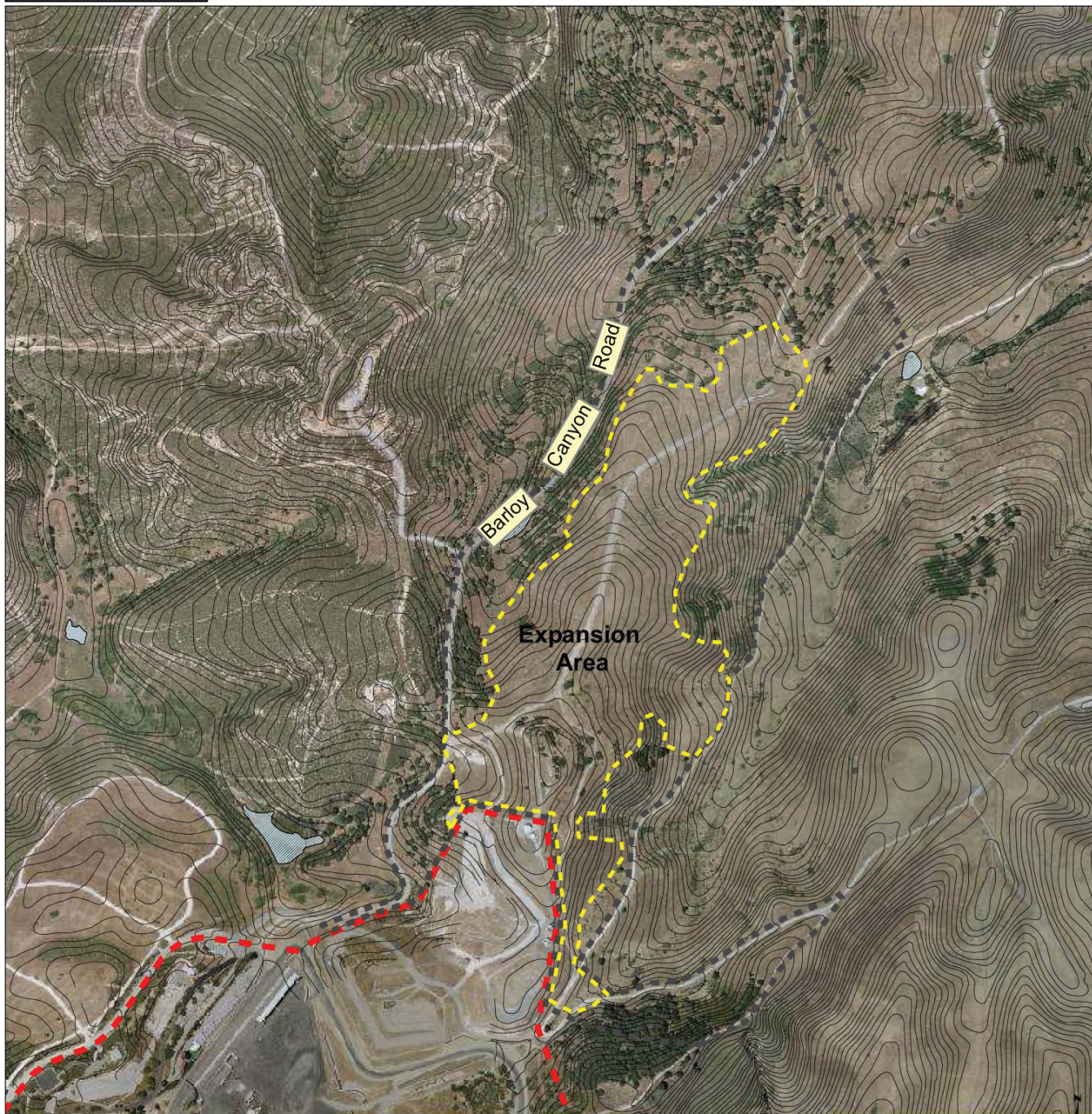
Source: Zander Associates

Figure 3-13
Wolf Hill Recreational Expansion Areas

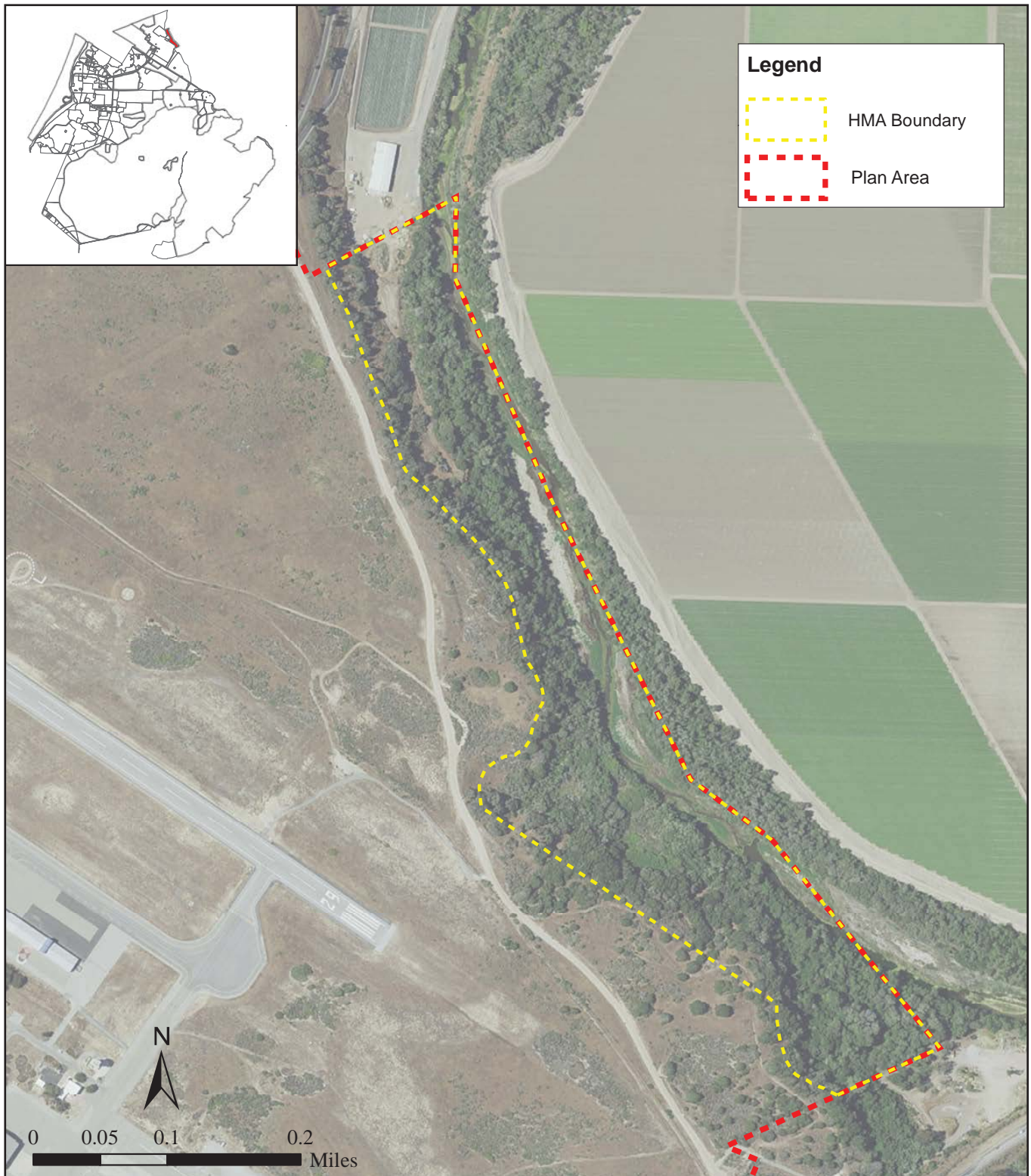


Legend

- Approximate Expansion Area
- Parcel Boundary
- Plan Area
- Ponds/Vernal Pools

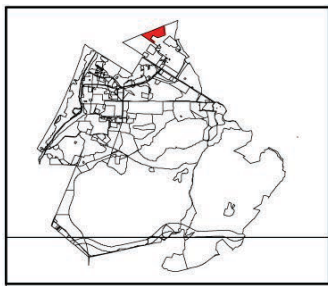


Source: Zander Associates





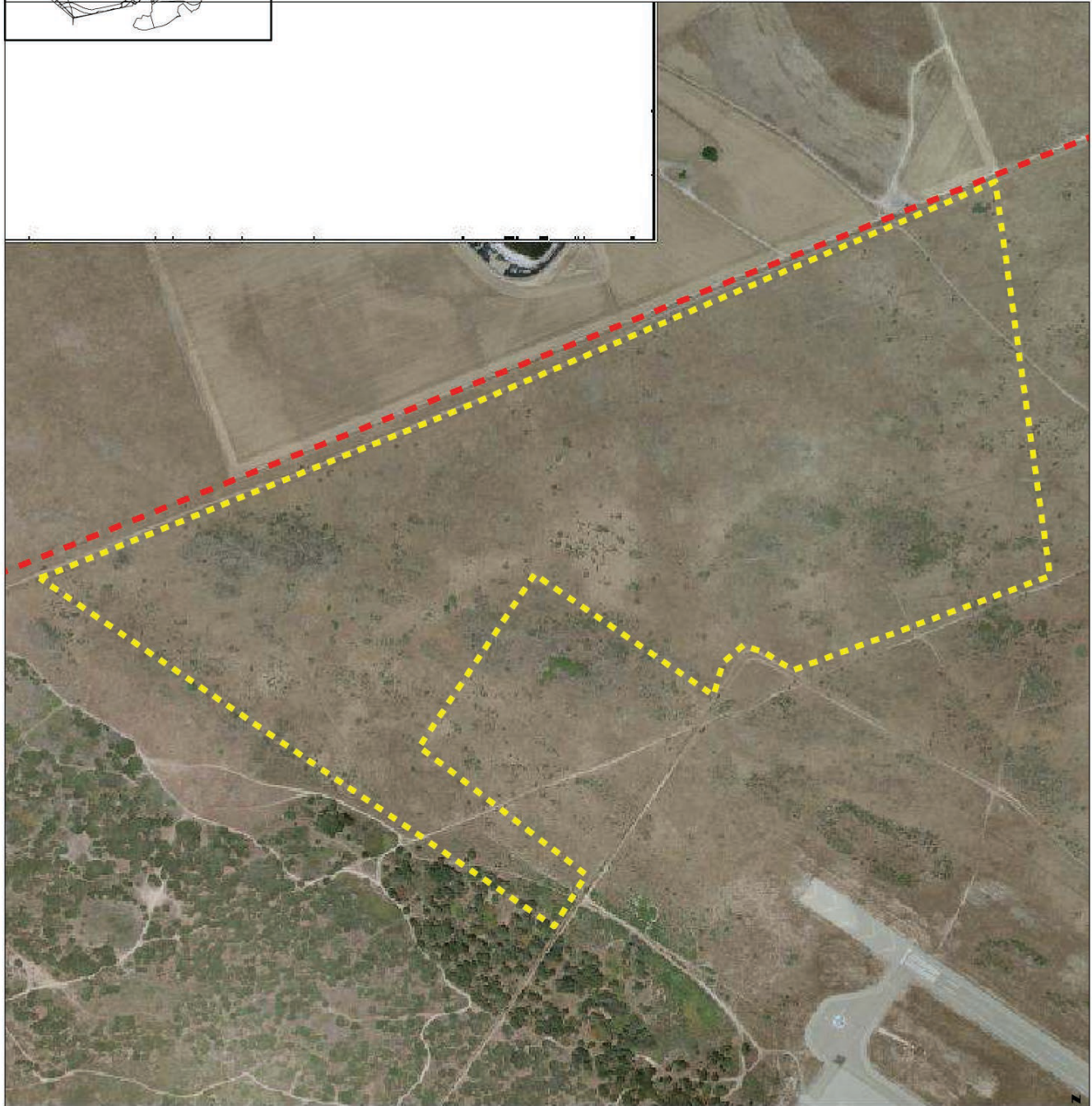
Source: Denise Duffy and Associates

Figure 3-15
Salinas River Habitat Area



Legend

-  Reserve Boundary
-  Plan Area



Source: Zander Associates

Figure 3-16
Marina Airport Habitat Reserve

5,800 feet is planned for the airport. These additions would affect approximately 30 acres of the 130-acre Marina Airport HMA west of the runway. See section 5.5.5, *Covered Activity-Specific Mitigation Measures*) for mitigations that will apply to the Marina Airport runway extension.

3.3.2.12 City of Marina—Marina Northwest Corner

This 63-acre parcel borders Highway 1 and existing residential areas in the City of Marina at the northwestern corner of the Plan Area. The parcel is currently undeveloped but designated for planned development as a mixed use district by the Fort Ord Base Reuse Plan and as development with reserve areas/restrictions by the Army's HMP (HMP parcel E2a). In its 2000 General Plan, the City of Marina designates visitor-serving commercial uses and public education facilities in the parcel, as well as habitat reserve and other open space. Public access would be permitted.

The HMP reported a population of Yadon's piperia (*Piperia yadonii*) within a polygon situated in the center of this parcel (Figure 3-17). Surveys conducted in 2006 and 2007 identified two Yadon's piperia stalks within the parcel. It is postulated that an additional occurrence may occur on the property (Yadon 2007). Based on these surveys, a 5-acre preserve to protect the Yadon's piperia population has been identified within the HMA (Figure 3-17) with the remaining 58 acres are available for development. Development is a covered activity in this parcel under the condition that it is sited and designed as to not adversely affect Yadon's piperia. The 2nd Avenue Road Extension project would be designed to avoid impacts to the Yadon's piperia and associated reserve area.

3.3.2.13 Monterey Peninsula College—Range 45 Reserve

This reserve is located in the Parker Flats area and consists of approximately 206 acres bordering Range 45 (Figure 3-18). While the two parcels adjacent to the Range 45 Reserve are designated for future development by the MPC, covered activities in this HCP do not include development or firing range use within the reserve. Existing roads and trails within this reserve may be used for management activities. No current or future public access is anticipated at the Range 45 Reserve. The Cooperative is to implement access restrictions, such as fencing along the Range 45 Reserve perimeter, to prevent unauthorized access.

3.3.2.14 Monterey Peninsula Regional Park District—Natural Area Expansion

The Monterey Peninsula Regional Parks NAE would be an expansion of the existing Frog Pond Natural Area (owned by Monterey Peninsula Regional Park District or MPRPD). The Frog Pond Natural Area is just outside the boundary of the Plan Area on adjacent land west of General Jim Moore Boulevard in the City of Del Rey Oaks (Figure 3-19). The 19-acre NAE would add several different habitat types to the Frog Pond Natural Area. This would provide an area for interpretive trails, biological research, and other appropriate uses where several different habitat types may be observed in a small area.⁷ There is a native plant reserve in the northwest corner of the NAE that encompasses 8 acres. MPRPD would preserve natural habitat within the NAE HMA in perpetuity. With the exception of a portion of the FORTAG trail, no new development would occur; only maintenance of existing trails and infrastructure. MPRPD has proposed limited development of a vehicle parking area, on the existing South Boundary Road adjacent to the preserve on a

⁷ Research projects will be required to be discussed with USFWS and CDFW before approval. Depending on the project type, a Federal Recovery Permit under Section 10(a)(1)(A) of the ESA or State Scientific, Educational, or Management Permit under Section 2081(a) of the Fish and Game Code may be needed.

development parcel, and modest interpretive displays along existing trails. Resource management, habitat enhancement, and restoration, along with environmental education are the high-priority uses.

3.3.3 Operations and Management Activities in HMAs

3.3.3.1 Maintain and Improve Roads and Trails

Many existing roads and road segments pass through HMAs (Figures 3-6a and 3-21). These include named, paved roads through the FONM, Habitat Corridor/Travel Camp, and East Garrison Reserves such as Barloy Canyon Road, Hennekens Ranch Road, Watkins Gate Road, Parker Flats Road, and Eucalyptus Road; unpaved roads through habitat areas; the existing roads in the coastal zone to be transferred to State Parks; and others. Some of these existing roads and accompanying rights-of-way would be transferred as parcels for continued use as roads and are designated as development polygons. Others are included in the overall land transfer parcel with the assumption that they may be maintained as roads or retired and restored to habitat. Road closures and/or relocations of some of these roads may be considered, depending on their projected uses and potential effects on HCP species and natural communities. The anticipated future road corridor construction, operation, and maintenance activities are described below in Section 3.3.4.1, *Future Road Corridors Construction, Operations, and Maintenance*.

The purpose of this activity is to maintain and improve roads and trails in the HMAs that are necessary for land management purposes and to provide opportunities for compatible public access on a system of well-defined and maintained trails. Existing road and trail systems that are redundant or not needed would be eliminated or restored. Needed transportation systems would be rerouted away from occupied habitat of HCP species where possible—especially state and Federally listed species. Activities to maintain and improve roads and trails apply to all HMAs and would include the following.

- **Maintain paved roads and associated shoulders with appropriate materials and at prescribed widths⁸.** Road shoulders would be mowed annually and graded as needed to control erosion, maintain slopes and contours, and ensure proper drainage. Repaving would occur as needed, but the asphalt surfaces of existing roads would not be widened. Glyphosate-based (e.g., Roundup Pro®) or other appropriate herbicides as approved by the HMA manager in coordination with the CRMP program would be used to control vegetation in asphalt cracks inside roadbeds, along a 6–12 inch strip along asphalt road edges, within 6–12 inches around and inside concrete culverts inlets, and within 6–12 inches along roadside concrete or otherwise hardened drainage ditches.
- **Maintain unpaved roads and associated vegetated shoulders with appropriate materials and at prescribed widths⁹.** Together the road shoulders and travel lane would be 20–26 feet wide. Road shoulders would be mowed annually with a rubber-wheeled tractor mower. The

⁸ Paved roads typically include asphalt (or equivalent) surfaces 20–25 feet wide with shoulders typically 3–4 feet wide.

⁹ Unpaved roads typically include a compacted soil surface travel lane 8–10 feet wide with a 6- to 8-foot sparsely vegetated shoulder on each side.



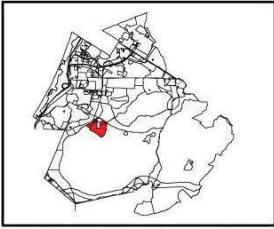
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- Location of JSA Yadon's Piperia Polygon
- Parcel Boundary
- Plan Area



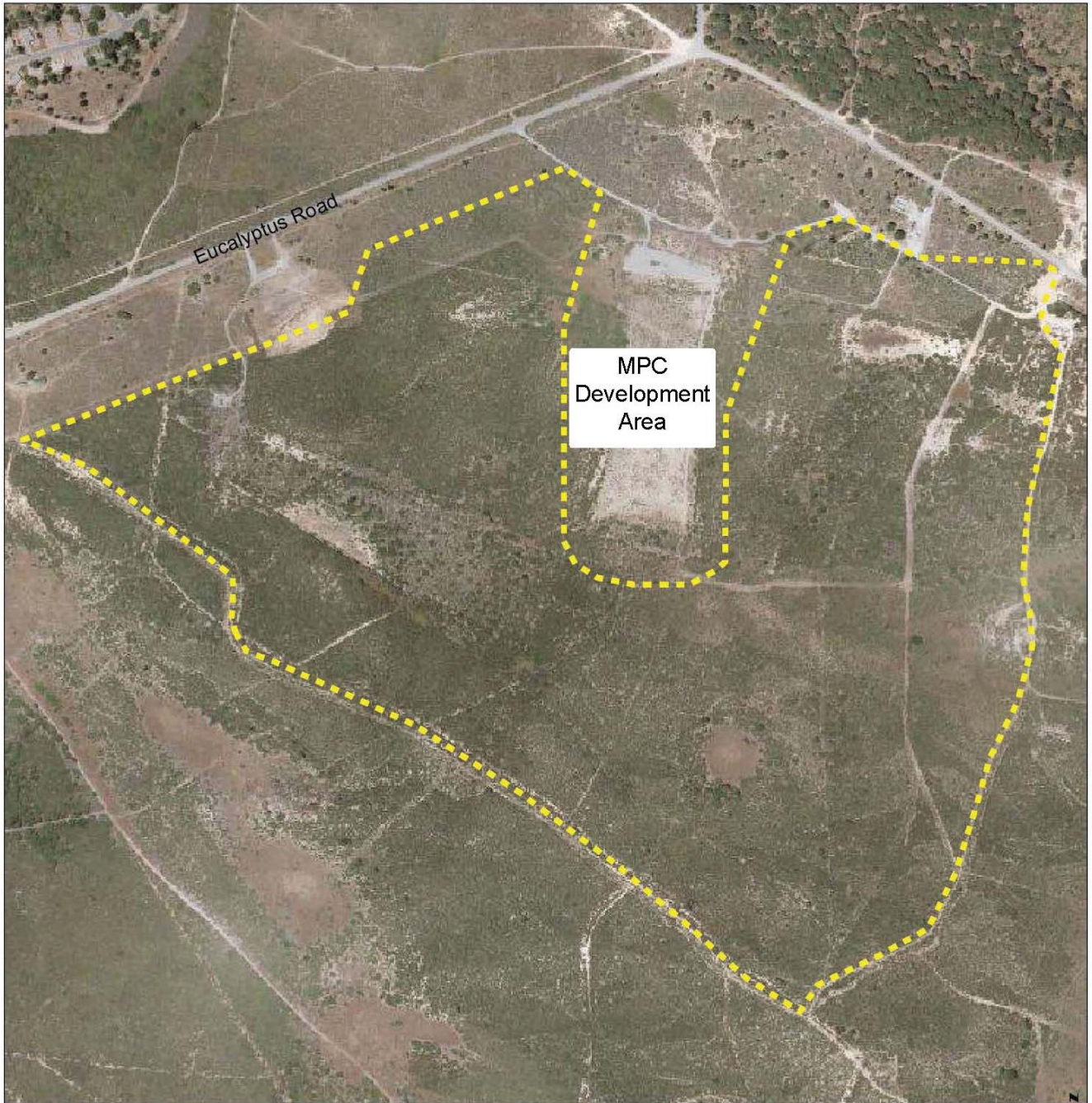
Source: Zander Associates

Figure 3-17
Recorded 1992 Location of Yadon's Piperia



Legend

 HMA Boundary



Source: Zander Associates

Figure 3-18
MPC Range 45 Reserve



Legend

- Parcel Boundary
- Native Plant Reserve
- Frogpond Natural Area
- Plan Area



Source: Zander Associates

Figure 3-19
Natural Expansion Area

travel lane and portions or all of the road shoulder would be graded by heavy equipment every 3 to 5 years to maintain the road and ensure proper drainage.

- **Maintain trails to include a compacted soil surface at a prescribed width¹⁰.** Trail maintenance would include vegetation trimming on an as-needed basis and repairs to the trail surface using either hand tools or mechanized trail equipment. Mechanized trail equipment would use a 4- to 6-foot-wide blade to grade a given trail, but only 4 feet would be maintained for actual recreational use. Any scraped surfaces outside of the 4-foot trail would be seeded, strawed, and allowed to revegetate. It is anticipated that any given trail segment would be graded once a decade or less. Trails used one or more times annually for large mountain bike and other events would require more frequent repairs and grading.
- **Close and rehabilitate redundant or unneeded road and trail systems within the HMAs.** While site-specific road and trail retirement sites are difficult to delineate at this time, it is reasonable to expect that, with funding from Permittees for project-by-project restorations, BLM would complete its goal to restore and stabilize approximately 100 miles of former roads over the term of the HCP. This would result in the restoration of between 100 to 150 acres of degraded habitat. This estimate is based on aerial surveys of the route network conducted in the *Road and Trail Resources Inventory (RATRI): Bureau of Land Management Lands, Former Fort Ord, Monterey County, California* (2002). This road and trail retirement estimate includes restoration that has already been conducted by BLM since land transfer of 7,200 acres in 1996. An estimate of roads and trails that would be closed and rehabilitated in HMAs not under BLM management or jurisdiction is not known at this time, but would be a covered activity under the HCP. California tiger salamanders encountered during road and trail rehabilitation will be relocated out of harm's way by a qualified biologist; procedures for such relocation are described in AMM-7 in section 5.4.1.3.
- **Develop new routes when needed outside occupied habitat of state and Federally listed species to the maximum extent possible.** The road and trail system consists of existing routes created by the Army. In most cases, BLM would be improving select roads while retiring others. BLM would also select locations for Permittees to fund ecological restoration of retired roads. Any new routes established by BLM would be offset by restoration of the existing routes; or, if it is not offset by road retirement and restoration, then it would count against the BLM 2% development allowance. Road restoration counts toward the 100–150 total acres of chaparral restoration required (Table 5-1, Objective 3.1) only in cases where the road crosses through this type of habitat and is not accompanied by new construction of equal acreage. New route development (including administrative access roads, fuelbreak roads, recreation trails) would encumber less than 2% of the land base. BLM would not count against the 2% development restriction any reroutes of trails or roads that involved closing certain route segments and opening alternative route segments to lessen overall impacts to sensitive resources in a given area. Development of routes within BLM's Fort Ord Project Office development parcel (8 acres) would also not be counted against the 2% development restriction on FONM habitat parcels.

3.3.3.2 Maintain Fuelbreaks

The purpose of this covered activity is to maintain fire and emergency access and fuel reduction standards around and through the HMAs to provide for adequate management during prescribed

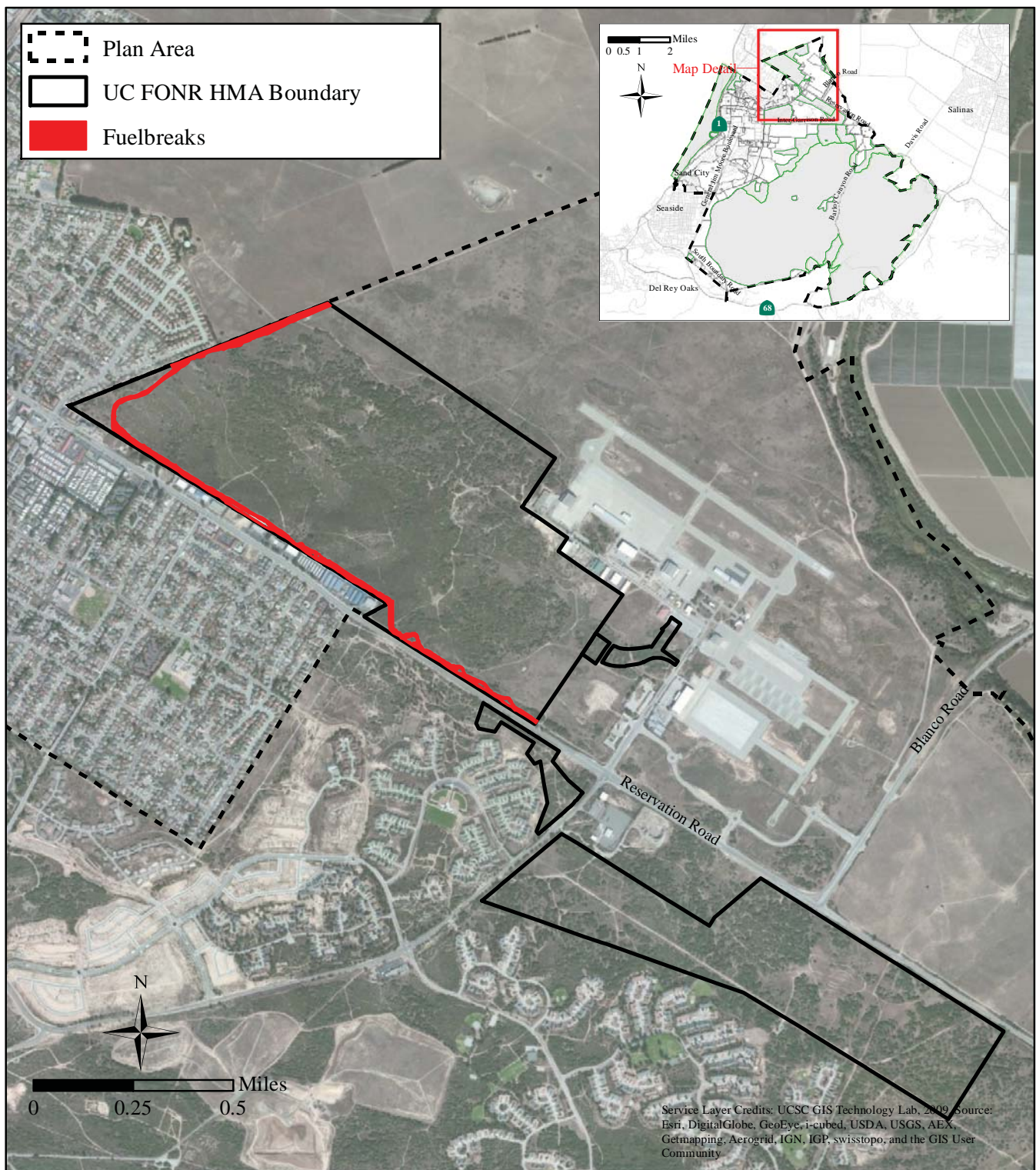
¹⁰ Trails typically include a compacted soil surface that is 4 feet wide.

burns and to reduce fire threats to communities at risk. A fuelbreak is a type of fuel buffer that is meant to slow or stop the spread of fire. The primary responsibility for providing adequate fuelbreaks or other appropriate separation between the reserve and developed private lands or lands designated for future development rests with the designated development lands (Chapter 5). However, fuel reduction measures within the HMAs would be used to complement those required fuelbreak measures on Borderland parcels adjacent to the HMAs.

The locations of fuelbreaks on FONM and FONR are mapped (Figures 3-5 and 3-20); however, the locations of the fuelbreaks on the other HMAs are not known at this time. Fuelbreaks would typically be maintained along the HMA borders (i.e., Borderlands) and/or existing roads or fuelbreaks. Adjacent land uses include other HMAs, airport, existing and proposed residential, agricultural, recreational, and other uses. Activities to provide and/or maintain adequate fuelbreaks would include 1) maintaining and managing fuelbreaks of variable width depending upon fuel type, fuel loading (tons per acre), topographic position and features of the area; and 2) implementing special fuels management strategies if determined necessary to reduce the risk of wildfire adjacent to Borderlands.

Fuelbreaks are generally located along drivable roads. They have widths typically ranging between 8 to 23 feet beyond one or both of the road shoulders and up to 45 feet beyond the shoulder in areas where sharp turns occur in oak woodlands. Crews would maintain fuelbreaks using hand tools and mechanized equipment. Maintenance could occur annually or as infrequently as every 2–4 years, depending on vegetation type, rainfall amounts, and specific locations. Vegetation would be removed using hand tools, chain saws, an All Seasons Vehicle (ASV), a tractor-operated mower, or a combination of the above. Manually-operated hand tools would be used to limb up oak trees so that no oak tree branches in the fuelbreak would be lower than 9 feet off the ground. Understory vegetation would be cleared using the ASV or mower except in areas where hand crews and chippers must be used instead. In general, shrubs would be cleared to a height of 2–6 inches, leaving a mostly herbaceous cover on the ground. In oak woodlands and savannahs, branches below 9 feet would be trimmed and the canopy thinned. Other surface fuels would be removed, leaving an open park-like landscape. Mechanized equipment would be used to chip or grind up the cut vegetation or it would be piled and burned at a later date. Cut vegetation may be loaded into a truck to be chipped offsite and used for erosion control in other locations, or chipped and dispersed back into the project area. Pile burning would be completed outside of the declared fire season. In locations where burning may encourage the propagation of listed plant species, fuels could be windrowed for later burning. This technique would be continued or discontinued depending on post-burn monitoring results to protect listed species.

Maritime chaparral stands adjacent to developed or future designated development lands would be periodically assessed to determine fire threats to communities at risk. Special fuels management strategies would be considered in these areas to lessen the chance of a wildfire moving toward or from these communities. Vegetation management activities would be implemented that achieve both fuel reduction objectives and HCP preservation objectives (e.g., by maintaining open habitat suitable for Monterey gilia and Monterey spineflower). Monitoring and weed control would be required to keep areas free of non-native species, especially annual grasses. These fuel reduction measures would complement the fuelbreak and fire-wise planning measures on the designated development lands (Borderland parcels).



Source: Denise Duffy and Associates

Figure 3-20
UC FONR Fuelbreaks

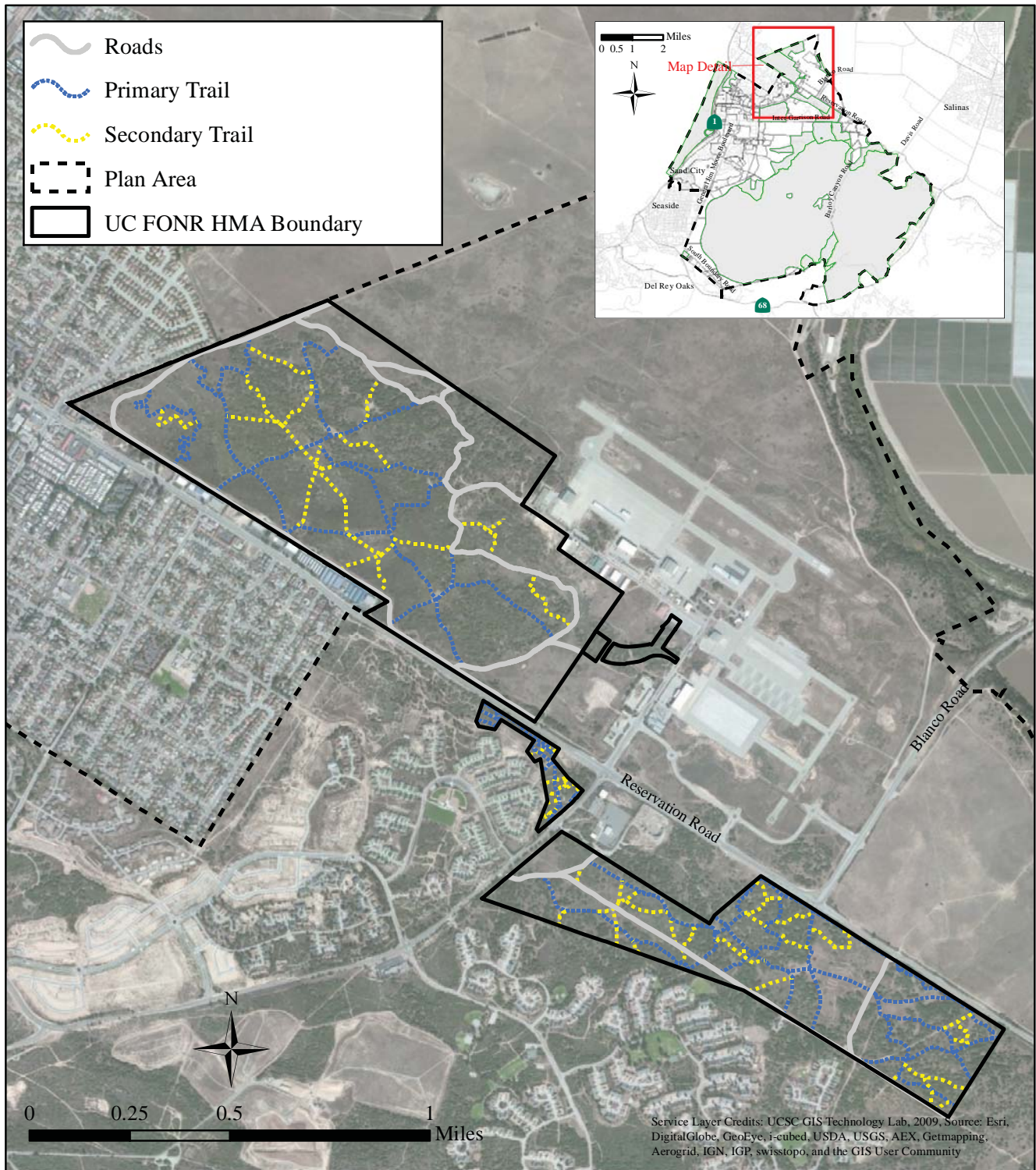


Figure 3-21
UC FONR Roads and Trails

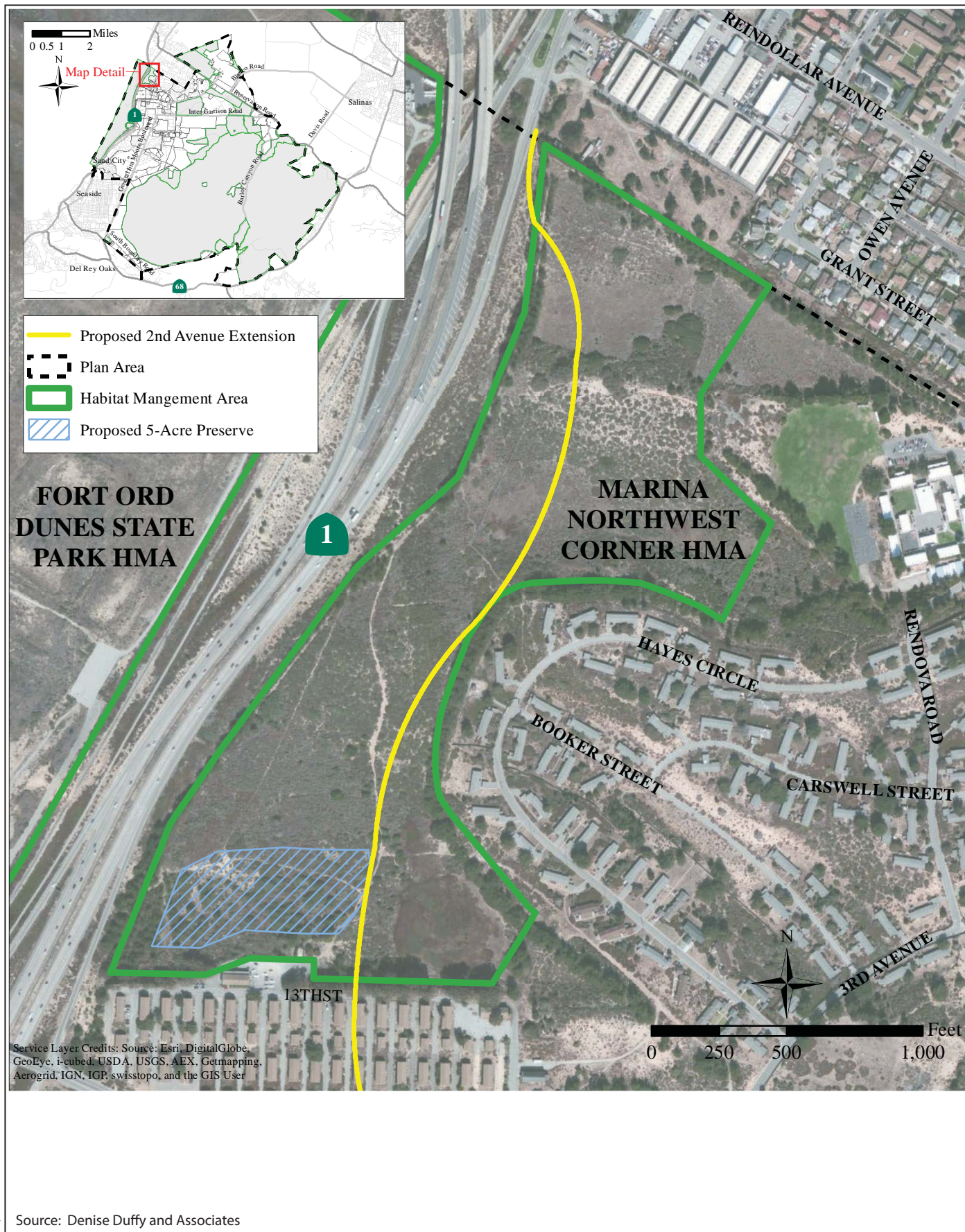


Figure 3-22
NW Corner Preserve and Roads

3.3.3.3 Recreational and Educational Use

HMA recreational and educational use would be a covered activity. Although the primary focus in most of the HMAs is the implementation of HCP required mitigation and monitoring actions (Chapter 5 and Chapter 6), development with restrictions is included as a covered activity in all HMAs to support public recreation and open space uses or teaching and research activities. Public access is only currently permitted at the FONM and FODSP along designated trails. Several other HMAs also anticipate allowing future public access along designated trails. (See Chapter 5, Section 5.4.4 for avoidance and minimization measures for public use in HMAs.). Educational use may be implemented in the form of guided tours or educational panels within the HMAs, especially in the interests of promoting actions in the community that would aid in preservation of native habitats and species. Recreational use may include active and passive activities, such as hiking, walking, running, biking, bird watching, horseback riding, and wildlife viewing. These activities would be designed and conducted to minimize adverse effects to all HCP species.

3.3.3.4 Beach Management

Beach management activities include marine mammal rescue, assistance of stranded boats, law enforcement, removal of hazardous materials, and any other activities associated with public safety. All beach management activities are covered by this HCP. These activities would be implemented in a way that would minimize impacts on any HCP species (see Chapter 5, AMM-27). These management activities are unpredictable and difficult to quantify, but the amount of take would likely be small.

3.3.4 Future Road Corridors and Infrastructure Construction, Operations, and Maintenance in HMAs

Road corridors and infrastructure construction, operation, and maintenance in HMAs would be covered activities under the HCP. The following covered activities would typically be implemented by a Permittee or third party applicant that is not the HMA land owner or manager.

3.3.4.1 Future Road Corridors Construction, Operations, and Maintenance in HMAs

The Fort Ord Reuse Plan and the Army's HMP accommodated several areas identified as "Future Road Corridors" through habitat reserve areas and/or restricted development areas (Figure 3-4). These future road corridors are development that would take place in addition to the allowable development described above and are typically implemented by a Permittee that is not the HMA owner or manager. One such road corridor, connecting Reservation Road with Inter-Garrison Road through the East Garrison Reserve, has been designed to avoid isolating and fragmenting habitat in the HMA in conformance with conditions of the USFWS-approved modifications to the HMP in the East Garrison Area. As a result of the East Garrison-Parker Flats Land Use Modifications approved in May 2002, this road, called the East Garrison Connector, is now incorporated as a designated development parcel in the HMP (HMP parcel E11a.1). It comprises 7.3 acres in the northwest portion of East Garrison.

A Multi-Modal Transportation Corridor (MMTC) linking Salinas to Fort Ord by a variety of transportation methods, including light rail, was proposed through the UC/NRS South Reserve HMA in the Fort Ord Reuse Plan and HMP. The alignment of that corridor has since been changed and

associated easements dissolved. The corridor was also proposed to follow the existing alignment of Inter-Garrison Road and the proposed East Garrison Connector Road (described above) through adjacent HMAs (i.e., East Garrison North, Habitat Corridor/Travel Camp, and the Landfill Parcel. This alignment of the MMTC would have encompassed the future widening of Inter-Garrison Road (FORA CIP Project FO6, Table 3-7b). Therefore, with the MMTC alignment no longer proposed along Inter-Garrison Road, the Inter-Garrison Road widening would encroach into the East Garrison North (i.e., 7.5 acres) and Habitat Corridor/Travel Camp (10.5 acres) HMAs based on conceptual plans. The approved MMTC alignment avoids impacts to all HMAs (Figure 3-4). Two other HMAs have future road corridors identified in the Fort Ord Reuse Plan and addressed in the HMP; however, the alignments of both of these corridors have changed so that they do not impact the HMAs: Marina Airport Habitat Reserve and Marina Northwest Corner. The future road corridor in the Marina Airport Habitat Reserve, according to the text of the Army's April 1997 HMP (documented in Appendix C of the HMP), is a six-lane arterial roadway to be located along the northerly edge of the parcel. This road right-of-way would be about 135 feet wide and extend about 1,740 linear feet (5.4 acres). The parcel boundary and road alignment have been altered since the 1997 HMP to exclude the HMA. As such, the roadway would run adjacent to the airport reserve not through it (Figure 3-22). The roadway along the Marina Northwest Corner parcel would be a four-lane arterial with a 122-foot-wide right-of-way. The alignment of this road would avoid any Yadon's piperia, including a suitable buffer area. The roadway would run adjacent to the reserve's northwest boundary not through it. Construction and maintenance of these two roads are covered activities under this HCP.

The City of Marina is in the process of preparing an Airport Master Plan Update for the Marina Municipal Airport that was not previously addressed in the HMP (Section 3.3.4.4, *City of Marina – Airport Master Plan Update*). This proposed plan will result in future improvements at the airport, including a future road that may be constructed on the eastern end of the runway to provide access to the designated development area to the north of the airport. Due to Federal Aviation Administration regulations, the road may be required to encroach into the Salinas River HMA and impact approximately 3 acres. The future operation and maintenance of the road would not result in additional impacts as the road right-of-way would be maintained as paved and/or gravel areas lacking suitable HCP species habitat.

3.3.4.2 Utilities, Easements, and Rights-of-Way Construction, Operations, and Maintenance in HMAs

Utilities, easements, and rights-of-way exist or may exist in HMAs throughout the former base. Water, gas and electric lines, and ancillary facilities to support these services (e.g., water tanks, towers) exist and would likely need to be improved and increased as base redevelopment proceeds. The requirements to avoid and restore habitat disturbed within the HMAs and corridor areas for operation, maintenance, and replacement of utility systems in utility easement areas in the HMAs are the same as applied to the fee title grantee of the HMA and/or corridor area. Coordination of the proposed actions and compliance with the requirements of this HCP are the responsibility of the HMA owner and manager.

Following are the projected operation and maintenance activities and proposed improvement projects in habitat areas for the MCWD. The operation and maintenance of PG&E transmission lines within HMAs are discussed below in Section 3.3.6, *Activities Not Covered by the HCP*. However, in the event that additional utility requirements are identified in habitat areas or new utility requirements through habitat areas become necessary to support reuse, they would need to be addressed separately from the permitted uses of this HCP (see Chapter 8, Assurances). The impact assessment

for the construction of new MCWD facilities in HMAs assumes that ground-disturbing effects will be the same as development and considered permanent. However, for some of the facilities (e.g., pipelines), the ground disturbance will be temporary and HCP plant species may be able to recolonize the disturbed areas. The maintenance activities are assumed not to result in take as the facilities and access easements would be maintained as developed areas lacking suitable HCP species habitat.

3.3.4.2.1 Marina Coast Water District Facilities

In 1997, FORA selected the MCWD from among other competing companies to receive the Fort Ord water and wastewater collection systems. The conveyance process was completed in late October 2001 when the Army transferred the deeds to FORA and FORA in turn transferred the property to MCWD. In June 2004, MCWD released its CIP (Capital Improvement Programs) for former Fort Ord that identifies the construction of new storage tanks and booster/lift stations and installation of wells and pipelines within or adjacent to HMAs. Since the 2004 Capital Improvement Program, the MCWD has reprioritized the projects and identified new projects that are required to supply water to the former Fort Ord (Table 3-7b and Figure 3-23). Descriptions of the operation and maintenance activities and the projects are provided in Appendix D. Covered MCWD projects within HMAs are summarized in Table 3-11.

MCWD facilities and associated activities in HMAs include new water distribution pipelines and tank improvements and construction in the Habitat Corridor/Travel Camp, East Garrison North, and FONM; well abandonment in the FONR; and improvements to the wastewater lift station in the State Park (Table 3-8 and Figure 3-23). Potential MCWD development on FONM would be part of BLM's 2% development allowance only if approved and authorized under a BLM right-of-way and, if necessary, re-initiation of BLM's Section 7 consultation. Thus, MCWD development is not in addition to other BLM development in the FONM.

The maximum extent of area in HMAs that could be affected by the construction of MCWD facilities is 36.0 acres (Table 3-8). Assuming a 100-foot corridor for construction of the proposed pipelines 11, 32.8 acres in HMAs could be affected. The construction of pipelines could include associated system connections, site drainage, and tank overflow facilities. The construction of the proposed Huffman Tank could affect 0.5 acre in the FONM HMAs. The construction activities associated with the proposed storage tank could consist of clearing, grading, excavation or placement of soil, and concrete foundations. The abandonment of Well 29 could affect 0.5 acre in the FONR SR HMAs. The improvements to the Ord Village Lift Station could affect 2.6 acres in the State Parks HMA. These development activities would be in addition to any allowable development in the HMAs (i.e., FONR, Travel Camp, FONM, and State Parks HMAs) or considered allowable development in HMAs where development was not previously addressed in the HMP (i.e., East Garrison North and Habitat Corridor). Access to these facilities would occur within existing roads and easements. The final design of these facilities has not been completed and it may be feasible for many of these facilities to be installed below the existing paved roadways, and, therefore, no vegetation would be removed. The construction of new facilities as described herein for MCWD are covered activities under this HCP. If HMA lands are impacted as a result of these activities, MCWD would be responsible for

¹¹ The assumed corridor width for the Inter-Garrison Road Pipeline Replacement project is 50 feet; all other pipeline corridors are assumed to be 100 feet.

restoring impacted areas to their previous condition. The future operation and maintenance of these facilities would not result in additional impacts as the existing access roads and easements would be maintained as paved and/or gravel areas lacking suitable HCP species habitat.

Table 3-11. Covered MCWD Projects within HMAs

MCWD Project	Project Description	Location	Impact Area	HMA
East Garrison Pipeline	Install pipeline from Reservoir B4/B5 to East Garrison	South of InterGarrison Road within Habitat Corridor/Travel Camp HMA	1,348 linear feet with 100-foot wide corridor = 3.1 acres total	Habitat Corridor/Travel Camp
Well 29	Destroy Well 29; add standby mode and disinfection	Within MCWD easement on north side of Old County Road within FONR South	0.5 acre	FONR (South Reserve)
Reservoir C2 Pipeline	Install new pipeline from Reservoir C2 to Watkins Gate Road	Pipeline alignment follows Watkins Gate Road and existing gravel road from Reservoir C2 to Watkins Gate within Habitat Corridor/Travel Camp	4,600 linear feet with 100-foot wide corridor = 10.6 acres total	Habitat Corridor/TravelCamp
East Garrison Phase 4 Pipeline	Install new pipeline to serve East Garrison along unpaved roads	Alignment follows unpaved roads within Habitat Corridor/Travel Camp	2,761 linear feet with 100-foot wide corridor = 6.3 acres total	Habitat Corridor/Travel Camp
Reservoir C2 and Pipeline	Construct pipeline from tank to InterGarrison Road	Pipeline alignment follows unpaved road from Reservoir C2 to InterGarrison Road (or alternatively may follow existing trail straight down hill through vegetation); portion of alignment lies within Habitat Corridor/Travel Camp; however, the northern portion may fall within designated development parcel (to be determined during design)	3,458 linear feet with 100-foot wide corridor (7.9 acres); existing parcel 0.92 acre but need 1.92 acres for tank improvements and operation = 9.8 acres total	Habitat Corridor/Travel Camp

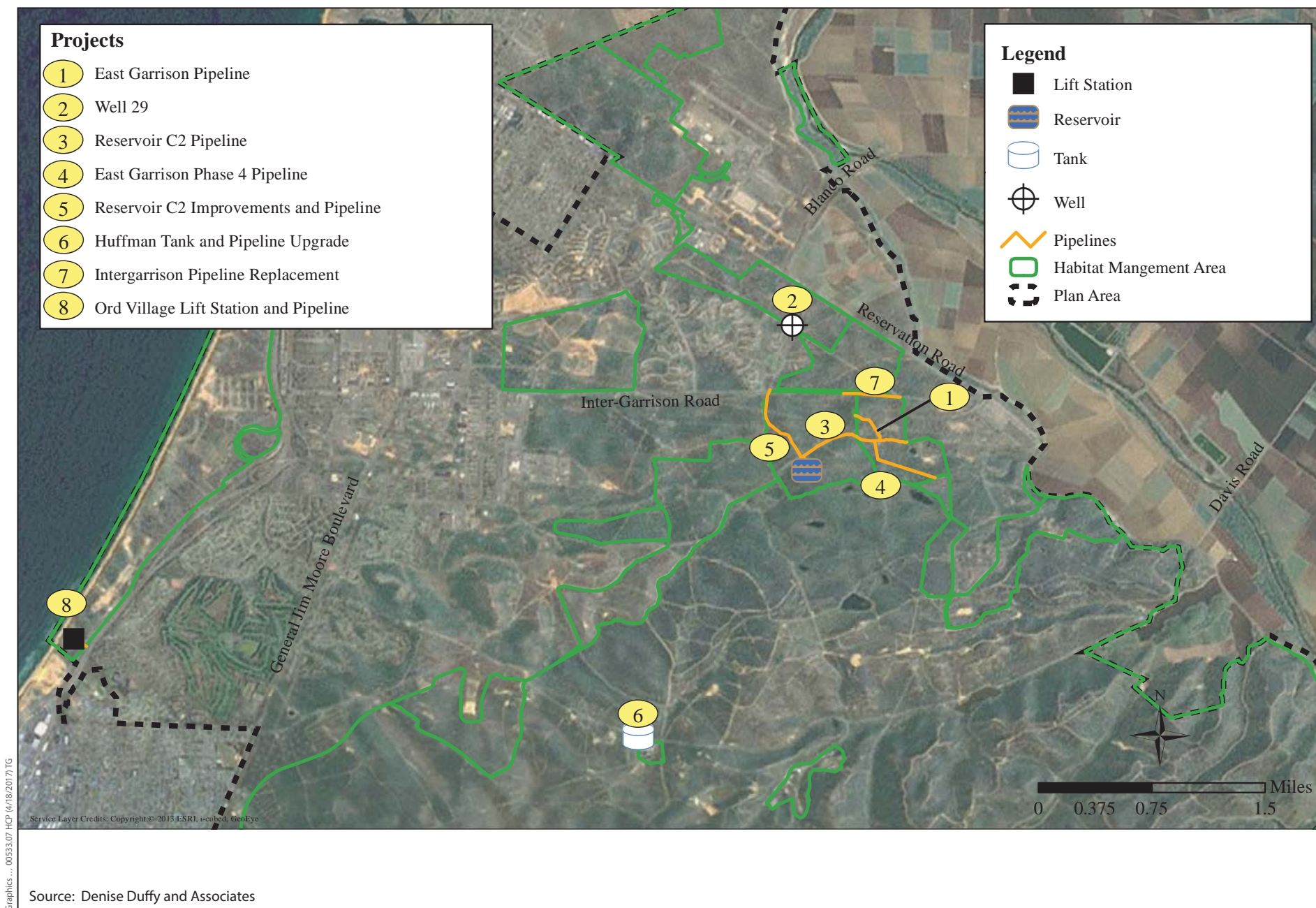


Figure 3-23
Marina Coast Water District Potential Projects

MCWD Project	Project Description	Location	Impact Area	HMA
Huffman Tank and Pipeline Upgrade	Replace Huffman Tank and upgrade pipeline from tank to Eucalyptus Road	FONM and within BLM Headquarters parcel; portion of pipeline runs cross-country (approximately 4,000 feet) but upgrade will occur in existing roadway; tank replacement will occur within 0.5-acre footprint but may need to be in new location	Assume pipeline within existing roadway but tank construction will require impacts to vegetated area = 0.5 acre total	FONM; within existing easements to MCWD from Army
InterGarrison Pipeline Replacement	Replace water supply pipeline along InterGarrison Road	InterGarrison Road, possibly along road shoulder but will be off-pavement and likely affect vegetation	Assume 2,000 linear feet and 50-foot wide corridor plus 50 square feet on both ends (100,100 square feet) = 2.3 acres total	East Garrison North; Habitat Corridor/Travel Camp
Wastewater CIP Project—Ord Village Lift Station	Upgrade existing pump station and pipeline	0.91-acre parcel on southern end of State Parks, east of Highway 1	1.91 acres with 300-foot pipeline with 100-foot wide corridor (0.69 acre) = 2.6 acres total	State Parks

3.3.4.3 Fort Ord Recreational Trail and Greenway

The Fort Ord Recreational Trail and Greenway (FORTAG) is proposed as a continuous 12-foot wide paved bikeway with an open-space buffer on both sides incorporating habitat and existing parks, playing fields, developed outdoor recreation sites, associated amenities, unpaved trails, and agriculture (Figure 3-24 through Figure 3-30). This development, not previously considered in the HMP, will intersect development parcels and HMAs. The “greenway” component is based on the concept of maintaining an open-space buffer extending at least 150 feet on each side of the trail for the majority of its length and the linked bike ways will be on development parcels. The proposed alignment is in conceptual planning phase. As currently proposed, the northern loop of FORTAG encircles Marina, following a 13.08-mile route that includes 2.56 miles of the existing “Coastal Recreational Trail.” The southern loop of FORTAG encircles Seaside and bisects Del Rey Oaks, following a 15.90-mile route that includes 4.73 miles of the existing coastal trail system. The two main loops combined and connected total 29.91 miles of trail, including 7.47 miles of the existing “Coastal Recreational Trail.” Additional segments are being considered as potential alternatives or future pursuits. The main FORTAG trail system connects with spurs that lead into existing and planned municipal bike/pedestrian infrastructure. Several sections of the paved trail would be accompanied by nearby unpaved trails running loosely parallel to the main paved trail. Many of these unpaved trails already exist; new unpaved trails are not proposed as part of this covered

activity. It is likely that FORTAG would involve three underpasses and one overpass for pedestrians and bikes.

Due to its conceptual nature, it is assumed that the paved trail will be 12 feet wide, with median striping and 2-foot buffers on either side to facilitate a safe line of sight and to reduce obstruction by overhanging vegetation. The paving material could be asphalt or a natural alternative such as GraniteCrete. It is also assumed that, within HMAs, the trail will be constructed within a 52-foot-wide construction limit, with the exception of a few designated locations for staging and underpass construction, to provide a sufficiently wide corridor for future design, planning, and engineering to occur and account for any potential constraints in the alignment location. During construction, HCP avoidance and minimization measures will be applied. Post-construction, temporary construction limits will be revegetated. The future operation and maintenance of the trail would not result in additional impacts as the trail right-of-way would be maintained as paved and/or gravel areas lacking suitable HCP species habitat.

Several HCP measures address the immediate impacts of FORTAG trail construction and the possible long-term impacts to HCP species in HMAs. These are Avoidance and Minimization Measure-20, 21 24 and 27 (Section 5.4.2-5.4.4), Monitoring Measure-10 (Section 6.3.1.4), and Adaptive Management Measure-2 (Section 6.8.1).

3.3.4.4 City of Marina—Airport Master Plan Update

The City of Marina adopted an Airport Master Plan Update for the Marina Municipal Airport in June 2018 that was not previously addressed in the HMP (Figure 3-31). This plan will result in future improvements at the airport and an updated long-term development program for the continued operation of a safe, efficient, and environmentally sensitive airport facility. Potential airside (e.g., runways, taxiways, navigational aids, markings, lighting) and landside (e.g., hangars, apron areas, terminal building) development alternatives are in the process of being developed. At present, Runway 11-29 is planned to be extended from 3,483 feet to 5,800 feet in the long term. While the current runway length is adequate to meet the needs of current users, to accommodate more activity by larger turboprop and small business jet, a runway length of 4,000 to 5,000 feet would be needed. An ultimate runway length of 5,800 feet is planned for the airport. The runway extensions, corresponding modified taxiways, and runway safety zones would extend into a portion of the Marina Airport HMA west of the runway, which may result in impacts to approximately 30 acres with the 130-acre HMA. In addition, a future road may be constructed on the eastern end of the runway to provide access to the designated development area to the north of the airport. Due to Federal Aviation Administration regulations, the road may be required to encroach into the Salinas River HMA and impact approximately 3 acres. The future operation and maintenance of the road would not result in additional impacts as the road right-of-way would be maintained as paved and/or gravel areas lacking suitable HCP species habitat.

3.3.5 HCP Required Actions that may Result in Take

HCP required actions described in Chapter 5, *Conservation Strategy*, and Chapter 6, *Monitoring*, would be covered activities under the HCP. Avoidance and minimization measures and mitigation measures implemented as part of the conservation strategy are HCP required actions that are designed to avoid, minimize, or mitigate the impacts of the activities covered under the HCP. These actions are mandatory to meet the ESA and CESA permit requirements. All HCP required actions are expected to result in a net long-term benefit for HCP species and natural communities. Avoidance

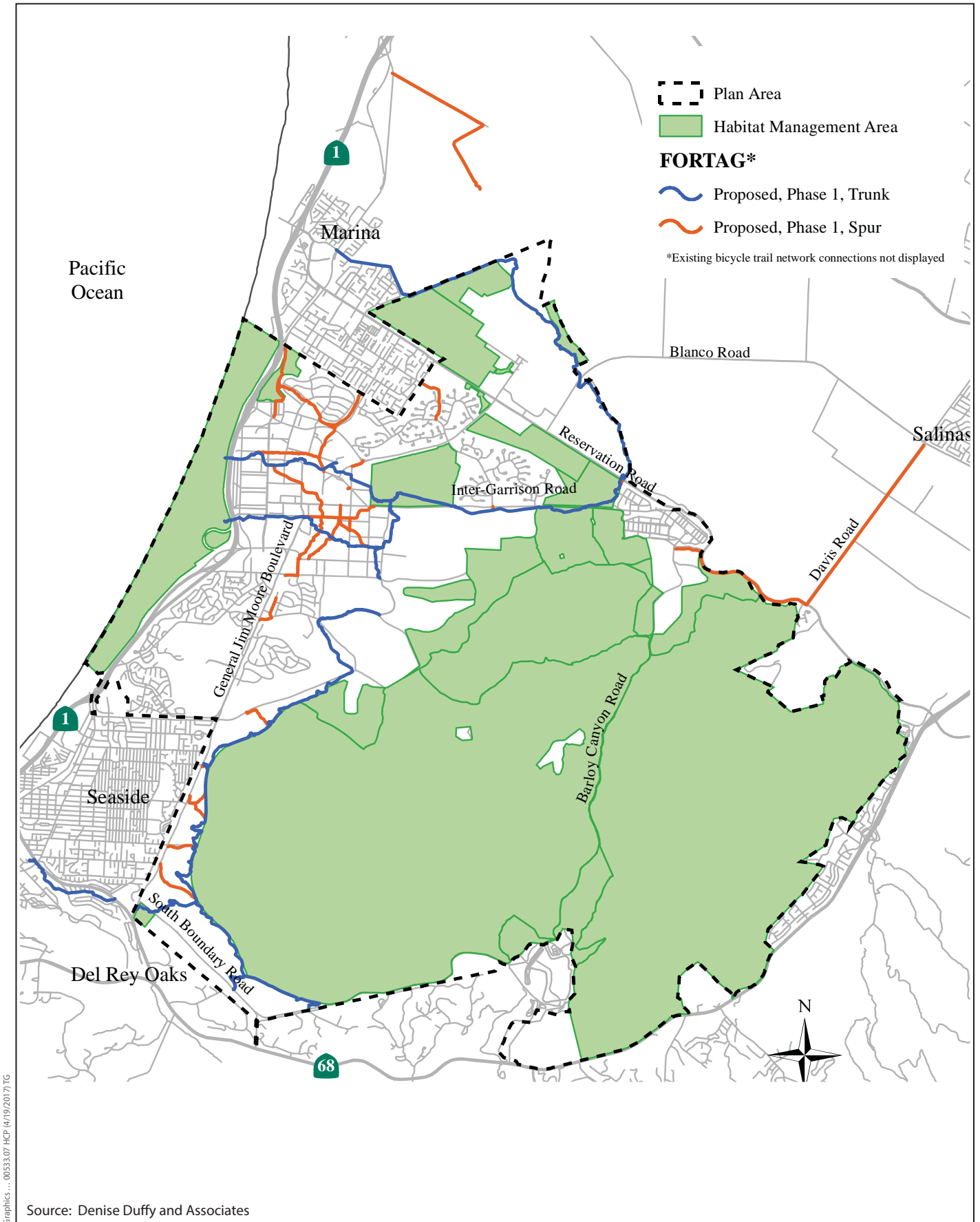


Figure 3-24
FORTAG Conceptual Alignment

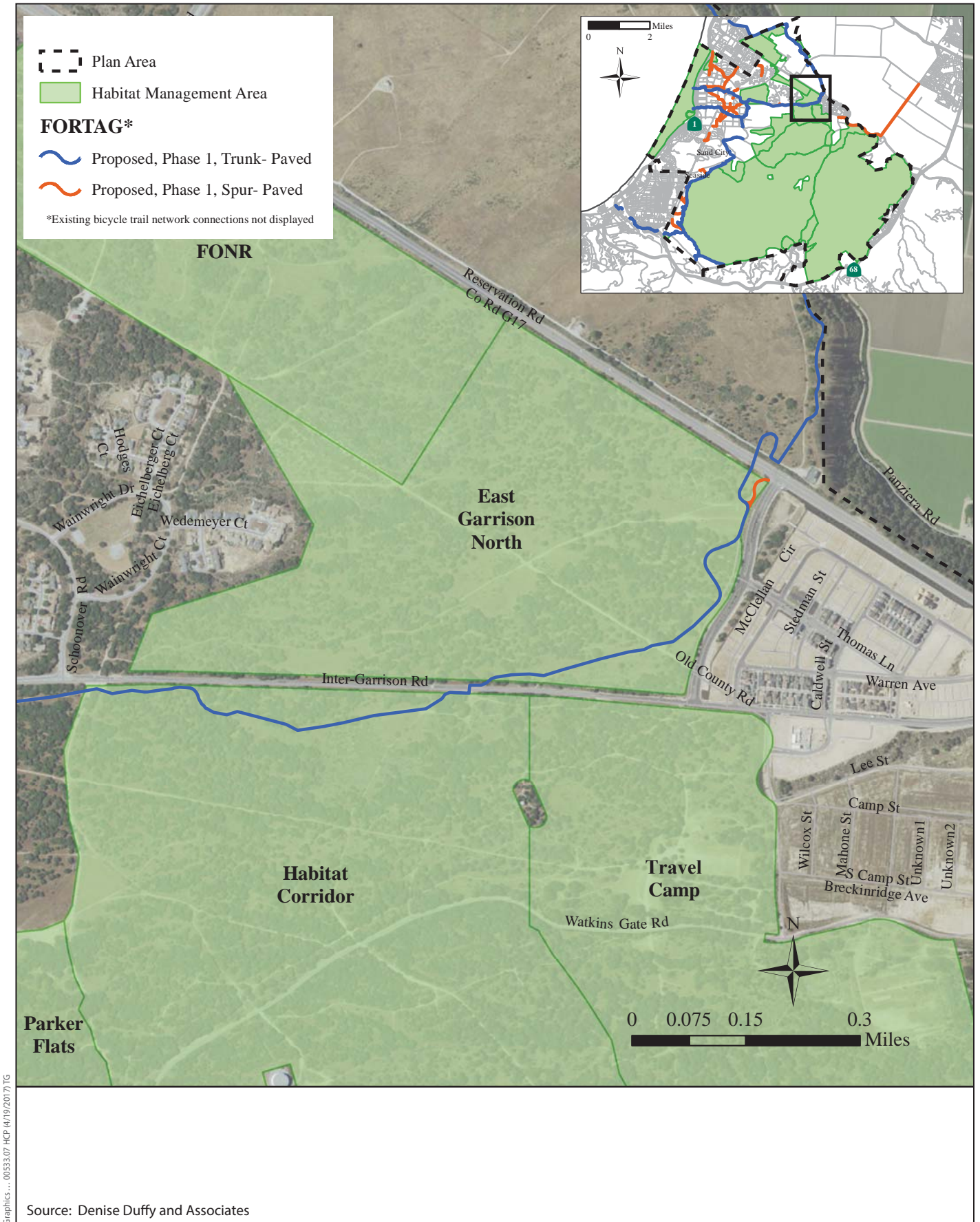
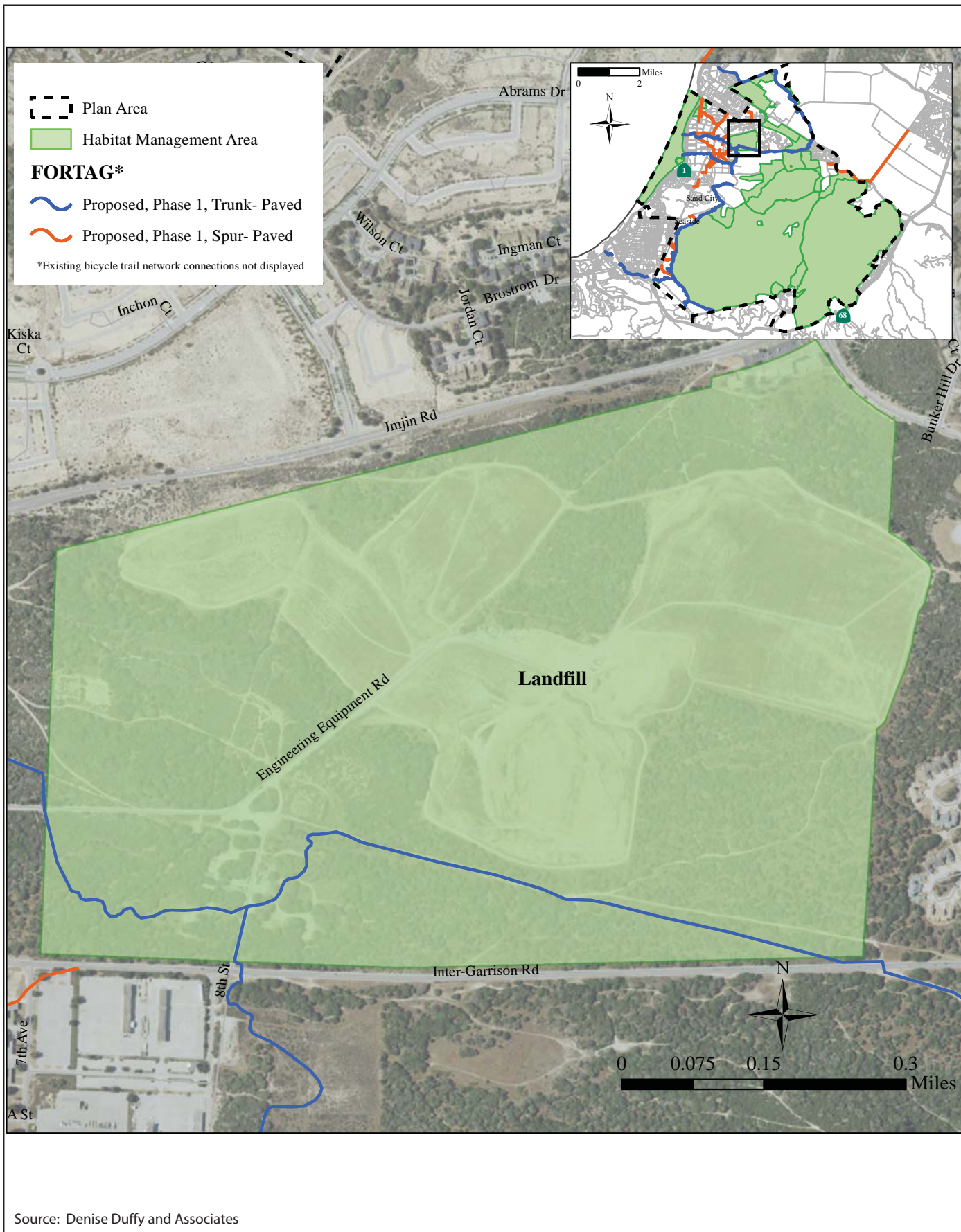


Figure 3-25
East Garrison North & Habitat Corridor HMAs—
FORTAG Conceptual Alignment



Source: Denise Duffy and Associates

Figure 3-26
Landfill HMA—
FORTAG Conceptual Alignment

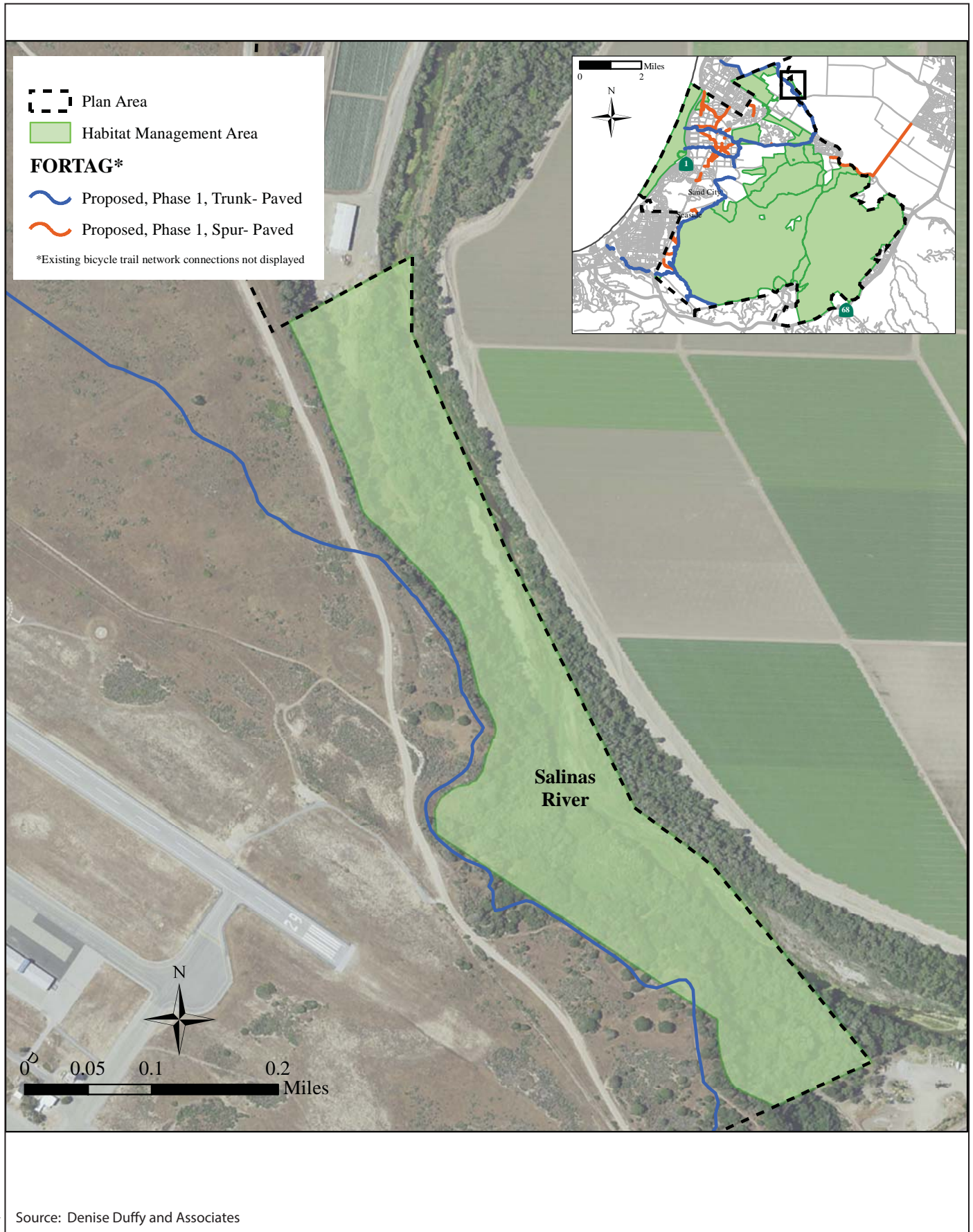


Figure 3-27
Salinas River HMA—
FORTAG Conceptual Alignment

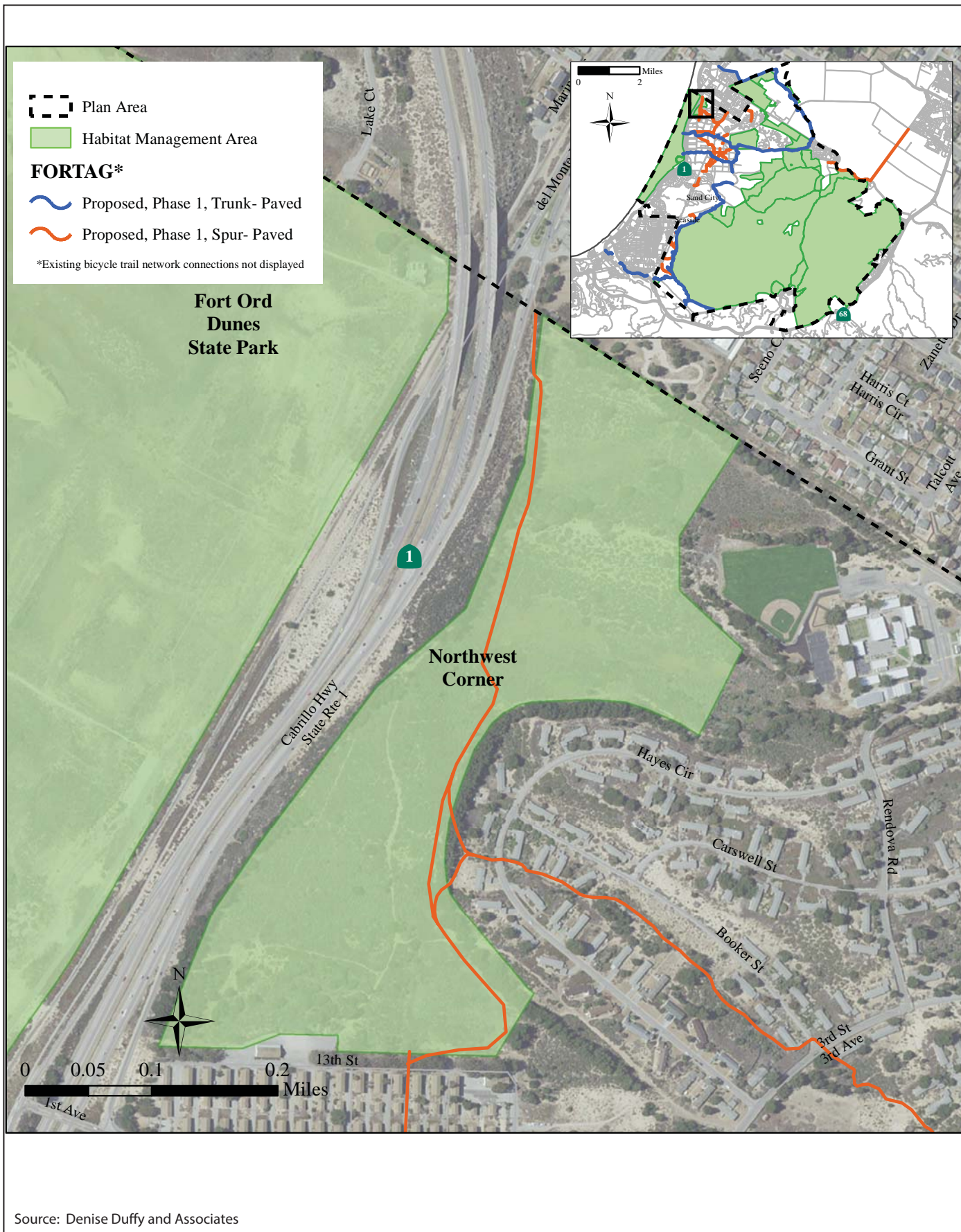
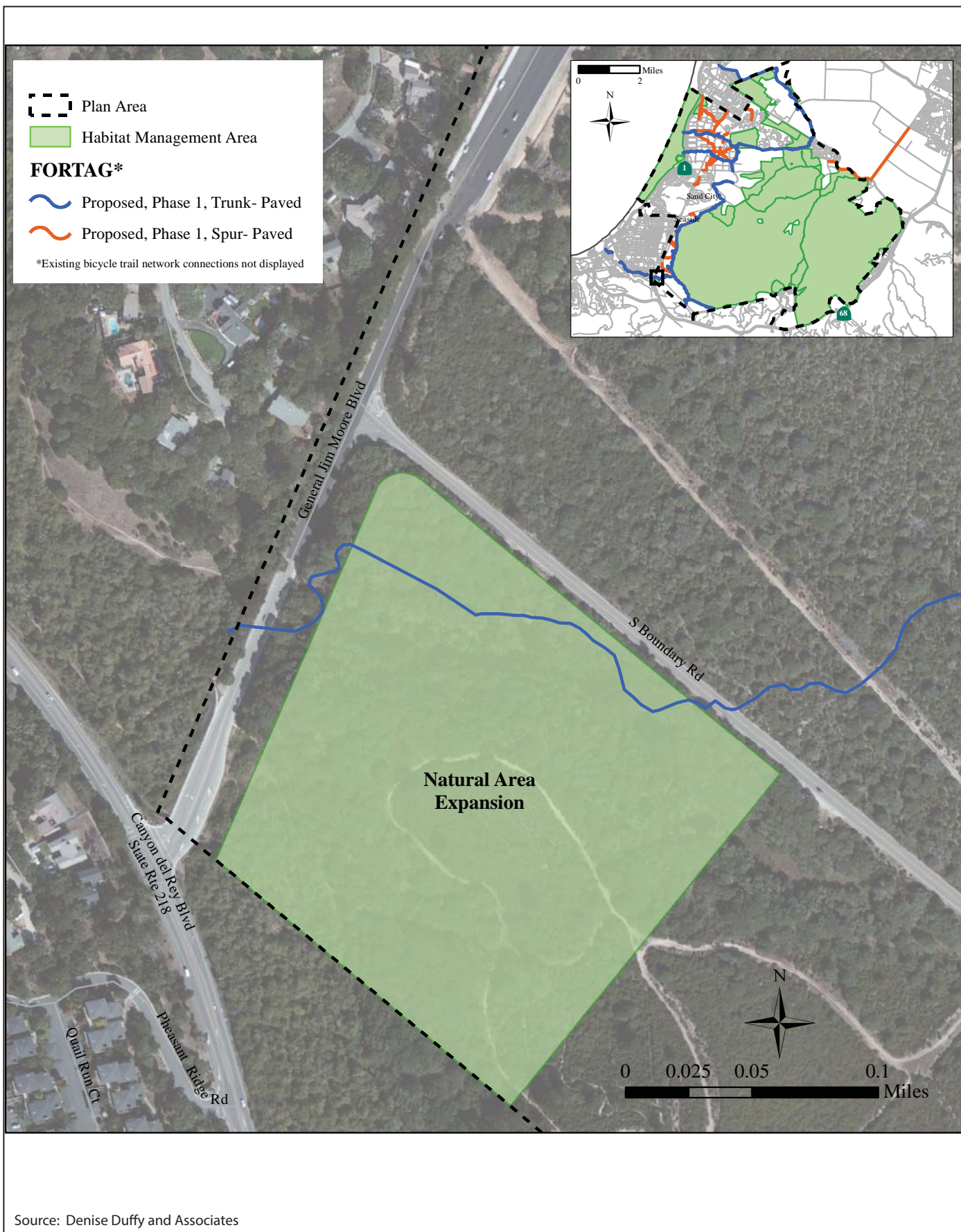
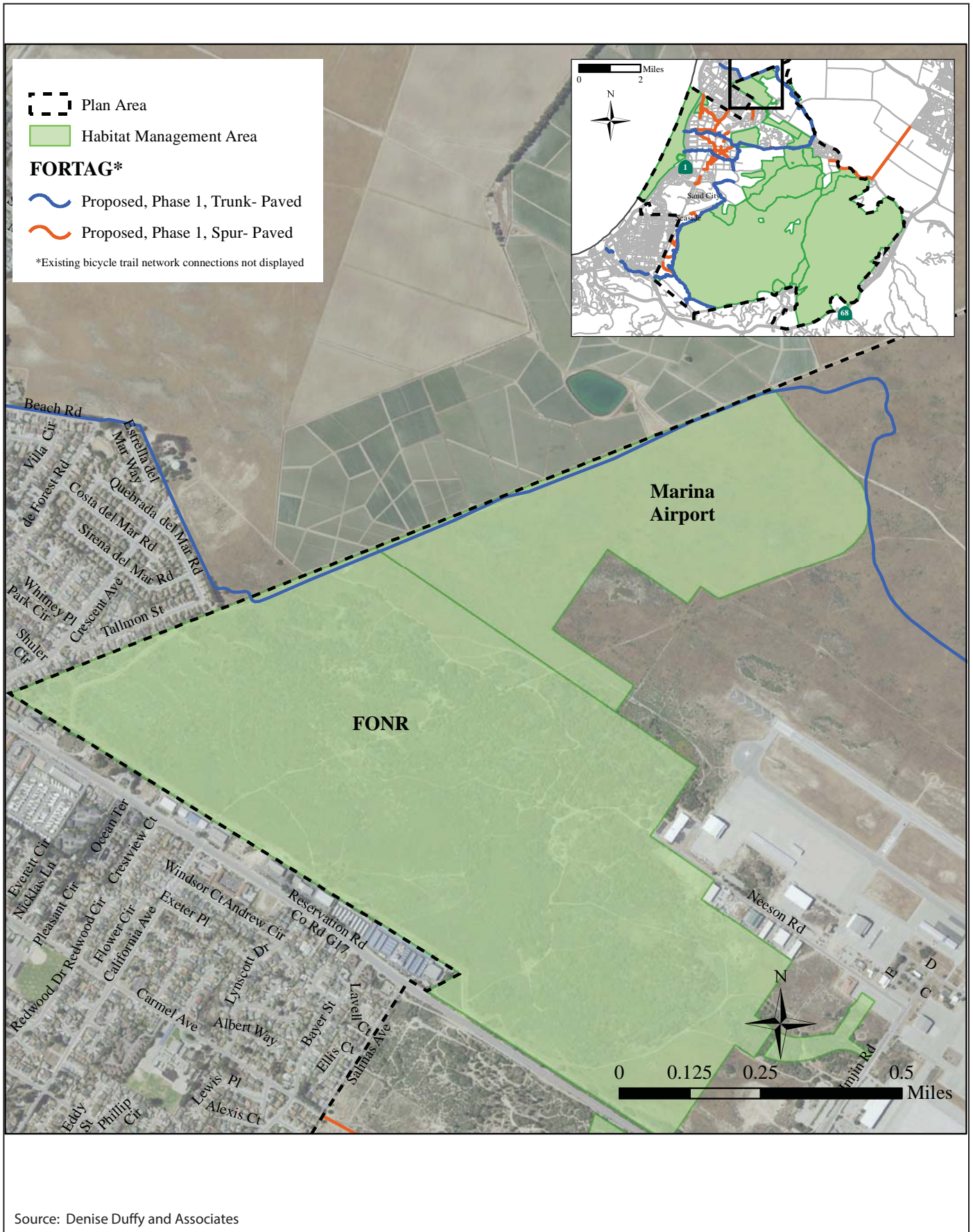


Figure 3-28
Marina Northwest Corner HMA—
FORTAG Conceptual Alignment



Source: Denise Duffy and Associates

Figure 3-29
Natural Area Expansion HMA—
FORTAG Conceptual Alignment



Source: Denise Duffy and Associates



Figure 3-30
UC FONR & Marina Airport HMAs—
FORTAG Conceptual Alignment

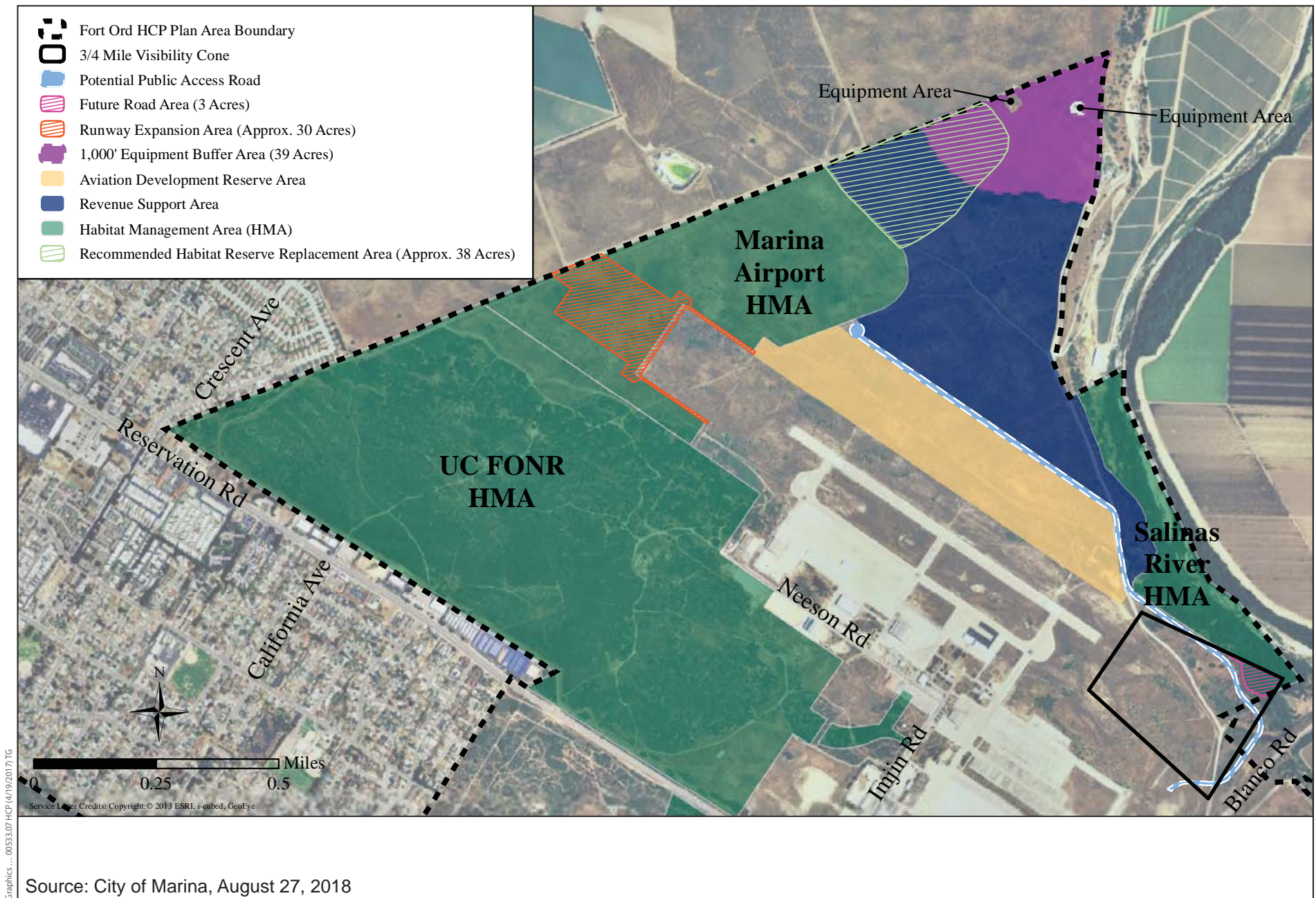


Figure 3-31
Marina Airport Impact Map

and minimization measures were designed to minimize or avoid impacts to HCP species (Chapter 5); however, some HCP required actions may have temporary or short-term adverse effects and may result in limited take of covered species (Chapter 4). The following is a summary of those HCP required actions that may result in impacts to HCP species.

- **Revegetation, restoration, and enhancement.** Revegetation, restoration, and enhancement would generally be disruptive only in the short term because these activities may involve soil disturbance, removal of undesirable plants, and limited grading. All habitat enhancement and restoration activities conducted in the HMAs that are consistent with the requirements of the HCP would be covered by the permits.
- **Prescribed burning and alternative vegetative management.** Prescribed fire and wildfire suppression strategies play an important role in perpetuating desired future conditions for stands of maritime chaparral in the HMAs. Prescribed burning would be conducted on a rotational basis with a patchwork of burned and unburned areas to maintain food and shelter for HCP animal species inhabiting planned burn sites. Alternative vegetative management would be conducted in areas where prescribed burns are not feasible and pose a risk to public safety. Techniques may include mechanical mowing, livestock grazing, and trimming.
- **Non-Native Invasive species control.** Integrated vegetation management methods would be used to control the spread and reduce the abundance and distribution of noxious weed infestations. The goal is to limit the overall area of individual infestations to no more than 5% of the total area of habitat. A combination of standard methods and research-oriented treatments would be employed, including manual removal, mowing, use of gas powered weed cutters, propane torches, hand spraying herbicide or vinegar, livestock grazing, and prescribed burning (both in and out of season) to contain, reduce, or remove infestations of non-native plant species. AMMs for methods to be followed in non-Federal HMAs are specified in Section 5.4.10, *Avoidance and Minimization Measures for Non-Native Invasive Species Control*.

BLM's non-native species eradication involves acacia mechanical removal and herbicide application by teams of five crewpersons and a botanist on roughly 500 acres per year. The most common non-natives being eradicated are: spotted knapweed (*Centaurea maculosa*), Spanish broom (*Spartium junceum*), French broom (*Genista monspessulana*) African ice plant (*Carpobrotus edulis*), Scotch thistle (*Onopordum acanthium*), European gorse (*Ulex europaeus*), waxy manna grass (*Glyceria declinata*), jubata grass (*Cortaderia jubata*) and pampasgrass (*Cartaderia selloana*). This weed abatement and herbicide treatment/mechanical removal is currently paid for by U.S. Army. Within the permit term, the Army will complete CERCLA commitments on BLM lands and the funding may cease. At that time, Permittees will fund parts of the program as a measure of the HCP. The Record of Decision on vegetation treatments (2016) allows Aminopyralid, Floroxypyr, and Rimsulfuron. The Biological Opinion for BLM ongoing activities on FONM as amended in 2017 states that Roundup must not be used within 100 feet of open water in potential or known California tiger salamander breeding habitat. Rodeo, or an equivalent with no-to-low aquatic toxicity must be used in that zone (U.S. Department of the Interior, 2017).

State Parks' non-native species eradication policy dictates that programs to manage exotic species will be designed to avoid causing significant damage to native species, natural ecological communities, natural ecological processes, cultural resources, and human health and safety. There are two objectives of State Park's pest control program. First, when chemical treatment is the only effective method, use chemicals (i.e., formulations, applications, or by-products) which:

1) are target specific; 2) do not persist in the environment; 3) do not damage resources; or 4) are least hazardous for humans to handle. Second, it complies with all Federal, State, and County laws, regulations, and ordinances. Acreages treated varies per year because it is dependent on the amount of funding that is available as well as the size of the infestations. The current treatments are performed by a Natural Resource Crew and also additional contracted workers, using Glyphosate (AquaNeat, Aquamaster, Roundup Pro Concentrate), Clethodim (Envoy Plus), Triclopyr (Garlon 4 Ultra), Aminopyralid (Milestone), Imazapyr (Polaris), Imazapyr (Stalker), and Chlorsulfuron. The main non-native species being eradicated are: slender iceplant (*Conicosia pugioniformis*), African iceplant, Crystalline iceplant (*Mesembryanthemum crystallinum*), veldt grass (*Ehrharta calycina*), French broom, jubata grass, mustard (*Hirschfeldia incana*), European beach grass (*Ammophila arenaria*), annual grass (*Bromus diandrus* + others), Fennel (*Foeniculum vulgare*), Tea tree (*Leptospermum laevigatum*), and Acacia (*Acacia sp.*)

- **Erosion control for habitat restoration and enhancement.** While wind, sheet, rill, and gully erosion are natural processes in the maritime chaparral landscape, accelerated erosion is normally associated with road construction and maintenance (or lack of maintenance) and former military training. Erosion control activities would focus on reducing the source of erosion such as concentrated runoff, point discharges, gullies, and other drainage problems, especially associated with impervious surfaces, disturbed landforms, roads, and trails. Restoration of eroded or otherwise disturbed areas should recreate characteristics similar to natural functioning undisturbed parts of the nearby landscape.

BLM's erosion control activities are targeted to old road restoration and gullies on old trails, and involve the use of backhoes, volunteers using shovels, and are overseen by BLM staff. Areas are under 5 acres per site, and outcomes are monitored for future procedural improvements.

- **Monitoring.** Status and trends monitoring, as well as effectiveness monitoring, is required by the HCP (Chapter 6). Monitoring required by the HCP could result in trampling of HCP species or temporary habitat degradation but these are expected to be infrequent impacts because of the number and awareness of the personnel assigned to conduct the monitoring.

3.3.6 Activities Not Covered by the HCP

The activities discussed in this section were included in the HMP analysis but are not part of the HCP. These activities, therefore, are not covered by the Federal or state permits, and are excluded from the above description of covered activities. This is not an exhaustive list. These specific projects are identified because they are addressed in the HMP or the Base Reuse Plan. The organizations involved with the activities described below, such as PG&E, have and will follow separate ESA and CESA compliance processes for their actions.

3.3.6.1 Highway 1 and Transportation Easement—State Route 68 Corridors

The Highway 1 corridor is the principal state highway paralleling Monterey Bay along the western edge of the Plan Area. It has been maintained as a Caltrans right-of-way through the base during the Army's tenure, but title to most sections of the route has been transferred directly to Caltrans. The highway would continue to be used for transportation purposes and may be used for expansion or improvements of transportation systems. The HMP requires Caltrans to preserve and restore

habitats in road shoulders and medians in areas that would not conflict with anticipated highway expansion, improvements, operations, or maintenance.

Compliance with the HMP is required in the deed restrictions for the parcels Caltrans has and would receive. As such, Caltrans would implement the conditions of the HMP. However, Caltrans has declined to participate in the HCP (Appendix B). Any maintenance, improvements, expansion, or other work in the Highway 1 corridor are not activities covered by this HCP. Any future plans by Caltrans to conduct maintenance, improvements, expansion, or other work in the Highway 1 corridor is not mitigated in any way by activities which are required under this HCP. Any mitigation activities that Caltrans would subsequently undertake to mitigate impacts of activities in the Highway 1 corridor would be measures over and above those which are required as part of this HCP.

The Transportation Easement–SR 68 corridor is generally a 1,000-foot-wide study corridor for a proposed new route for SR 68 along the southern part of the Plan Area (Figure 1-2). The SR 68 corridor is not a distinct parcel but an easement through several separate FONM and other parcels (HMP parcels L4.2, E29e, E29b.1, F1.4, F1.5, F1.7.1, S4.2.1, S4.2.3, L20.3, L20.5, and F1.1). The portions of the easement through the FONM total 647 acres and the developed portion of this right-of-way would be 300 feet wide. Work by Caltrans on this easement is not a covered activity under the HCP.

As an alternative to a new SR 68 corridor, Caltrans is studying improvements to the existing SR 68 corridor which would also require use of the Plan Area lands adjacent to the existing highway. Caltrans has indicated that its route selection process and NEPA/CEQA documentation for the SR 68 corridor have been stalled but the agency wishes to keep options for two alignments open: an upper alignment and a lower alignment along the existing SR 68.

Caltrans would coordinate with BLM regarding interim management and monitoring of the proposed state right-of-way until such time that route selection is finalized and a project could be constructed. In the event that a project is proposed to be constructed, Caltrans would consult directly with USFWS and CDFW and independently obtain all necessary permits, authorizations, and approvals from those agencies. Caltrans has already contributed \$250,000 toward base-wide habitat restoration by enabling the removal of all hardstand areas around the inland ranges that are to be transferred to BLM. This does not count as HCP required mitigation. Caltrans may also continue to participate in base-wide habitat management planning through the CRMP program. Any future plans by Caltrans to build or maintain a public highway within the SR 68 easement is not mitigated in any way by activities which are required under this HCP. Any mitigation activities that Caltrans would subsequently undertake to mitigate impacts of activities in the Highway 68 Transportation Easement would be measures over and above those required as part of this HCP.

3.3.6.2 Pacific Gas and Electric Company Operations

The Pacific Gas and Electric Company (PG&E) will continue to operate and maintain all gas and electric transmission and delivery in the Plan Area through easements granted by the Army. To meet the needs of customers and to satisfy the California Public Utility Commission's requirements to offer "adequate, efficient, just, and reasonable" service, PG&E must construct, operate, and maintain safe and efficient gas and electric service. However, PG&E facility operation and maintenance will not be covered under this HCP. PG&E is seeking separate ESA Section 10 coverage under the PG&E Operations and Maintenance Multi-Region Habitat Conservation Plan.

Chapter 4

Impact Assessment and Levels of Take

The effects of reuse of the Plan Area on HCP species have been addressed in various environmental documents including: the 1997 HMP, as amended by the 2002 Assessment of East Garrison-Parker Flats Land Use Modifications; the Final Supplemental EIS, Fort Ord Disposal and Reuse (FSEIS) (U.S. Department of the Army 1996); Biological and Conference Opinion on the Closure and Reuse of Fort Ord, Monterey County, California, dated April 11, 1997 (1-8-99-F/C-39R); Biological and Conference Opinion for Monterey spineflower (*Chorizanthe pungens* var. *pungens*) critical habitat, dated October 22, 2002 (1-8-01-F-70R); Cleanup and Reuse of Former Fort Ord as it affects California tiger salamander (*Ambystoma californiense*) and Critical Habitat for Contra Costa goldfields (*Lasthenia conjugens*), dated March 14, 2005 (1-8-04-F-25R); and Biological Opinion for Bureau of Land Management Ongoing Activities on Fort Ord Public Lands, dated December 30, 2005 (1-8-04-F/C-22). The impact assessment provided in this chapter uses information contained in these documents as well as the estimates of direct effects on HCP species using the baseline data described herein. This chapter evaluates the potential effects of the covered activities described in Chapter 3, *Covered Activities*. Direct impacts are assessed quantitatively; indirect impacts are assessed qualitatively.

The impact assessment evaluates the effects of the project for five categories of covered activities as described in Chapter 3.

- Development in designated development areas and Borderlands.
- Allowable development in HMAs.
- Operations and management activities in HMAs.
- Future road corridors and infrastructure construction, operation, and maintenance in HMAs.
- HCP required actions that may result in take.

4.1 Approach

The level of incidental take has been identified and quantified based on the extent of area mapped as occupied by each species using a number of sources. Appendix A provides the mapped habitat area and the occurrence maps for each species. The following sources were used to compile species-specific data.

- Jones & Stokes Associates (J&S) baseline polygon data (1992).
- Zander Associates baseline update (2007) for sand gilia (*Gilia tenuiflora* ssp. *arenaria*), seaside bird's beak (*Cordylanthus rigidus* ssp. *littoralis*), and Yadon's piperia (*Piperia yadonii*).
- California Natural Diversity Database RareFind Reports (2017).
- Army GIS files (JSA 92, post-92, annual monitoring reports through 2017).
- Landfill sand gilia survey (Zander Associates 2008).

- Local biologists (Sean McStay/Gage Dayton for FONR species; David Styer for Smith's blue butterfly [*Euphilotes enoptes smithi*]; Bruce Delgado for California tiger salamander; Bill Collins for California tiger salamander),
- Biological assessments and opinions for the former Fort Ord and surrounding area.
- Results from project-specific surveys (e.g., Marina Heights, The Dunes, Seaside Main Gate, East Garrison, CSUMB Master Plan, MCWD projects, and Del Rey Oaks Resort, Cypress Knolls, FONR OU-1 Monitoring Data, Monterey Downs Specific Plan, and California Central Coast Veterans Cemetery).

The most comprehensive surveys that took place in the Plan Area were the Army's 1992 *Flora and Fauna Baseline Study of Fort Ord, California* (baseline studies) conducted by J&S. The parameters used in the baseline studies (e.g., size of polygons, scale of mapping, abundance and density criteria) were established for large-scale assessment. These data are referred to as the *J&S 1992 baseline polygon data*.

The J&S 1992 baseline polygon data were developed through field surveys conducted between April and August 1992. To establish the survey areas, polygons were delineated on aerial photographs by drawing boundaries around land units with relatively homogeneous vegetation. In the field, botanists identified the habitat type and conducted a floristic inventory of each polygon. The abundance of special-status plants was scored using a qualitative estimate: "uncommon," "occasional," or "abundant." These scores were used to classify each HCP plant polygon as "low," "medium," or "high" on the species occurrence maps (Appendix A). This data provided a baseline of the distribution and abundance of special-status plants in the Plan Area, which was updated per the sources identified in this section. In general, the updated baseline data has shown plant populations to remain stable unless there are some drastic changes in the habitat, so it is expected that the HCP plant species are still present in the polygons where they were reported. There are some areas that have been altered by ordnance removal or by fire, but the habitat of these areas recovered afterwards (Preston pers. comm.). Plants would only be expected to be extirpated from a polygon if the polygon was converted to a non-habitat land cover type. J&S biologists have visited several sites that were affected as a result of ordnance removal and were able to locate plants at these locations (Preston pers. comm.). Therefore, HCP species were assumed to be absent from J&S survey polygons identified as "developed." It is unlikely that plant populations have migrated into other polygons because these populations have been in place for so long that all suitable habitat was likely colonized centuries ago; however, some HCP species are adapted to colonize recently disturbed areas (e.g., Monterey spineflower) and therefore may have re-established in these areas since baseline establishment.

The J&S 1992 baseline polygon data were updated to include results from site-specific surveys conducted for various projects in the Plan Area up through 2017 for all HCP species. For HCP plant species, to make the new data comparable to the original baseline data, the more recent data were extrapolated to the polygon level using the J&S 1992 polygons. Where a post-1992 plant species occurrence was recorded, the entire polygon in which it occurred was identified as a low, medium, or high density occurrence. For HCP animal species, major updates include the following.

- **Smith's blue butterfly.** Existing literature and occurrence records, as well as data provided by the Army, State Parks, local expert David Styer, HLA, and Zander Associates, were used to evaluate the effects on Smith's blue butterfly and its host plants. The extent of buckwheat host plants on FODSP as mapped in 1996, 1999, 2002, and 2008 was considered potential habitat. In

addition, data from various sources, including Fort Ord botanical experts Bruce Delgado and David Styer, were gathered to identify habitat patches east of Highway 1.

- **Western snowy plover** (*Charadrius nivosus* ssp. *nivosus*). Existing literature, occurrence records, and aerial photos, as well as the results of recent surveys and estimates of potential habitat provided by State Parks, were used to evaluate effects on western snowy plover. In addition, Point Blue Conservation Science (PBCS)¹ and State Parks nesting observation data were incorporated from 2005 through 2016.
- **California tiger salamander**. The effects of covered activities on California tiger salamander were evaluated using existing literature and occurrence records, as well as information provided in the Army's request for consultation on Contra Costa goldfields critical habitat and request for conference on California tiger salamander dated July 19, 2004 and Biological Opinion 1-8-04-F-25R dated March 14, 2005. In addition, new occurrences up through 2016 were included.
- **California red-legged frog** (*Rana draytonii*). The HMP habitat map (1997) was updated to include current literature and occurrence records, as well as a 1-mile (1.6 km) radius around potential breeding sites to calculate potential upland habitat. A single species occurrence (larvae observed) at Pond 998 South in 2011 was added to the species habitat map.

Tables 4-1a and 4-1b summarize the methods and key assumptions used to conduct the impact analysis and identify the level of take requested by the Permittees and BLM. These tables are located at the end of this chapter.

4.2 Impact Mechanisms

Impact mechanisms are those actions affecting biological resources in the Plan Area. Impact mechanisms can be direct, indirect, or cumulative and can be temporary or permanent. Direct impacts are defined as ground-disturbing activities or actions that remove land cover types, habitat for HCP species, or populations (or portions of populations) of HCP species. Land development would result in direct impacts on biological resources through conversion of HCP species' habitat to structures, roads, or landscaping; mortality of plants or wildlife from construction equipment; displacement of species because of temporary or permanent habitat loss; and abandonment of a site by wildlife because of disturbance during critical life stages. Temporary impacts are defined as any impact on vegetation or habitat that does not result in permanent habitat removal.

USFWS defines indirect impacts as "those that are caused by the proposed action and are later in time but are still reasonably certain to occur" (50 CFR 402.02). Changes in land use could result in indirect impacts such as mortality of native wildlife because of depredation by domestic pets, disturbance to wildlife by recreationists, habitat fragmentation, or erosion of soil from one parcel to an adjacent parcel resulting in loss or degradation of habitat. In this HCP, indirect impacts include effects on species that take place at the time of the proposed action but that are beyond the footprint of a project or activity.

¹ Point Blue Conservation Science was formerly known as Point Reyes Bird Observatory Conservation Science.

Cumulative impacts include the effects of future State, tribal, local, or private actions that are reasonably certain to be implemented in the Plan Area. Cumulative effects can result from individually minor but collectively significant actions that take place over time. Future Federal actions are subject to the consultation requirements established in Section 7 of the ESA, and therefore, are not considered cumulative in the project.

Specific impact mechanisms are described for each of the major categories of covered activities: development in designated development areas (including Borderlands); development and public use in HMAs; road corridors, infrastructure, and utilities construction and maintenance in HMAs; and resource management activities in HMAs.

4.2.1 Development in Designated Development Areas and Borderlands

The designated development areas (all on non-Federal lands) comprise 9,292 acres or about 33% of the Plan Area. Within the designated development areas, 4,241 acres are existing developed areas and 5,051 acres are natural land cover (Table 2-1). The HCP assumes that direct impacts from land uses within designated development areas would eliminate all biological resources in the land use footprint, resulting in the removal of 5,051 acres of natural land cover. An analysis for individual projects was not conducted within designated development areas. Some of these proposed land uses could result in the retention of small patches of habitat and HCP plant species. However, the biological value of these remnant habitats would be low because of their small size, their isolation, and the anthropogenic impacts from surrounding development. In the case of Borderlands parcels, some habitat may be retained at the border and remain contiguous with the HMAs. However, because the extent of these areas cannot be predicted, it is assumed entire Borderland parcels would be developed.

Indirect impacts on biological resources within the HMAs are likely as the human population grows in and adjacent to the Plan Area. Predation by domestic pets, disturbance to wildlife by recreationists, soil erosion resulting in loss of plant habitat or degradation of wetlands, harassment due to reuse at the urban/wildland border, unauthorized vehicle access, trash dumping, landscape waste dumping, and spread of non-native species could result in adverse effects on biological resources within the HMAs. However, this HCP requires minimization measures in Borderlands parcels to include barriers to unauthorized vehicle use, measures to prevent erosion, measures to prevent the spread of non-native species, and fuelbreak construction (Chapter 5, *Conservation Strategy*).

4.2.2 Covered Development in HMAs

Limited development totaling 777 acres will be allowed in some of the HMAs, with 485 acres of the total on non-Federal HMAs, as indicated in Table 4-2.

These development allowances within the HMAs include infrastructure to support habitat management and recreational use. As such, the acreages include development of roads, trails, fencing, parking areas, and a campground, as well as structures for plant nurseries and equipment storage facilities. To the extent possible, the covered development in HMAs will continue to support covered species' habitat. For example, the 110 acres for Lookout Ridge will be maintained in its current vegetation of non-native grass and used for overflow parking but will continue to provide upland dispersal habitat for California tiger salamander.

Table 4-2. Allowable Development in Habitat Management Areas

Habitat Management Area	Allowable Development (acres)
Fort Ord National Monument	292
Fort Ord Dunes State Park	142
Fort Ord Natural Reserve ^a	8
East Garrison North Reserve	0
East Garrison South Reserve	0
Habitat Corridor/Travel Camp	52
Oak Oval Reserve	4
Parker Flats Reserve	0
Landfill Parcel	81
Laguna Seca Recreational Expansion—Wolf Hill	30
Laguna Seca Recreational Expansion—Lookout Ridge	110
Salinas River Habitat Area	0
Marina Airport Habitat Reserve	0
Marina Northwest Corner	58
Range 45 Reserve	0
Natural Area Expansion	0
Non-Federal Total	485
Total (non-Federal and Fort Ord National Monument)	777

^a FONR allowable development in HMAs includes a 1% development allowance, plus 1.89 acres permitted under the 1999 Amendment to the HMP. Under the 1999 Amendment, an additional 6.89 acres were added to FONR. Of the 6.89 acres, 5 acres will be protected in perpetuity while development of 1.89 acres is permitted.

All covered development in HMAs will be required to site and design facilities to avoid or reduce impacts on HCP species and natural communities. Specific development envelopes have not been designated within the FONM or the FONR; however, minimization measures to site facilities to avoid populations of HCP species will be implemented, thereby reducing losses of these species. While the extent of Yadon's piperia in the Marina Northwest Corner parcel has not yet been established, the take assessment assumes that all but five acres of the parcel will be developed. No development will occur in known or potential breeding habitat for California tiger salamander. Facilities in the FODSP will be sited, to the extent feasible, to avoid western snowy plover habitat and Smith's blue butterfly host plants. Public use of the FONM and other HMAs where public access is allowed could also affect HCP species through trampling, harassment, or degradation of habitat. The management actions that the HMA managers will implement to control the anthropogenic effects resulting from public use will reduce or minimize this impact (see Section 5.4, *Measures to Avoid and Minimize Impacts*).

Increased public use of the FODSP beach could affect western snowy plover through trampling, harassment, or degradation of habitat. Management actions that State Parks will employ in FODSP will reduce these effects (See Chapter 5, *Conservation Strategy*). Public beach access will be limited to no more than three routes to be identified by signs, boardwalks, paving, and/or fences. The footprint of each of the three beach access routes will consist of an access corridor of 200 feet wide by 600 feet long (120,000 square feet) (Figure 3-6). Access closure will be implemented as part of the western snowy plover adaptive management strategy (See Section 6.8, *Adaptive Management*

Strategy). Beach management activities (Section 3.3.3.4, *Beach Management*) will be implemented to minimize impacts on HCP Species, including western snowy plover.

4.2.3 Operations and Management Activities in HMAs

4.2.3.1 Maintenance of Roads and Trails

Maintenance of roads and trails in HMAs could eliminate plant species within the right-of-way (ROW) by being mowed during the growing season; crushed by vehicles; trampled, dug up, or buried by grading; or by burial of the soil seed bank. While regular use of the travel lane may eliminate some plants, annual HCP plant species may persist in an equal or greater area surrounding the trail or dirt road due to the created disturbance regime. However, the disturbance could also increase the density and abundance of non-native grasses and forbs that could outcompete the native plants. Only authorized, motorized vehicles will be allowed within HMAs; public access will be limited to non-motorized uses, and, therefore, operational impacts to HCP species will be minimized. Maintenance of vehicle routes and trails could kill or injure California tiger salamander or California red-legged frog by vehicle strike, burial or crushing by grading machinery, and crushing of burrows that extend into dirt roads and road edges. Roads and trails in FODSP will be limited and should be directed away from occupied habitat, thereby reducing the potential for vehicle strike.

Road and trail maintenance will indirectly affect HCP species by fragmenting populations, trampling habitat (including burrows), particularly if cyclists go off trails, alteration of habitat through soil compaction, and introducing and/or spreading invasive species, particularly non-native annual grasses at road edges. Measures to minimize the effects of road and trail maintenance include timing activities outside of the breeding season for California tiger salamander, facilitating re-establishment of annual HCP plant species outside of travel lanes, controlling the spread of non-native plants, and maintaining unsurfaced sandy tracks wherever possible.

Quantitative estimates of the direct impacts of road and trail maintenance were made based on the descriptions of these activities provided by BLM for the FONM, UC FONR, and the County (Table 4-3). Approximately 110 miles of roads and 75 miles of recreational trails will be maintained within the FONM. Approximately 6 miles of roads and 15 miles of trails will be maintained within FONR. The County is proposing to maintain approximately 19 miles of trails through its Fort Ord Recreational Habitat Area Trail Master Plan (draft in progress). Road maintenance includes a 10-foot travel lane and up to an 8-foot-wide shoulder on each side and trail widths are approximately 4 feet. Since the travel lanes are already developed, the impact assessment of road maintenance focuses on the road shoulders. The impact is calculated as a one-time, permanent impact to the HCP species that occur in the HMA and assumes that 20% of the road shoulder may be occupied by the HCP species since the road shoulders are primarily gravel and do not provide much suitable habitat. For the FONM, 20% of the 213 acres of road shoulder is approximately 42 acres, which is approximately 0.2% of the HMA land area. For UC FONR, 20% of the 11.6 acres of road shoulder is 2.32 acres, which is about 0.4% of the HMA land area. Since no other HMAs have existing road inventories at this point, the impact assessment assumes that 0.2% of the reserve areas within each of the remaining HMAs will consist of road shoulders requiring maintenance. Because the exact locations of roads and trails in relation to HCP species occurrences cannot be determined at this time, the impact assessment assumed a 0.2% loss of the total habitat for each HCP species known to occur in each of the HMAs for road shoulder maintenance.

The same approach was applied to calculate impacts associated with trail maintenance, with the exception that the entire trail may contain HCP species since the trails provide more suitable habitat than the road shoulders, which are primarily gravel. The 75 miles of trails on FONM comprise approximately 36 acres (0.2% of HMA). Maintenance of these trails is described in *Reinitiation of Formal Consultation for Ongoing Activities at Fort Ord National Monument, Monterey County, California* (1-8-04-F/C-22) issued in October 2017 as the following:

“Trails on FONM would be maintained for public recreation such as bicycling, hiking, and equestrian use. Motorized recreational trail use would not be permitted. Trails would be maintained to include a compacted dirt surface that is 4 feet wide (0.5 acre per trail mile). Trail maintenance would include vegetation trimming on an as-needed basis and repairs to the trail surface using either hand tools or mechanized trail maintenance equipment. Mechanized trail equipment would use a 4-to 6-foot wide blade to grade a given trail, but only 4 feet would be maintained for actual recreation use. Any scraped surfaces outside of the 4 feet of trail surface would be seeded, strawed, and allowed to revegetate. BLM anticipates that any given trail segment would be graded once per decade or less. Exceptions to this would be trails such as Trail 47 and Trail 43, which are used one or more times annually for large mountain bike events and would require more frequent repairs and grading.”

Trails comprise approximately 7.25 acres (1.2% of HMA) within UC FONR. The 19 miles of trails within the County HMAs total approximately 13 acres (see Tables 4-1a and 4-1b for assumptions for the percentage of each HMA). The MPRPD requested that they be allowed to maintain 2 acres of trails, which is approximately 11% of the Natural Area Expansion HMA. Because the exact locations of trails in relation to HCP species occurrences cannot be determined at this time, the impact assessment assumed a respective percent loss of each HCP species known to occur in each of these HMAs for trail maintenance. Since no other HMAs have existing trail inventories at this point, the impact assessment assumes that 0.2% of the reserve areas within each of the remaining HMAs will consist of trails requiring maintenance.

4.2.3.2 Maintenance of Fuelbreaks

Fuelbreaks are required to maintain compliance with fire code and fire protection planning within the Plan Area. At the urban/wildland interface, they are also required to comply with the AMMs identified in the HCP (Chapter 5, *Conservation Strategy*). The following description of fuelbreak maintenance applies only to fuelbreak maintenance within HMAs. The purpose of the discussion is to describe the impact mechanism in order to quantify take of covered species, not to identify the parties responsible for fuelbreak maintenance. Parties responsible for maintaining fuelbreaks as part of AMMs are identified in Chapter 5.

BLM estimates that it will maintain up to 110 miles of fuelbreaks in the FONM. Most of these fuelbreaks contain a road so fuelbreak maintenance will occur in the area up to an additional 23 feet (12.5 feet per side) beyond the road shoulder. The vegetation will be managed to maintain fuel reduction standards, which could include clearing, limbing, mowing, chipping, or other methods as described in Chapter 3, *Covered Activities*. Approximately 400 acres (3%) of reserve land within the FONM would be included in fuelbreak maintenance (Table 4-3). UC/NRS will maintain 5.9 acres of fuelbreaks. This impact assumption includes a perimeter fuelbreak around the FONR North Reserve and a fuelbreak in the FONR Corridor Reserve to reduce the risk of fire in adjacent developed areas.

Fuelbreaks will be required in the East Garrison North Reserve along the border with CSUMB (2,879 linear feet) and adjacent to Inter-Garrison Road (2,176 linear feet). It is anticipated that the East Garrison South Reserve, Parker Flats Reserve, Oak Oval Reserve, and Range 45 Reserve will each

have a system of fuelbreaks similar to the FONM and so the impact assessment assumes approximately 2 to 4% of the land area would be maintained fuelbreaks.

Maintenance of fuelbreaks in HMAs could both benefit and adversely affect HCP species. Removal of the shrub canopy could benefit annual plant species by creating the openings and bare mineral soils needed for growth and reproduction that may otherwise have remained covered. However, if present in the fuelbreak, plants could be crushed, trampled, or uprooted, and the soil seed bank could be uncovered during vegetation cutting or buried under chipped or piled brush. Repeated placement of chipped material may also eventually alter the nature of the sandy soils as the woody matter slowly decays. Mechanical and manual clearance of vegetation for fuelbreaks could injure or kill California tiger salamander or California red-legged frog by crushing burrows or animals on the ground when machinery used for cutting gouges the soil, particularly as the machinery turns. Burning, chipping, or grinding piled material cleared from fuelbreaks could also kill animals unable to move out of harm's way. Measures to minimize these effects include timing of fuelbreak maintenance, limiting maintenance activities to areas necessary to support a prescribed burn or contain a potential wildfire, and reducing amount of chipped debris placed in areas with a sandy substrate.

The impact assessment assumes that all habitat for HCP species would be lost within these fuelbreak areas. This may be an overestimate, as fuelbreaks could provide suitable habitat conditions for sand gilia, Monterey spineflower, seaside bird's beak, and other HCP species. Because the exact locations of fuelbreaks in relation to HCP species occurrences cannot be determined at this time, the impact assessment assumed that the total area of fuelbreak in the HMA would result in that amount of take for each HCP species recorded to occur in the parcel.

Table 4-3. Estimated Area of Impact for Road and Fuelbreak Maintenance in HMAs

Habitat Management Area	Road Maintenance^a (acres)	Trail Maintenance (acres)	Fuelbreak Maintenance (acres)	Total (acres)
Fort Ord National Monument	42	36	400	478
Fort Ord Dunes State Park	2.5	1.7	—	4.2
Fort Ord Natural Reserve	2.3	7.25	5.9	15.45
East Garrison North Reserve	0.4	1	5.9	7.3
East Garrison South Reserve	0.8	1	7.4	9.2
Habitat Corridor	0.7	4.5	—	5.2
Travel Camp	0.3	0.5	—	0.8
Oak Oval Reserve	0.2	1	1.9	3.1
Parker Flats Reserve	1.1	3	10	14.1
Landfill Parcel	0.7	1.5	—	2.2
Laguna Seca Recreational Expansion— Wolf Hill	0.1	0	—	0.1
Laguna Seca Recreational Expansion— Lookout Ridge	0.3	0.5	—	0.8
Salinas River Habitat Area	0.1	0.1	—	0.2
Marina Airport Habitat Reserve	0.4	0.3	5.2	5.9
Marina Northwest Corner	0.01	0.01	—	0.02
Range 45 Reserve	0.6	0.4	5.6	6.6

Habitat Management Area	Road Maintenance^a (acres)	Trail Maintenance (acres)	Fuelbreak Maintenance (acres)	Total (acres)
Natural Area Expansion	0.06	2	—	2.06
Non-Federal Total	10.57	24.76	41.9	77.23
Total (non-Federal and Fort Ord National Monument)	52.57	60.76	441.9	555.23

4.2.4 Future Road Corridors and Infrastructure Construction, Operations, and Maintenance in HMAs

The impact assessment for infrastructure and facilities projects in HMAs assumes that ground-disturbing effects will be the same as development. However, for some of the facilities, the ground disturbance will be temporary and HCP plant species may be able to recolonize the disturbed areas. The extent of the disturbance varies by project as described in the following sections. Indirect effects also vary depending on the type of project.

4.2.4.1 Future Road Corridors in Habitat Management Areas

Road corridor widths and alignments were obtained from the Fort Ord Reuse Plan Proposed Transportation Network. There are three major roads planned within HMAs: the road through the Marina Northwest Corner parcel, the road at the edge of the Salinas River Habitat Reserve, and the widening of Inter-Garrison Road.

The road through the Marina Northwest Corner parcel is 3,165 feet long and 122 feet wide and would impact an area of about 9 acres. As described above, the impact assessment assumed that all but 5 acres of the Marina Northwest Corner parcel would be developed to accommodate the Yadon's piperia that was rediscovered in 2006. Minimization measures to avoid direct loss of Yadon's piperia will be required in siting this road and the road is included in the 58 acres of development that is assumed for this parcel. Therefore, no new direct impacts are associated with this proposed road.

The City of Marina is in the process of preparing an Airport Master Plan Update for the Marina Municipal Airport. This proposed plan will result in future improvements at the airport, including a roadway that may be constructed on the eastern end of the runway to provide access to the designated development area to the north of the airport. Due to Federal Aviation Administration regulations, the road may be required to encroach into the Salinas River HMA and impact approximately 3 acres. The future operation and maintenance of the road would not result in additional impacts as the road right-of-way would be maintained as paved and/or gravel areas lacking suitable HCP species habitat. HCP species that may be impacted by the construction of the roadway include sand gilia, Monterey spineflower, California red-legged frog, and California tiger salamander.

The Inter-Garrison Road Widening project would encroach into the East Garrison North (i.e., 7.5 acres) and Habitat Corridor/Travel Camp (10.5 acres) HMAs based on conceptual plans. The HCP species potentially affected by this road widening project includes sand gilia, Monterey spineflower, California red-legged frog, and California tiger salamander. The total estimated direct impact for road corridors within HMAs is 18 acres (Table 4-4).

In addition to direct impacts of road corridor construction, there would be indirect impacts. New roads create dispersal corridors for non-native plants and introduce runoff of vehicle waste (e.g., oil, grease, radiator fluid). Vehicular traffic on roads generates debris such as tires, litter, or car parts that can be hazardous to wildlife. Expanded roads typically increase vehicular traffic and/or traffic speed, decrease habitat connectivity, and increase the likelihood of take of individual species. For example, injury or mortality of terrestrial species such as California tiger salamander and California red-legged frog may increase as they disperse across the road. Minimization measures are identified in Section 5.4, *Measures to Avoid and Minimize Impacts*.

Table 4-4. Estimated Area of Impact for Road Corridors and Infrastructure Projects in Habitat Management Areas

Habitat Management Area	Road Corridors (acres)	MCWD Facilities (acres)	FORTAG (acres)	Airport (acres)
Fort Ord National Monument ^a	—	0.5	—	—
Fort Ord Dunes State Park	—	2.6	—	—
Fort Ord Natural Reserve	—	0.5	—	—
East Garrison North Reserve	7.5	1.1	3.5	—
East Garrison South Reserve	—	—	—	—
Habitat Corridor/Travel Camp	10.5	30.9	3.3	—
Oak Oval Reserve	—	—	—	—
Parker Flats Reserve	—	—	—	—
Landfill Parcel	—	—	6.5	—
Laguna Seca Recreational Expansion—Wolf Hill	—	—	—	—
Laguna Seca Recreational Expansion—Lookout Ridge	—	—	—	—
Salinas River Habitat Area	—	—	0.5	3.0
Marina Airport Habitat Reserve	—	—	4.4	30.0
Marina Northwest Corner	—	—	— ^b	—
Range 45 Reserve	—	—	—	—
Natural Area Expansion	—	—	1.1	—
Non-Federal Total	18	35.6	19	33
Total (non-Federal and Fort Ord National Monument)	18	35.6	19	33

^a Potential MCWD development would be part of BLM's 2% development allowance if approved and authorized under a BLM right-of-way.

^b The conceptual alignment is proposed within the development area within this HMA.

4.2.4.2 Marina Coast Water District Facilities

MCWD covered activities include new water distribution pipelines, and tank improvements and construction within the Habitat Corridor/Travel Camp, East Garrison North Reserve, and FONM; well abandonment within the UC/FONR; and improvements to the wastewater lift station within the State Park (Table 3-11).

The maximum extent of area in HMAs that could be affected by the construction of MCWD facilities is 36.0 acres (Table 4-4). Assuming a 100-foot corridor for construction of the proposed water distribution pipelines², approximately 32.8 acres within HMAs could be affected. The construction of pipelines could include associated system connections, site drainage, and tank overflow facilities. The construction of the proposed Huffman Tank could affect 0.5 acre in the FONM HMA. Potential MCWD development would be part of BLM's 2% development allowance if approved and authorized under a BLM right-of-way. The construction activities associated with this proposed storage tank could consist of clearing, grading, excavation, or placement of soil, and concrete foundations. The abandonment of Well 29 could affect 0.5 acre within the FONR SR HMA. The improvements to the Ord Village Lift Station could affect 2.6 acres within the State Parks HMA. These development activities would be in addition to any allowable development in the HMAs (i.e., FONR, Travel Camp, FONM, and State Parks HMAs) or considered allowable development in HMAs where development was not previously addressed in the HMP (i.e., East Garrison North and Habitat Corridor). Access to these facilities would occur within existing roads and easements.

The final design of these facilities has not been completed and it may be feasible for many of these facilities to be installed below the existing paved roadways, and, therefore, no vegetation would be removed. However, the assessment assumed removal of vegetation for this construction. It also assumed that some vegetation management would be required to continue to provide access for repair and maintenance of the facility. Therefore, the impact area was treated similar to developed sites and it was assumed that all vegetation would be removed, even though it is likely that at least herbaceous species would be allowed to recolonize the area after the initial installation. If HMA lands are impacted as a result of these activities, MCWD would be responsible for restoring impacted areas to their previous condition, if required by the HMA land manager. The future operation and maintenance of these facilities would not result in additional impacts as the existing access roads and easements would be maintained as paved and/or gravel areas lacking suitable HCP species habitat.

4.2.4.3 Fort Ord Recreational Trail and Greenway

The Fort Ord Recreational Trail and Greenway (FORTAG) is proposed as a continuous 12-foot wide paved bikeway with an open-space buffer on both sides. FORTAG will cross FONR, Marina Airport Habitat Reserve, Salinas River Habitat Area, East Garrison Reserve – North, Habitat Corridor, Natural Area Expansion, Northwest corner, and Landfill Parcel. To the extent possible, the trail is aligned within Borderlands of the HMAs. The spur trail that crosses the Marina Northwest Corner HMA avoids the 5-acre designated reserve within this HMA. The impact acreage with the HMAs is 19 acres and assumes a 52-foot wide construction area, with the exception of a few designated locations for staging and underpass construction. FORTAG-specific Mitigation Measure-39 (Section 5.5.5, *Covered Activity-Specific Mitigation Measures*) will apply to FORTAG. Mitigation Measure-39 requires that these impacts will be mitigated at a ratio of 1:1. The additional mitigation area will be subject to HCP conservation measures.

² The assumed corridor width for the Inter-Garrison Road Pipeline Replacement project is 50 feet; all other pipeline corridors are assumed to be 100 feet.

4.2.4.4 Marina Airport Master Plan Update

The 2017 Marina Airport Master Plan update includes construction of runway extensions, corresponding modified taxiways, and runway safety zones. Runway 11-29 is planned to be extended from 3,483 feet to 5,800 feet in the long term. While the current runway length is adequate to meet the needs of current users, to accommodate more activity by larger turboprop and small business jet, a runway length of 4,000 to 5,000 feet would be needed. An ultimate runway length of 5,800 feet is planned for the airport. These additions would affect approximately 30 acres of the 130-acre Marina Airport HMA west of the runway. In addition, a future road may be constructed on the eastern end of the runway to provide access to the designated development area to the north of the airport and may result in impacts to 3 acres of the Salinas River HMA. Marina Airport runway extension-specific Mitigation Measure-40 (Section 5.5.5, *Covered Activity-Specific Mitigation Measures*) will apply to the Marina Airport runway extension. Mitigation Measure-40 requires that these impacts will be mitigated at ratios of 1:1.25 for runway extension or 1:1 for the road. The additional mitigation area will be subject to HCP conservation measures.

4.2.5 HCP Required Actions That May Result in Take

HCP required actions are expected to have a net benefit on all HCP species, but some activities may have temporary or permanent adverse impacts resulting in take. Impacts from HCP required actions on HCP species are described below.

Pesticide use³ will be implemented under the HCP only to achieve biological goals and objectives (e.g., invasive species control), in accordance with label instructions, and in compliance with state and local laws. Invasive species control by HMA managers is only a covered activity if pesticides are applied to achieve exotic plant or exotic animal control. Implementation of AMMs will prevent species impacts from pesticide application.

4.2.5.1 Revegetation, Restoration, and Enhancement

Habitat revegetation, restoration, and enhancement could result in permanent and temporary impacts on HCP species. Restoration activities could remove HCP plant species if they occupy the restoration site or if plants or their soil seed bank are dug up, trampled, or buried during recontouring, revegetating, fencing, or other restoration activities. Earth-moving could kill or injure wildlife species or destroy their habitat. Indirect effects from restoration include increased sedimentation during and following the activity. HCP species impacts are discussed in Section 4.3, *Effects on HCP Species*. For all habitat restoration and enhancement activities, implementation of AMMs will avoid and minimize impacts.

Restoration activities are anticipated to occur on FONM, FONR, FODSP and other HMAs. Restoration sites are in areas that have been disturbed by previous military use, old roadbeds, poorly placed trails, eroding gullies, colonized by ice plant mats, or otherwise degraded and do not provide extensive habitat for HCP species. The Permittees will restore 20.9 acres of maritime chaparral and native grassland in the non-Federal HMAs. With funding from the Permittees, BLM⁴ will restore up

³ The term pesticide is inclusive of herbicides.

⁴ BLM is not a Permittee, but, for the State Permit, management of its large inland habitats pursuant to BLM's RMP, HMP, and as described in this HCP will mitigate for take. For the purposes of the Federal Permit, BLM will

10 acres of maritime chaparral and BLM will continue to restore this habitat type for a total of 100 to 150 acres over the term of this HCP. (BLM has restored 69.1 acres of maritime chaparral on FONM before 2016.) BLM⁴ will restore up to 5 acres of aquatic and riparian/wetland habitats over the life of the HCP and has restored 1.3 acres of vernal pools and 8.6 acres of riparian forest before 2016. The Permittees will fund the restoration of up to 2 acres of pond/vernal pool on FONM. UC/NRS will restore maritime chaparral in the Corridor Reserve of the FONR.

Within FODSP, the open space habitat area will total approximately 700 acres, which includes coastal strand, coastal scrub, beaches, bluffs, and blowouts. Within this area, approximately 280 acres will be enhanced through the removal of iceplant and other exotic species. An additional 420 acres of coastal strand and coastal scrub habitat will be restored within the 50-year permit term to reach the goal of 700 acres of habitat. In addition to restoration, some enhancement activities could result in temporary impacts on HCP species. State Parks will enhance habitat for Smith's blue butterfly in the FODSP by planting the two species of buckwheat that are host plants for the Smith's blue butterfly in all habitat restoration projects in the FODSP. One or both species may be appropriate depending on the location. Enhancement sites would be targeted to create a contiguous habitat corridor. An increase in cover of buckwheat plants could reduce the area of suitable habitat for sand gilia and Monterey spineflower.

UC/NRS will restore maritime chaparral in the Corridor Reserve of the FONR. Where oak woodlands intergrade with maritime chaparral, enhancement includes mechanical thinning and clearing to restrict oak invasion into chaparral. Oak woodland enhancement may also require understory clearance to remove exotic species and allow for seeding/sapling growth. Such management could kill or injure HCP species present in the oak woodland, such as California tiger salamander, if conducted while these species are active.

Overall, restoration and enhancement activities are expected to have a long-term beneficial effect on HCP species. For example, restoration will benefit Monterey spineflower critical habitat by removing non-native plants and expanding potential habitat for Monterey spineflower. Habitat enhancement may temporarily impact species but would be expected to provide a long-term benefit for plants and animals that inhabit the natural communities. Prescribed burning, alternative fuel management, and non-native species control are also restoration and enhancement activities. The potential effects of these activities on HCP species are described separately.

4.2.5.2 Prescribed Burning and Alternative Vegetative Management

Prescribed burning and alternative vegetative management could result in temporary or indirect impacts on HCP species. The deployment of foams or fire retardants at prescribed burn boundaries may adversely affect HCP plant species by killing vegetation and by adding nitrogen to the soil to the extent that non-native invasive grasses increase. The addition of nitrogen could also increase the density of established native vegetation, making germination sites for sand gilia and Monterey spineflower less available. California tiger salamander and California red-legged frog could be injured or killed during prescribed burning through crushing, burying, burning, or from fire

cooperate with the Cooperative to allow additional mitigation measures on the Fort Ord National Monument such as habitat restoration. Under the Federal Permit, only those additional mitigation measures implemented or funded by the Cooperative on the Fort Ord National Monument will be credited to Permittees. Mitigation credit for BLM's current management activities will not be transferred to Permittees for the Federal Permit. For additional information, please see Section 1.9.3, *Role of Bureau of Land Management*.

retardants through direct contact or contamination of breeding sites (California tiger salamander and California red-legged frog).

Prescribed burning activities and alternative vegetative management are anticipated to occur on FONM, FONR, East Garrison Reserve, Parker Flats Reserve, Landfill Parcel, and Range 45 Reserve. Treatments such as cutting, mowing, goat grazing, and other measures will be used to gain a better understanding of the effects of alternative vegetation management strategies or for use in areas considered too hazardous to prescribe burn. To date, only the BLM FONM has committed to conducting prescribed burns; however, prescribed burning will be considered as a management tool for each of the HMAs mentioned. Prescribed burning, or alternatives to burning, is assumed to commence in year 20 on FONM, year 30 on FONR, and between years 20 and 30 on the other HMAs. For example, in FONM, the target for prescribed burning is that it will be conducted on a rotational basis, covering from 1,000 up to 1,500 acres each decade, and alternative treatments on up to 500 acres of maritime chaparral.⁴ Prescribed burning and alternative vegetative management provide key management strategies to maintain healthy maritime chaparral as a patchwork of stands that support vegetation of various ages and structures and to maintain the viability and populations of HCP species occurring within this habitat in the HMAs.

The prescribed burn and alternative vegetative management program design, monitoring, and adaptive management and AMMs implementation will result in a net benefit to HCP species. Results from a coordinated, management-oriented study will evaluate alternatives to burning and the results of the study will be applied to HMA management. Each burn and alternative treatment will be planned and monitored, and the results will be evaluated to ensure that the desired effect of improved habitat quality can be obtained. No more than one prescribed burn will be conducted in any one area during the permit term. It is anticipated that HCP species' habitat will regenerate within 1 to 5 years after the burn or alternative treatment. Effects from associated activities such as staging and construction of fuelbreaks are described in Section 4.2.3.2 above (staging can have effects similar to construction of fuelbreaks). AMM implementation will avoid and minimize impacts from prescribed burning by limiting prescribed burns in the same area to once in the permit term, rotating burns, using existing roads and fuelbreaks to the maximum extent possible, using fire retardants that don't contain sodium ferrocyanide, and monitoring the effects of prescribed burns. As a result, prescribed fire is not likely to have any long-term adverse effects on HCP plant species; rather, it is intended to improve the habitat for these species.

4.2.5.3 Non-Native Invasive Species Control

Non-native invasive species control could result in impacts on HCP species. Non-native invasive species control will be applied across all HMAs, including approximately 100 acres per year of Permittee-funded non-native invasive weed control on FONM.⁴ Manual and mechanical methods and herbicide treatment to remove non-native plant species could also remove HCP plant species if they co-occur. The HCP plant species seed bank could be adversely affected through burial or exposure at the ground surface during dry season non-native species removal activities. Manual weed control activities could injure or kill HCP animal species or result in temporary habitat degradation. The use of chemical controls could affect HCP species if not properly applied. HCP plant species could be killed by drift or overspray, and animals could experience direct acute effects. Non-native invasive species control will be conducted on all non-Federal HMAs using techniques to reduce the possibility of impacts on HCP species. This includes restrictions on where treatments can be used (avoiding the possibility of runoff into vernal pools or ponds), shielding of host plants if treatments must be done within areas occupied by coast or seacliff buckwheat (*Eriogonum*

latifolium or *Eriogonum parvifolium*), and other avoidance measures outlined in Section 5.4.10, *Avoidance and Minimization Measures for Non-Native Invasive Species Control*.

BLM's non-native invasive species control protocols are in conformance with their RMP and under the authority of FLPMA environmental assessment and USFWS Biological Opinions. An example of the avoidance of take in current practice is "when spraying in the vicinity of rare annual species, spraying will be deferred until the annuals have dropped their seed or barriers will be erected so spray cannot get onto rare annual species." (Hubbard, 2018). (For a description of invasive non-native species controls currently done on FONM and FODSP, see Section 3.3.5, *HCP Required Actions That May Result in Take*.)

Many invasive species can be reduced with carefully timed grazing of a frequency and intensity to suppress or promote target species (D'Antonio et al. 2002). In the Plan Area, domestic sheep grazing is expected to occur on approximately 700 acres of BLM land and is recommended on non-Federal HMAs as well. Grazing could affect HCP species by trampling, compacting soils, contaminating habitats with urine and feces, increasing sediment movement into ponds by denuding vegetation and disturbing soils in the watershed, and reducing vegetative cover at pond margins. Removal of water for domestic sheep could reduce pond longevity resulting in death of California tiger salamander or California red-legged frog. AMMs and monitoring and adaptive management measures were developed to avoid and minimize the adverse impacts anticipated from non-native invasive species control.

The Cooperative will also control California tiger salamander hybrids in ponds. The application of control measures, and the selection of ponds in which they will be applied, will be determined in conjunction with, and approval from, the Wildlife Agencies. Ponds where hybrids occur will be the focus of hybrid control. Measures to control hybrids may include modifying ponds to reduce hydroperiod (within non-Federal HMAs), addition of predatory fish prior to pond dry-down (to ensure introduced predatory fish do not survive) to depredate hybrids (within FONM), and capture and removal of hybrids ("paedomorph roundups") (within FONM). Altering hydroperiod to make aquatic conditions more favorable to native California tiger salamander can affect habitat for other native and non-native species that rely on perennial water. Measures to remove hybrids could also impact non-target native and non-native species (e.g., Pacific chorus frog); however, these species will benefit from the removal of full hybrids, which can be superior competitors and predators of native species.

AMMs and monitoring and adaptive management will be applied to avoid and minimize adverse impacts and inform management. For example, direct effects of herbicide use will be minimized by following the application protocols provided in AMM 46 and Appendix E. Livestock grazing will be monitored and if it is determined to be detrimental to grassland habitat for HCP species (e.g., effectiveness monitoring demonstrates decline in abundance and/or distribution of the species due to management action), other methods will be considered (Chapter 6, *Monitoring and Adaptive Management*). As the result of AMMs, monitoring, and adaptive management, non-native invasive species control will result in net benefits to HCP species, such as increased survival, reproduction, and opportunity for population expansion.

4.2.5.4 Erosion Control for Habitat Restoration and Enhancement

Erosion control for habitat restoration and enhancement could impact HCP species. It will be applied across all HMAs. Activities include heavy equipment use to repair erosion channels, typically

within access roads and fuelbreaks, and construct water bars to prevent future erosion. Species could be affected if they are present onsite during erosion control activities.

AMM implementation will avoid and minimize impacts on HCP species. For example, efforts such as BMP implementation during construction and limiting the extent of the work area will reduce direct effects on HCP species during construction/repair activities. Accordingly, AMM implementation during erosion control for habitat restoration and enhancement will result in net HCP species benefits.

4.2.5.5 Monitoring

Monitoring could result in impacts on HCP species. HCP required monitoring could result in the trampling of HCP species, temporary habitat degradation, and incidental capture. For example, aquatic monitoring may occasionally kill or injure California tiger salamander or California red-legged frog larvae or eggs due to incidental capture or trampling. AMMs and monitoring requirements were developed to avoid and minimize monitoring impacts on HCP species.

AMM implementation and monitoring will avoid and minimize impacts on HCP species. For example, personnel will have the proper knowledge and training to avoid impacts on HCP-covered species when conducting monitoring activities. Although there may be some impact on HCP species as a result of monitoring activities, the data collected are likely to benefit the species by informing future management, monitoring, and recovery actions.

4.3 Effects on HCP Species

Covered activity impact mechanisms (Section 4.2, *Impact Mechanisms*) may result in adverse impacts on HCP species. A conservative estimate was made for all direct impacts. The impact analysis represents a worst-case scenario; it does not take into account AMM implementation (Section 5.4, *Measures to Avoid and Minimize Impacts*), the nature of the impact (i.e., temporary, permanent), or indirect benefits. For example, impacts to HCP species were estimated based on the areal extent of the impact mechanism (e.g., development footprint), without consideration of their nature or AMM implementation. Impacts associated with MCWD pipeline maintenance would likely be temporary, except perhaps for the likely need to clear woody chaparral vegetation from the easements. Still, the assessment calculated loss of species' habitat occurring within the defined impact corridors for the pipelines. Although fuelbreak maintenance may enhance habitat for sand gilia and Monterey spineflower, to be conservative, the impact assessment assumes that these species would not recolonize within the fuelbreaks. BLM strives to avoid sensitive species when siting development in the FONM.⁵

Detailed impact mechanisms, broken down by activity type and HMA, are provided Tables 4-5a and 4-5b for plants and wildlife, respectively. Impact mechanisms are summarized in Tables 4-6a and 4-6b for plants on non-Federal lands and FONM, respectively; and Tables 4-7a and 4-7b for wildlife on non-Federal lands and FONM, respectively. Tables 4-8a and 4-8b summarize the impacts and

⁵ BLM lands, which make up a large area of the HMAs in the HMP, are now subject to continuing management under federal land laws which may result in change in habitat protection and management over time. BLM's adherence to the HMP helps to ensure the Permittees comply with the terms of the HCP. Trails and roads are located to avoid or reduce effects on HCP species, as well as HMP species.

preservation for the HCP plant and wildlife species, respectively. As outlined in Section 1.10, *HCP Preparation Process*, permittees will only receive credit for HCP mitigation implemented on FONM if those mitigation actions are funded or implemented by the permittees and approved by the BLM, and if those actions are in addition to actions that the BLM would normally implement on FONM. For the USFWS section 10 permit, protection of HCP species and their habitat on the permittee's non-Federal HMAs qualifies as mitigation for take, but the FONM, which would be managed through BLM's normal operations and management actions, would not qualify as mitigation for take. For the state permit, CDFW considers protection and management of the FONM to be in conformance with the HCP as mitigation for take of listed species. Therefore, these tables are included to clarify the difference in impact : preservation ratios.

HCP required actions are expected to have a net benefit on all HCP species. The impact discussion for these impacts is limited to the impact mechanism section above (Section 4.2.5, *HCP Required Actions that may Result in Take*), unless additional species-specific discussion is warranted. Mitigation measures and AMMs intended to benefit HCP species are detailed in Chapter 5, *Conservation Strategy*.

The following subsections provide additional details of the potential impacts on HCP species.

Table 4-5a. Impacts to HCP Plant Species by Activities and HMAs

Impact Mechanism	HCP Species Impacts (acres)			
	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak
Potential/known species habitat (acres)	9,088.80	2,420.00	12,977.8	6,849.6
HCP Development Activities				
Development	1,296.67	199.10	3,124.7	454.6
Development in HMAs	269.2	4.5	418.4	149.3
<i>Subtotal</i>	1,565.87	203.60	3,543.1	603.9
Road corridors and infrastructure				
FORTAG Alignment	10.0		15.5	1.1
Marina Airport Expansion	0.5		28.3	
Inter-Garrison Road Widening	8.9		12.8	
MCWD	6.9	0.1	16.5	0.3
<i>Subtotal</i>	26.3	0.1	73.1	1.4
<i>Subtotal HCP development, road corridors and infrastructure</i>	1,592.2	203.7	3,616.2	605.3
<i>% impacted from HCP development, road corridors and infrastructure</i>	18%	8%	28%	9%
<i>Subtotal preserved within HMAs</i>	7,496.8	2,216.3	9,361.6	6,244.3
<i>% Preserved</i>	82%	92%	72%	91%

Table 4-5a. Impacts to HCP Plant Species by Activities and HMAs (continued)

Management Activities within HMAs	Sand Gilia			Yadon's Piperia			Monterey Spineflower			Seaside Bird's Beak		
	Road	Trail	Fuelbreak	Road	Trail	Fuelbreak	Road	Trail	Fuelbreak	Road	Trail	Fuelbreak
BLM FONM	17.80	11.86	160.16	6.63	4.4	59.71	21.36	14.24	192.26	17.49	11.66	157.38
State Parks	0.44	0.29					1.47	0.98				
UC FONR	2.21	6.64	5.53				2.32	6.97	5.81	0.34	1.03	0.86
East Garrison North	0.40	1.34	5.35				0.40	1.34	5.35			
East Garrison South	0.38	0.63	3.42				0.23	0.38	2.03	0.32	0.53	2.85
Habitat Corridor	0.08	0.41					0.42	2.11				
Travel Camp	0.06	0.04					0.08	0.05				
Oak Oval							0.20	1.02	1.83			
Parker Flats	0.30	0.99	2.68				0.72	2.40	6.48		0.01	0.03
Landfill	0.60	1.01					0.48	0.80				
Laguna Seca Wolf Hill	0.14									0.14		
Laguna Seca Lookout Ridge							0.01	0.01				
Salinas River Habitat Reserve							0.02	0.01				
Marina Airport Habitat Reserve	0.01	0.01	0.07				0.28	0.19	3.63			
Marina Northwest Corner	0.01	0.01		0.02	0.01							
Range 45 Reserve	0.62	0.41	5.56				0.62	0.41	5.56	0.47	0.31	4.24
Natural Area Expansion							0.05	1.96		0.05	1.96	
Subtotal HCP Mgmt Activities	23.0	23.7	182.8	6.65	4.4	59.7	28.7	32.9	222.9	18.8	15.5	165.4
<i>Subtotal HCP Mgmt Activities</i>		229.5			70.8			284.5			199.7	
Total Impacts		1,821.6			274.5			3,900.7			805.0	
Total Preserved		7,267.3			2,145.5			9,077.1			6,044.6	
% Preserved		80%			89%			70%			88%	

Table 4-5b. Impacts to HCP Wildlife Species by Activities and HMAs

Impacts Mechanisms	HCP Species Impacts (acres)					
	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander		California Red-Legged Frog	
			potential and occupied aquatic habitat	potential upland	potential and occupied aquatic habitat	potential upland
Potential/known species habitat (combined acres)	110.16	71.03	89.36	19,598.43	89.36	16,361.80
HCP Development Activities						
Development	0.04	0.00	0.00	3,245.26	0.00	1,836.52
Development in HMAs	5.85	10.76	0.00	495.12	0.00	448.83
<i>Subtotal</i>	<i>5.89</i>	<i>10.76</i>	<i>0.00</i>	<i>3,740.38</i>	<i>0.00</i>	<i>2,285.35</i>
Road corridors and infrastructure						
FORTAG Alignment	0.00	0.00	0.00	13.78	0.00	7.71
Marina Airport Expansion	0.00	0.00	0.00	31.05	0.00	2.26
Inter-Garrison Road Widening	0.00	0.00	0.00	13.18	0.00	12.86
MCWD	0.28	0.00	0.00	26.97	0.00	25.67
<i>Subtotal</i>	<i>0.28</i>	<i>0.00</i>	<i>0.00</i>	<i>84.98</i>	<i>0.00</i>	<i>48.50</i>
<i>Subtotal HCP Development, Road corridors, and infrastructure</i>	<i>6.17</i>	<i>10.76</i>	<i>0.00</i>	<i>3,825.36</i>	<i>0.00</i>	<i>2,333.85</i>
<i>% impacted from HCP development, road corridors and infrastructure</i>	<i>6%</i>	<i>15%</i>	<i>0%</i>	<i>20%</i>	<i>0%</i>	<i>14%</i>
<i>Subtotal preserved within HMAs</i>	<i>103.99</i>	<i>60.27</i>	<i>89.36</i>	<i>15,773.07</i>	<i>89.36</i>	<i>14,027.95</i>
<i>% Preserved</i>	<i>94%</i>	<i>85%</i>	<i>100%</i>	<i>80%</i>	<i>100%</i>	<i>86%</i>
Management Activities within HMAs						
BLM FONM				435.27		403.54
State Parks	0.52	0.12				
UC FONR				13.50		0.53
East Garrison North				7.22		7.17
East Garrison South				9.58		9.58
Habitat Corridor				4.10		4.11
Travel Camp				0.40		0.40
Oak Oval				3.10		2.79
Parker Flats				14.76		14.76
Landfill				0.42		
Laguna Seca Wolf Hill				0.14		0.14
Laguna Seca Lookout Ridge				0.67		0.67
Salinas River Habitat Reserve				0.14		0.15
Marina Airport Habitat Reserve				4.27		

Impacts Mechanisms	HCP Species Impacts (acres)					
	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander		California Red-Legged Frog	
			potential and occupied aquatic habitat	potential upland	potential and occupied aquatic habitat	potential upland
Marina Northwest Corner						
Range 45 Reserve				5.39		2.21
Natural Area Expansion				1.89		1.89
<i>Subtotal HMA Management Activities</i>	<i>0.52</i>	<i>0.12</i>	<i>0.00</i>	<i>500.87</i>	<i>0.00</i>	<i>447.95</i>
Total Impacts	6.69	10.88	0.00	4,326.23	0.00	2,781.80
Total Preserved	103.47	60.15	89.36	15,272.2	89.36	13,580.00
% Preserved	94%	85%	100%	78%	100%	83%

Table 4-6a. HCP Plant Species: Impact Mechanisms and Impacts on Non-Federal Lands

Species	Impact Mechanisms				
	HCP Development Activities: Development Areas	HCP Development in HMAs	Future Road Corridors and Infrastructure Construction, Operations, and Maintenance	Operations and Management Activities: Non-Federal HMAs	Total Impacts : Non-Federal
Sand gilia	1,297	148	26	40	1,511
Yadon's piperia	199	5	0.01	0.03	204.04
Monterey spineflower	3,125	273	73	57	3,528
Seaside bird's beak	455	30	1	13	499

Table 4-6b. HCP Plant Species: Impact Mechanisms and Impacts on FONM and Plan Area Total

Species	Impact Mechanisms				
	HCP Development	Future Road Corridors and Infrastructure Construction, Operations, and Maintenance	Operations and Management Activities	Total Impacts: Federal Lands	Total Impacts Plan Area
Sand gilia	121	0.02	190	311.02	1,822.02
Yadon's piperia	0	0.01	71	71.01	275.05
Monterey spineflower	145	0.02	228	373.02	3,901.02
Seaside bird's beak	119	0.02	187	306.02	805.02

Table 4-7a. HCP Wildlife Species: Impact Mechanisms and Impacts on Non-Federal Lands

Species	Impact Mechanisms				
	HCP Development Activities: Development Areas	HCP Development in HMAs	Future Road Corridors and Infrastructure Construction, Operations, and Maintenance	Operations and Management Activities: Non-Federal HMAs	Total Impacts: Non-Federal
Smith's blue butterfly	0.04	6	0.3	0.5	6.84
Western snowy plover	0	4	7	0.1	11.1
California tiger salamander (upland habitat)	3,245	218	85	66	3,614
California red-legged frog (upland habitat)	1,837	191	48	44	2,120

Table 4-7b. HCP Wildlife Species: Impact Mechanisms and Impacts on FONM and Plan Area Total

Species	Impact Mechanisms				
	HCP Development	Future Road Corridors and Infrastructure Construction, Operations, and Management	Operations and Management Activities	Total Impacts: Federal Lands	Total Impacts Plan Area
Smith's blue butterfly	0	0	0	0	6.84
Western snowy plover	0	0	0	0	11.1
California tiger salamander (upland habitat)	278	0.04	435	713	4,327
California red-legged frog (upland habitat)	257	0.04	404	661	2,781

Table 4-8a. Summary of Impacts, Impact Limits, and Preservation for HCP Plant Species

Species	Occupied and Potential Habitat				Impacts					Preservation		
	Non-Federal Development Parcels	Non-Federal HMAs	FONM	Total in Plan Area	Non-Federal Development Parcels	Non-Federal HMAs	Impact Limit: Non-Federal	FONM	Total Impacts in Plan Area	Non-Federal HMA	FONM	Total in Plan Area
Sand gilia	1,297	1,739	6,053	9,088	1,297	214	1,511	311	1,822	1,525	5,742	7,267
Yadon's piperia	199	10	2,211	2,420	199	5	204	71	275	5	2,140	2,145
Monterey spineflower	3,125	2,587	7,266	12,978	3,125	403	3,528	373	3,901	2,184	6,893	9,077
Seaside bird's beak	455	447	5,948	6,850	455	44	499	306	805	403	5,642	6,045

Table 4-8b. Summary of Impacts, Impact Limits, and Preservation for HCP Wildlife Species

Species	Occupied and Potential Habitat				Impacts					Preservation		
	Non-Federal Development Parcels	Non-Federal HMAs	FONM	Total in Plan Area	Non-Federal Development Parcels	Non-Federal HMAs	Impact Limits: Non-Federal	FONM	Total Impacts in Plan Area	Non-Federal HMA	FONM	Total in Plan Area
Smith's blue butterfly	0	110	0	110	0.04	7*	7.04	0	7.04*	103	0	103
Western snowy plover	0	71	0	71	0	11	11	0	11	60	0	60
California tiger salamander												
Potential and occupied aquatic habitat	1	3	85	89	0	0	0	0	0	4	85	89
Potential upland habitat	3,245	2,473	13,880	19,598	3,245	369	3,614	713	4,327	2,104	13,167	15,271
California red-legged frog												
Potential and occupied aquatic habitat	1	3	85	89	0	0	0	0	0	4	85	89
Potential upland habitat	1,837	1,657	12,868	16,362	1,837	283	2,120	661	2,781	1,374	12,207	13,581

*The acreage expected to be impacted in non-Federal HMAs is 6.8 but has been rounded up to 7 in this summary table such that total impacts are slightly overestimated here; see summary text at section 4.3.5 for more detail.

4.3.1 Sand Gilia

For the Federal Permit, permitted activities could adversely affect reproduction/breeding of sand gilia through destruction of up to 1,511 acres of habitat, including 1,297 acres in designated development parcels and 214 acres in non-Federal HMAs. For the State Permit, permitted activities could adversely affect sand gilia through destruction of up to 1,822 acres of habitat, including 1,297 acres in designated development parcels and 525 acres in Federal and non-Federal HMAs. Most of this habitat would be permanently destroyed due to development activities. Some of the habitat in non-Federal HMAs may be repeatedly impacted by road, trail, and fuelbreak maintenance; these areas could still have some intermittent value to the species but are presumed destroyed for purposes of this analysis. The primary option to minimize the effects of habitat destruction on reproduction of the sand gilia is to reduce the amount of habitat destroyed. This HCP would minimize the amount of sand gilia habitat destroyed by preserving 1,525 acres of habitat for the species within non-Federal HMAs (for the State Permit, 7,267 acres of sand gilia habitat will be preserved). In addition, this HCP would prescribe mitigation of adverse effects to sand gilia reproduction by seeding to augment the species within 69 existing restored acres on BLM land (objective 2.5), restoring 210 acres on State Parks land (objective 5.2), and restoring at least 10 acres of habitat on BLM land (section 5.6.1.3). (See Section 1.9.3, *Role of Bureau of Land Management*, for BLM management activities and Section 4.3, *Effects on HCP Species*, for Federal and State Permit distinctions.) Considering the proposed minimization and mitigation, we do not believe that the proposed destruction of 1,511 acres of sand gilia habitat would have demographic consequences at the population or species level that would reduce appreciably the likelihood of the survival and recovery of sand gilia. See section 5.6.1, *Sand Gilia*, for additional information about effects and mitigation.

4.3.1.1 California Department of Fish and Wildlife Area Analysis

At the request of CDFW, the effects on sand gilia were evaluated for three geographic areas in the Plan Area as illustrated on Figure A-1 in Appendix A and summarized in Table 4-9. Area 1 consists of lands west of Highway 1 and includes 147 acres, of which 2 acres will be affected by development, roads, infrastructure, or O&M and HCP required actions (up to 1% of Area 1 affected). Area 2 is comprised of lands in and around the City of Marina, including the FONR property, and includes 1,678 acres. Development, roads and infrastructure construction, and O&M activities will result in the loss of up to 762 acres (up to 45% of Area 2 affected). Area 3 encompasses the remainder of the Plan Area, including the FONM, and is 7,264 acres. In Area 3, up to 1,057 acres (up to 15% of Area 3 affected) would be lost to development, roads and infrastructure construction, and O&M activities. This estimate assumes the 311 acres of impacts resulting from covered activity implementation in the FONM will affect species; however, BLM will site its facilities to avoid or significantly reduce impacts on HCP species in compliance with the RMP, HMP, and as stated in the minimization measures for the HCP (Chapter 5, *Conservation Strategy*).

A minimum of 7,267 acres (80%) of sand gilia habitat will be preserved and maintained or enhanced in the HMAs⁶ (Table 4-9). The majority of the preserved sand gilia habitat will be in Area 3 (6,206 acres), with 916 acres in Area 2 and 145 acres in Area 1. State Parks coastal dune habitat restoration goals and requirements will substantially increase the size of coastal populations in Area 1. State Parks is

⁶ The acreages preserved and affected in Table 4-8a and Table 4-9 differ slightly due to rounding.

required to maintain approximately 50% of the restored dune habitat for annual species. Between 1998 and 2003 State Parks planted a total of 2,751 sand gilia individuals within the FODSP. As a requirement of a previously authorized permit, UC has begun a pilot project to restore maritime chaparral habitat and actively introduce sand gilia on a 7-acre area of the FONR near the former Fritzsche Army Airfield. The actual area of introduction extent is less than one acre.

Table 4-9. Sand Gilia: Summary of Development, Infrastructure, Management Activities within HMAs, Impacts, and Preservation by Area

Area ^a	Total Acres	Total Affected (acres)	Total Preserved (acres)	Percentage Affected	Percentage Preserved
Area 1	147	2	145	1%	98%
Area 2	1,678	762	916	45%	55%
Area 3	7,264	1,057	6,206	15%	85%
Total	9,089	1,822	7,267	20%	80%

^a Areas correspond to those delineated on Figure A-1 (Appendix A).

The following subsections provide additional details on the potential species impacts; however, the impact acres identified below are included in the impact summary provided above (i.e., they are not additional impacts).

4.3.1.2 Future Road Corridors and Infrastructure Construction, Operations, and Maintenance in HMAs

The future Inter-Garrison Road widening project, City of Marina Airport Expansion, FORTAG alignment, and MCWD activities would remove a total of 26.3 acres of sand gilia habitat (Table 4-6a). The future operation and maintenance of these facilities would not result in additional impacts as the existing access roads and easements would be maintained as paved and/or gravel areas lacking suitable HCP species habitat.

4.3.1.3 Road and Trail Maintenance

The impact assessment assumes that sand gilia would be affected as a result of the maintenance of roads and trails (Tables 4-6a and 4-6b). Plants that occur in routes would be directly eliminated by being mowed during the growing season; crushed by vehicles; trampled, dug up, or buried by grading; or through burial of the seed bank. Indirect effects of the use and maintenance of roads and trails on sand gilia include fragmentation of populations; alteration of habitat through soil compaction; and the introduction, spread, or increased density of invasive species, particularly non-native annual grasses, at road edges. AMMs described in Chapter 5, *Conservation Strategy*, will reduce this impact.

4.3.1.4 Maintenance of Fuelbreaks

Removing vegetation in fuelbreaks may kill or injure sand gilia by crushing, trampling, or uprooting, when mechanized equipment or manual methods are used. Seeds in the soil bank may be uncovered during vegetation cutting or buried under chipped or piled brush. Burning piled fuels during the dry season could have beneficial effects if it clears competing vegetation and results in increased germination or available nutrients. Burning cut and piled vegetation could adversely affect sand gilia during the dry season if burning increases surface temperatures to the extent that seeds in the litter

or upper soils layers are destroyed. Wet season burning could kill living plants and seeds that have already absorbed water or germinated. Although maintenance of fuelbreaks may improve habitat for sand gilia, the impact assessment assumes total loss of sand gilia within fuelbreaks (Tables 4-6a and 4-6b).

Sand gilia could be adversely affected if the removal of native vegetation in fuelbreaks is followed by the invasion of non-native plant species or if invasive species already present increase due to regular maintenance. Use of mechanized equipment during the wet season could cause soil compaction and ruts. If non-native grasses become established in fuelbreaks, they may further invade openings in intact maritime chaparral, particularly following a fire, and lead to landscape-level changes by producing easily ignited fuels. Increased fire frequencies combined with annual grass abundance can convert the plant community from chaparral to one dominated by non-native grasses. AMMs described in Chapter 5, *Conservation Strategy*, will reduce these impacts.

4.3.2 Yadon's Piperia

For the Federal HCP, activities could adversely affect reproduction/breeding of Yadon's piperia through destruction of up to 204 acres of habitat, all in designated development parcels. Most of this habitat would be permanently destroyed due to development activities. The primary option to minimize the effects of habitat destruction on reproduction of the Yadon's piperia is to build new communities of the species through a translocation, salvage and propagation plan to create a 2:1 replacement for the occupied habitat destroyed. Pilot studies of Yadon's piperia propagation are underway in an unprecedented collaboration among University of California (UC) Santa Cruz Arboretum and Greenhouse staff, the Smithsonian Environmental Research Center in Maryland, staff and students at the UC Fort Ord Natural Reserve, and FORA. This HCP would minimize the amount of Yadon's piperia habitat destroyed by preserving 5 acres of habitat for the species within non-Federal HMAs. As needed, this HCP would prescribe mitigation of adverse effects to Yadon's piperia reproduction by increasing protection of occupied habitat in the region. For more on the conservation of the species, see Section 5.6.2, *Yadon's Piperia*; Sections 6.8.2 and 6.8.1 describe species monitoring and adaptive management.) Although Yadon's piperia is not currently a listed species under CESA, another 2,140 acres of Yadon's piperia habitat would be recognized by CDFW as preserved in FONM (see Section 1.9.3, *Role of Bureau of Land Management*). Considering the proposed minimization and mitigation, we do not believe that the proposed destruction of 204 acres of Yadon's piperia habitat would have demographic consequences at the population or species level that would reduce appreciably the likelihood of the survival and recovery of the species.

4.3.3 Monterey Spineflower

For the Federal HCP, permitted activities could adversely affect reproduction/breeding of Monterey spineflower through destruction of up to 3,528 acres of habitat, including 3,125 acres in designated development parcels and 403 acres in non-Federal HMAs. Most of this habitat would be permanently destroyed due to development activities. Some of the habitat in HMAs may be repeatedly impacted by road, trail, and fuelbreak maintenance; these areas could still have some intermittent value to the species but are presumed destroyed for purposes of this analysis. The primary option to minimize the effects of habitat destruction on reproduction of the Monterey spineflower is to reduce the amount of habitat destroyed. This HCP would minimize the amount of Monterey spineflower habitat destroyed by preserving 2,184 acres of habitat known to contain 72% of the highest density occupancy for the species within non-Federal HMAs. Although Monterey

spineflower is currently not listed under CESA, another 6,893 acres is preserved in FONM for a total of 9,077 acres preserved. In addition, this HCP would prescribe mitigation of adverse effects to Monterey spineflower reproduction by: seeding to augment the species within 69 existing restored acres on BLM land (objective 2.5), restoring 210 acres on State Parks land (objective 5.2), and restoring at least 10 acres of habitat on BLM land (See Section 5.6.1.3, and also see 1.9.3 *Role of Bureau of Land Management* for BLM management activities.) Considering the proposed minimization and mitigation, we do not believe that the proposed destruction of 3,528 acres of Monterey spineflower habitat would have demographic consequences at the population or species level that would reduce appreciably the likelihood of the survival of the Monterey spineflower.

The impact analysis for this species represents a worst-case scenario. It does not take into account AMM implementation within the HMAs (Chapter 5, *Conservation Strategy*). As such, impacts within the HMAs may be less than indicated due to AMM implementation. See Section 5.6.3, *Monterey Spineflower*, for more on effects and mitigation.

The following subsections provide additional details on the potential species impacts; however, the impact acres identified below are included in the impact summary provided above (i.e., they are not additional impacts).

4.3.3.1 Future Road Corridors and Infrastructure Construction, Operations, and Maintenance in HMAs

Road corridors and infrastructure development within the HMAs will result in 73 acres of impacts on Monterey spineflower habitat (Table 4-6a). Among the impacts, the widening of Inter-Garrison Road will remove 12.8 acres of Monterey spineflower habitat where it passes through the Habitat Corridor/Travel Camp and East Garrison North Reserve parcels. MCWD facilities within HMAs will remove another 16.5 acres of Monterey spineflower habitat. The proposed FORTAG alignment and City of Marina Airport Expansion would result in the loss of 15.5 and 28.3 acres, respectively. The Inter-Garrison Road Widening, FORTAG alignment, and MCWD activities would result in the loss of 41.55 acres of Monterey spineflower critical habitat. The future operation and maintenance of these facilities would not result in additional impacts as the existing access roads and easements would be maintained as paved and/or gravel areas lacking suitable HCP species habitat.

Table 4-10. Monterey Spineflower Designated Critical Habitat Impacts and Preservation

	Designated Critical Habitat (acres)
Total Designated Critical Habitat	11,055
Plan Area Designated Critical Habitat	10,160
% in Plan Area	92%
Impact Mechanisms	Plan Area Impacts (acres)
HCP Development Activities	
Designated Development Areas	1
Non-Federal HMA Allowable Development	150
FONM Allowable Development ⁷	163
<i>Subtotal</i>	<i>314</i>
Road corridors and infrastructure	
Inter-Garrison Road Widening	14.9
FORTAG	6.3
MCWD	20.35
<i>Subtotal</i>	<i>41.6</i>
<i>Subtotal HCP development, road corridors and infrastructure</i>	<i>355.6</i>
<i>Percent affected by HCP development, road corridors and infrastructure</i>	<i>3%</i>
<i>Subtotal preserved within HMAs</i>	<i>9,804.5</i>
<i>Percentage preserved</i>	<i>97%</i>
HMA O&M and Mitigation Measures	
BLM FONM	256.2
State Parks	2.9
UC FONR	15.5
East Garrison North Reserve	7.2
East Garrison South Reserve	2.6
Habitat Corridor/Travel Camp	4
Oak Oval Reserve	0
Parker Flats Reserve	0
Landfill Parcel	0
Laguna Seca Recreational Expansion—Wolf Hill	0
Laguna Seca Recreational Expansion—Lookout Ridge	0
Salinas River Habitat Reserve	0
Marina Airport Habitat Reserve	0
Marina Northwest Corner	0
Range 45 Reserve	5.8
Natural Area Expansion	0
<i>Subtotal HMA O&M and Mitigation Measures</i>	<i>294.2</i>
Plan Area Proposed Revised Critical Habitat Impact Summary	
Total Impacts	649.8
Total Preserved	9,510.3
Percentage Preserved	94%

4.3.3.2 Road and Trail Maintenance

Monterey spineflower habitat and Monterey spineflower critical habitat would be affected as a result of the maintenance of roads and trails in HMAs. Plants found in routes would be directly eliminated by being mowed during the growing season; crushed by vehicles; trampled, dug up or buried by grading; or through burial of the seed bank. Indirect effects of the use and maintenance of roads and trails on Monterey spineflower include fragmentation of populations; alteration of habitat through soil compaction; and the introduction, spread, or increased density of invasive species, particularly non-native annual grasses at road edges.

4.3.3.3 Maintenance of Fuelbreaks

Removing vegetation in fuelbreaks may remove Monterey spineflower and impact Monterey spineflower critical habitat by crushing, trampling, or uprooting, when mechanized equipment or manual methods are used. Seeds in the soil bank may be uncovered during vegetation cutting or buried under chipped or piled brush. Burning piled fuels during the dry season could have beneficial effects if it clears competing vegetation and results in increased germination or available nutrients. Burning cut and piled vegetation could adversely affect Monterey spineflower during the dry season if burning increases surface temperatures to the extent that seeds in the litter or upper soil layers are destroyed. Wet season burning could kill living plants and seeds that have already absorbed water or germinated. Although maintenance of fuelbreaks may improve habitat for Monterey spineflower, the impact assessment assumes total loss of Monterey spineflower within the fuelbreaks estimated to be required in the HMAs.

Monterey spineflower could be adversely affected if the removal of native vegetation in fuelbreaks is followed by the invasion of non-native plant species or if invasive species already present increase due to regular maintenance. Use of mechanized equipment during the wet season could cause soil compaction and ruts. If non-native grasses become established in fuelbreaks, they may further invade openings in intact maritime chaparral, particularly following a fire, and lead to landscape-level changes by producing easily ignited fuels. Increased fire frequencies combined with annual grass abundance can convert the plant community from chaparral to one dominated by non-native grasses.

4.3.4 Seaside Bird's Beak

For the Federal HCP, permitted activities could adversely affect reproduction/breeding of seaside bird's beak through destruction of up to 499 acres of habitat, including 455 acres in designated development parcels and 44 acres in non-Federal HMAs. For the State permit, total impacts in the Plan Area are 805 acres. Most of this habitat would be permanently destroyed due to development activities. Some of the habitat in non-Federal HMAs may be repeatedly impacted by road, trail, and fuelbreak maintenance; these areas could still have some intermittent value to the species but are presumed destroyed for purposes of this analysis. The primary option to minimize the effects of habitat destruction on reproduction of seaside bird's beak is to reduce the amount of habitat destroyed. This HCP would minimize the amount of seaside bird's beak habitat destroyed by preserving 403 acres of habitat for the species within non-Federal HMAs. (For the State permit, 5,642 acres of habitat in FONM is counted toward a total of 6,045 acres preserved.) In addition, this HCP would prescribe mitigation of adverse effects to seaside bird's beak reproduction by: seeding to augment the species within 69 existing restored acres on BLM land (objective 2.5), and restoring at least 30.9 acres of maritime chaparral habitat, including 10 acres on BLM land (MM-5) (See

Section 1.9.3, *Role of Bureau of Land Management*, for BLM management activities). The restoration of 210 acres of dune and coastal strand in FODSP (objective 5.2) may also serve to increase habitat for this species, as it is known to occur in that habitat type. Considering the proposed minimization and mitigation, we do not believe that the proposed destruction of 499 acres of seaside bird's beak habitat would have demographic consequences at the population or species level that would reduce appreciably the likelihood of the survival and recovery of seaside bird's beak.

The impact analysis for this species represents a worst-case scenario. It does not take into account AMM implementation (Chapter 5, *Conservation Strategy*). However, applying a conservative approach, the impact assessment assumes that all of the allowable development area within the FONM would be in seaside bird's beak habitat and therefore, the habitat could be lost as a result of development. Similarly, there are 8 acres of allowable development in the FONR that have not been sited and could occur in seaside bird's beak habitat so the impact assessment assumes that development in the FONR would result in the loss of up to 8 acres of seaside bird's beak habitat. As such, impacts within the HMAs may be less than indicated by the impact analysis with AMM implementation. The following subsections provide additional details on the potential impacts on this species; note however, that the impact acres identified below are included in the impact summary provided above (i.e., they are not additional impacts).

4.3.4.1 CDFW Area Analysis

At the request of CDFW, the effects to seaside bird's beak were evaluated for two geographic areas in the Plan Area as illustrated on Figure A-4 in Appendix A and summarized in Table 4-11. Area 1 consists of the seaside bird's beak occurrences north of Reservation Road and includes the FONR. Area 2 is the remainder of the Plan Area.

There are an estimated 6,850 acres of seaside bird's beak in the Plan Area; 130 acres (2%) are within Area 1 and 6,719 acres (98%) are within Area 2. Covered activities would remove 44 acres of habitat in Area 1 and 761 acres in Area 2. The remaining 6,045 acres of habitat would be preserved and maintained or enhanced within the HMAs. This includes 86 acres of habitat in Area 1 and 5,958 acres in Area 2. Overall, 88% of the seaside bird's beak habitat in the Plan Area will be preserved within the HMAs.

Table 4-11. Seaside Bird's Beak: Summary of Development, Infrastructure, Management Activities within HMAs, Impacts, and Preservation by Area

Area ^a	Total Acres	Total Affected (acres)	Total Preserved (acres)	Percent Affected (acres)	Percent Preserved (acres)
Area 1	130	44	86	35%	66%
Area 2	6,719	761	5,958	11%	89%
Total	6,849	805	6,045	12%	88%

^a Areas correspond to those delineated on Figure A-4 (Appendix A).

4.3.4.2 Road and Trail Maintenance

The impact assessment assumes that seaside bird's beak would be affected as a result of HMA roads and trails maintenance. Plants found in routes would be directly eliminated by being mowed during the growing season; crushed by vehicles; trampled, dug up or buried by grading; or through burial of the seed bank. Indirect effects of the use and maintenance of roads and trails on seaside bird's beak

include fragmentation of populations; alteration of habitat through soil compaction; and the introduction, spread, or increased density of invasive species, particularly non-native annual grasses at road edges.

4.3.4.3 Maintenance of Fuelbreaks

Removing vegetation in fuelbreaks may result in a loss of seaside bird's beak by crushing, trampling, or uprooting, when mechanized equipment or manual methods are used. Removing vegetation may indirectly affect seaside bird's beak by removing potential host plants (seaside bird's beak is hemiparasitic, acting as a parasite by attaching its roots to a host plant while producing some of its own chlorophyll). Seeds in the soil bank may be uncovered during vegetation cutting or buried under chipped or piled brush. Burning fuels during the dry season could have beneficial effects on seaside bird's beak if it clears competing vegetation and increases germination or available nutrients. Burning cut and piled vegetation could adversely affect seaside bird's beak during the dry season if burning increases surface temperatures to the extent that seeds in the litter or upper soils layers are destroyed. Wet season burning could kill living plants and seeds that have already absorbed water or germinated. Although maintenance of fuelbreaks may improve habitat for seaside bird's beak, the impact assessment assumes total loss of plants within the fuelbreaks estimated as necessary within the HMAs.

Seaside bird's beak could be adversely affected if the removal of native vegetation in fuelbreaks is followed by the invasion of non-native plant species or if invasive species already present increase due to regular maintenance. Use of mechanized equipment during the wet season could cause soil compaction and ruts. If non-native grasses become established in fuelbreaks, they may further invade openings in intact maritime chaparral, particularly following a fire, and lead to landscape-level changes by producing easily ignited fuels. Increased fire frequencies combined with annual grass abundance can convert the plant community from chaparral to one dominated by non-native grasses. AMMs described in Chapter 5, *Conservation Strategy*, will reduce these impacts.

4.3.5 Smith's Blue Butterfly

Permitted activities could adversely affect breeding, feeding, sheltering, and migration of Smith's blue butterflies through destruction of up to 6.84 acres of habitat, including 0.04 acres in designated development parcels and 6.8 acres in non-Federal HMAs. Most of this habitat would be permanently destroyed due to development activities. The primary option to minimize the effects of habitat destruction on breeding, feeding and sheltering of the Smith's blue butterfly is to minimize destruction of breeding, feeding and sheltering habitat. This habitat would be preserved within 103 acres of non-Federal HMAs. The primary option to minimize effects to Smith's blue butterfly migration is to increase habitat in FODSP. The HMP was designed to minimize the loss of connectivity between conserved areas of the former Fort Ord and that strategy has been carried forward into this HCP. This HCP would prescribe mitigation of adverse effects to Smith's blue butterfly breeding, feeding, sheltering, and migration activities by restoring at least 42 acres of habitat (objective 13.4), and creating a corridor of habitat from south to north within the FODSP HMA (objective 13.5). Considering the proposed minimization and mitigation, we do not believe that the proposed destruction of less than 7 acres of Smith's blue butterfly habitat would have demographic consequences at the population or species level that would reduce appreciably the likelihood of the survival and recovery of Smith's blue butterfly. The quantitative impact analysis for this species represents a worst-case scenario. It does not take into account implementation of AMMs

(Chapter 5, *Conservation Strategy*). Implementation of AMMs will avoid and minimize impacts on Smith's blue butterfly during construction. AMMs include pre-construction surveys, construction monitoring, and buckwheat plant removal and relocation (AMM-10). This reduction in impacts is described qualitatively. As such, impacts may be less than indicated with AMM implementation. The following subsections provide additional details on the potential impacts on this species.

4.3.5.1 Development

State Parks has identified four management zones that will have some level of development. The impact assessment assumes that all buckwheat plants providing potential habitat for Smith's blue butterfly in these zones will be removed; however, AMM implementation would require removal and relocation of affected buckwheat plant material (See *Removal and Relocation Protocol*). A total of 6 acres of buckwheat plants occur in these management zones. Development will consist of parking areas, visitor overlooks, recreation trails, interpretive displays, picnic areas, and campgrounds. Visitor use, infrastructure, and support facilities will be sited, to the extent possible, to avoid areas currently supporting sensitive resources and will be designed to prevent degradation of adjacent habitat. Host plants located in habitat patches affected by development, operations, and maintenance would be removed and relocated, consistent with the conservation strategy (Chapter 5).

The FODSP General Plan proposes that the beaches be managed to provide low-intensity public use. Foot traffic and other human impacts on habitat associated with increased use could damage host plants and degrade Smith's blue butterfly habitat in the coastal zone. Management requirements include the use of boardwalks, trails, fencing, and other means to control public access and minimize these effects.

All habitat patches within FONR are protected in perpetuity and no plant removal will take place. Small, isolated habitat patches would be removed outside FODSP, east of Highway 1, in designated development parcels and HMAs with allowable development. All host plant and plant material removed from east of Highway 1 will be relocated to FONR. Habitat acreages or host plant losses are assumed to occur as follows: two plants on Marina Northwest Corner (Appendix A, Figure A-5c), 0.02 acre adjacent to the east side of Blanco Road (Appendix A, Figure A-5d), 0.004 acre on Marina Airport (Appendix A, Figure A-5e), and a few dozen plants (about 10 square feet) on a City of Seaside parcel (Appendix A, Figure A-5f). Consistent with the conservation strategy (Chapter 5), host plant material will be removed and relocated from all habitat patches prior to development impacts. All sites east of Highway 1 are considered inland populations and will be relocated to FONR.

4.3.5.2 Road Corridors and Infrastructure Construction, Operations, and Maintenance in HMAs

None of the proposed road corridors or facilities are within the FODSP. Thus, these activities are expected to result in no effect on Smith's blue butterfly. However, MCWD's management and operation of the 5-acre abandoned sewage treatment plant within FODSP and a pump station near the southern end of FODSP will affect less than 1 acre of Smith's blue butterfly habitat.

4.3.5.3 Road and Trail Maintenance

Existing and new roads in Smith's blue butterfly habitat will be designed and maintained to minimize impacts on Smith's blue butterfly. New roads associated with the proposed FODSP

campground will have a speed limit of 15 mph to minimize incidental take of Smith's blue butterflies in flight.

Trails will be located away from Smith's blue butterfly habitat or will exist as paved trails or boardwalks to reduce the amount of repeated ground disturbance leading to soil compaction and introduction of non-native plants. Recreationists leaving designated trails could trample buckwheat plants or crush individual Smith's blue butterfly, but these incidents are expected to be infrequent. Thus, effects from these activities are expected to be minimal. The population of Smith's blue butterfly will be monitored, and management activities may be adapted as a result.

4.3.6 Western Snowy Plover

Permitted activities could adversely affect breeding, feeding, sheltering, and migration of western snowy plover through destruction of 11 acres of habitat, all in one non-Federal HMA. Most of this habitat would be permanently destroyed due to development activities. The primary option to minimize the effects of habitat destruction on breeding of the western snowy plover is to minimize effects to breeding habitat. An approved project site is located inland of the bluffs, improved access will include the footprint of three designated access routes and a 600-foot buffer around each access route which totals to 11 acres of destroyed breeding habitat. 60 acres of breeding habitat would be conserved within non-Federal HMAs. The primary option to minimize the effects of habitat destruction on feeding and sheltering of the western snowy plover is to minimize destruction of coastal habitat. Coastal habitat would be preserved within 60 acres of the same HMA. The primary option to minimize effects to western snowy plover migration is to preserve this habitat. In addition to preservation of existing habitat, this HCP would prescribe mitigation of adverse effects to Western snowy plover breeding by restoring at least 280 acres of breeding habitat (objective 4.1) and by controlling visitor access to habitat in the HMA. The proposed restoration of breeding habitat will have collateral benefits to the surrounding upland habitat such that feeding, sheltering, and possibly migration activities will also be enhanced surrounding the restored breeding areas. Considering the proposed minimization and mitigation, we do not believe that the proposed destruction of 11 acres of western snowy plover habitat would have demographic consequences at the population or species level that would reduce appreciably the likelihood of the survival and recovery of the western snowy plover.

The impact analysis for this species represents a worst-case scenario. It does not take into account AMM implementation within the FODSP (Chapter 5, *Conservation Strategy*). The HCP requires State Parks to manage western snowy plover habitat within the FODSP to a level necessary to achieve the species' biological goals (Chapter 6, *Monitoring and Adaptive Management*). As such, impacts within the FODSP may be less than indicated. The following subsections provide additional details on the potential species impacts.

4.3.6.1 Development

State Parks has identified four management zones that will have some level of development, totaling 145 acres (Table 3-10). To the extent possible, development in the management zones will avoid potential western snowy plover habitat. Infrastructure and support facilities will be sited to avoid areas typically occupied by western snowy plovers and will be designed to limit degradation of

adjacent habitat by controlling informal access to nesting habitat and restricting access to sensitive resources sites (Chapter 5, *Conservation Strategy*).

The FODSP General Plan proposes that the beach be managed to provide low-intensity public use. Foot traffic and other human impacts associated with increased use could degrade western snowy plover habitat or result in direct incidental take of nests or chicks. As described above, State Parks will designate three beach access corridors (360,000 square feet total) that will provide public access to the beach. These access corridors directly overlap western snowy plover habitat and increased public access could result in direct incidental take if nests or chicks are trampled or if broods are separated. Symbolic fencing, consisting of posts, cable, and interpretive signs, will be installed to prevent access at locations other than designated access routes, but narrow paths will remain unfenced to allow access to and from the beach. In addition, it is estimated that habitat within 600 feet north and south of each access route inside of the symbolic fence will be directly affected by increased public use (3,600 square feet total). Because western snowy plovers are extremely susceptible to disturbance, it is unlikely that they will nest in habitat near access routes; therefore, habitat within 600 feet will essentially become unavailable for nesting. The designation of 600 feet is a conservative estimate, but demographic monitoring will determine if this estimate is accurate; adaptive management can be implemented depending on the outcome. If nests are initiated within the access route or 600-foot buffer, direct incidental take (loss of individuals and/or nests) could occur. With AMM implementation (e.g., installation of fencing/signs/boardwalks/paving to limit beach access points, daily monitoring and repositioning fencing if any nests are initiated in access routes), and adaptive management (e.g., access route or beach closure), loss of individuals would not be expected if western snowy plovers nest within the unfenced areas.

In addition, increased human presence on the beaches facilitated by new park facilities could indirectly affect western snowy plover through disturbance that results in nest abandonment or the separation of broods (through unintentional harassment during activities such as sunbathing or picnicking) once the campground and other park features are developed, as well as facilitation of predators that thrive on human activity (e.g., corvids, raccoons). Beach management activities (see Chapter 5, *Conservation Strategy*) will be implemented to minimize impacts on HCP Species and will therefore have minimal impacts on western snowy plovers. Applicable western snowy plover AMMs included in Chapter 5 will reduce these impacts and contribute to the realization of the species' biological goals.

Table 4-12. Western Snowy Plover Critical Habitat Impacts and Preservation

	Designated Critical Habitat (acres)
Total Designated Critical Habitat	24,527
Plan Area Designated Critical Habitat	174
Percentage in Plan Area	1%
Impact Mechanisms	Plan Area Impacts (acres)
<i>HCP Development Activities</i>	
Designated Development Areas	0
HMA Allowable Development	20.7
<i>Subtotal</i>	<i>20.7</i>
<i>Road corridors and infrastructure</i>	
MMTC	0
MCWD	0
<i>Subtotal</i>	<i>0</i>
<i>Subtotal HCP development, road corridors, & infrastructure</i>	<i>20.7</i>
<i>Percentage affected from HCP development, road corridors and infrastructure</i>	<i>12%</i>
<i>Subtotal preserved within HMAs</i>	<i>153.3</i>
<i>Percentage preserved</i>	<i>88%</i>
<i>HMA O&M and Mitigation Measures</i>	
BLM FONM	0
State Parks	1.5
UC FONR	0
East Garrison North Reserve	0
East Garrison South Reserve	0
Habitat Corridor/Travel Camp	0
Oak Oval Reserve	0
Parker Flats Reserve	0
Landfill Parcel	0
Laguna Seca Recreational Expansion—Wolf Hill	0
Laguna Seca Recreational Expansion—Lookout Ridge	0
Salinas River Habitat Reserve	0
Marina Airport Habitat Reserve	0
Marina Northwest Corner	0
Range 45 Reserve	0
Natural Area Expansion	0
<i>Subtotal HMA O&M and Mitigation Measures</i>	<i>1.5</i>
Plan Area Critical Habitat Impact Summary	
Total Impacts	22.2
Total Preserved	153.3
Percentage Preserved	88%

4.3.6.2 Road and Trail Maintenance

No roads will be located in western snowy plover habitat. Trails will be closed if western snowy plovers nest nearby (i.e., close in distance and/or within line of sight). Maintenance activities will not occur until the birds have left the nesting area.

4.3.7 California Tiger Salamander

For the Federal permit, permitted activities could adversely affect breeding, feeding, sheltering, and migration of California tiger salamanders through destruction of up to 3,614 acres of habitat, including 3,245 acres in designated development parcels and 369 acres in non-Federal HMAs. Most of this habitat would be permanently destroyed due to development activities. Some of the habitat in non-Federal HMAs may be repeatedly impacted by road, trail, and fuelbreak maintenance; these areas could still have some intermittent value to the species but are presumed destroyed for purposes of this analysis. For the State Permit, activities in the Plan Area total 4,327 acres. The primary option to minimize the effects of habitat destruction on breeding of the California tiger salamander is to minimize effects to breeding habitat. No breeding habitat would be destroyed; 3 acres of breeding habitat would be conserved within non-Federal HMAs and 1 acre of breeding habitat would be retained within areas otherwise designated for development. (For the State permit, 85 acres of aquatic habitat in FONM is also preserved, for a total of 89 acres.) The primary option to minimize the effects of habitat destruction on feeding and sheltering of the California tiger salamander is to minimize destruction of upland habitat, especially that which occurs near breeding ponds. Upland habitat would be preserved within 2,104 acres of non-Federal HMAs and the majority of impacts to upland habitat would occur at least 630 meters from a breeding pond (see discussion in last paragraph of section 4.3.7). (For the State permit, an additional 13,167 acres in FONM is preserved, for a total of 15,271 acres.) The primary option to minimize effects to California tiger salamander migration is to minimize destruction of habitat between areas of breeding and upland habitat. The HMP was designed to minimize the loss of connectivity between conserved areas of the former Fort Ord and that strategy has been carried forward into this HCP, although one potential breeding pond and one 74-acre area of upland habitat would be isolated (see discussion in Section 4.3.7.1). In addition to preservation of existing habitat, this HCP would prescribe mitigation of adverse effects to California tiger salamander breeding by restoring at least two breeding ponds to provide at least 2 acres of breeding habitat (objective 14.5) and by controlling hybrid tiger salamanders within the former base (objective 14.4) (hybrid tiger salamanders may prey upon and/or interbreed with native California tiger salamanders at breeding ponds). The proposed restoration of breeding habitat will have collateral benefits to the surrounding upland habitat (upland habitat becomes more valuable when it is closer to breeding habitat), such that feeding, sheltering, and possibly migration activities will also be enhanced surrounding the restored breeding areas. Considering the proposed minimization and mitigation, we do not believe that the proposed destruction of 3,614 acres of California tiger salamander habitat would have demographic consequences at the population or species level that would reduce appreciably the likelihood of the survival and recovery of the California tiger salamander.

Impacts on California tiger salamander are divided into two main categories: breeding habitat and upland habitat for feeding, sheltering, and migrating (Figure 4-1). There are two breeding habitat categories: potential breeding habitat and breeding habitat. Potential breeding habitat is ponds that have been determined to provide appropriate habitat but are not currently known to support the species. Breeding habitat is those ponds that are known to have supported breeding in the past.

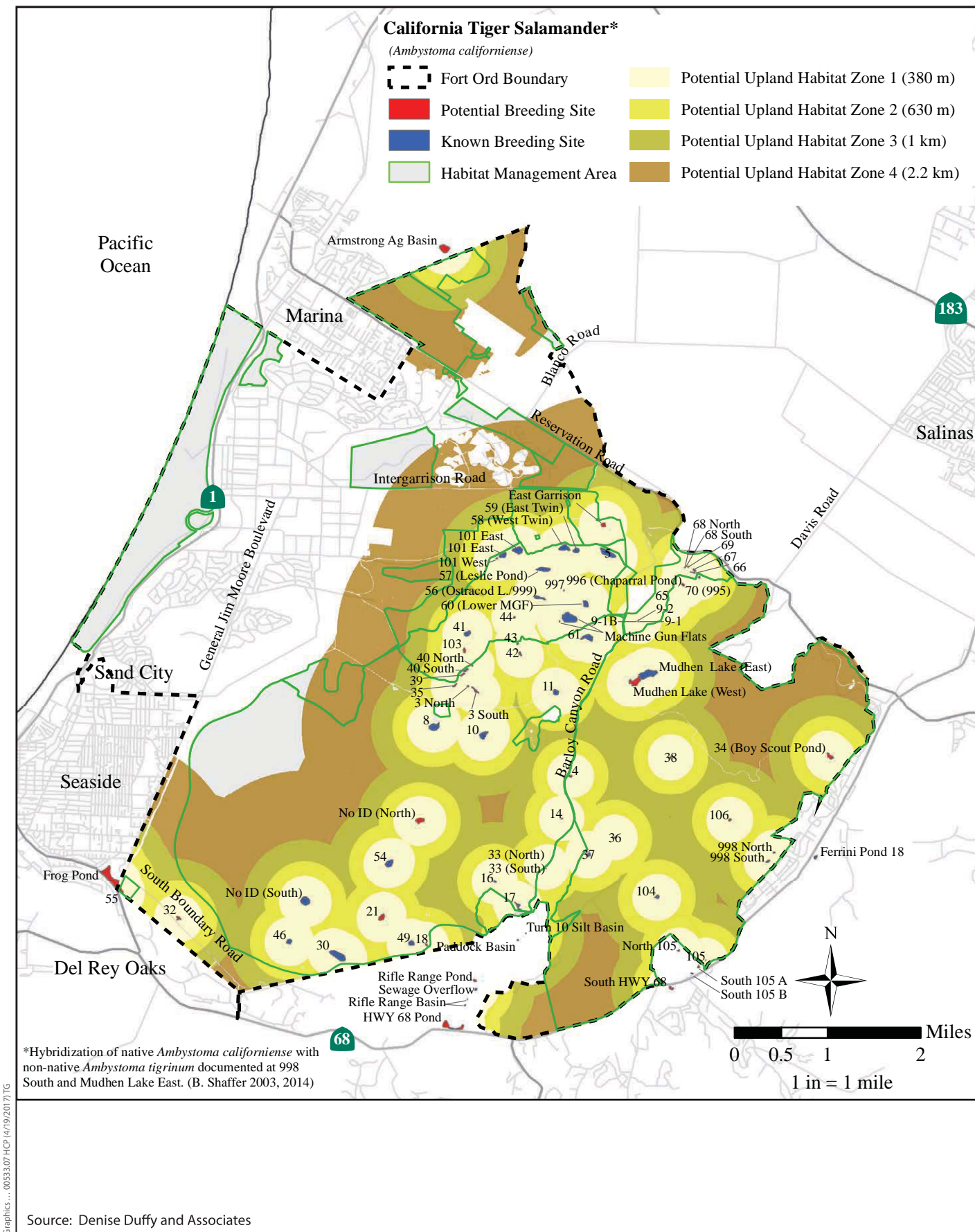


Figure 4-1
Potential Upland Habitat for California Tiger Salamander
Based on All Aquatic Resources

The extent of upland habitat occupancy is not known; accordingly, all upland habitat is considered potential habitat. The following subsections provide additional details on the potential impacts on this species. The impacts on California tiger salamander upland habitat have been divided into four impact zones developed in coordination with CDFW based on the probability of upland use and dispersal distance from known pools. These zones were determined based on research that identified frequency and abundance of California tiger salamander upland habitat use within specific distances of breeding ponds. This research resulted in the designation of the following four California tiger salamander impact zones (380 m [0.24 mile]; 630 m [0.39 mile]; 1 km [0.62 mile]; and 2.2 km [1.3 mile]).

- The first 380-meter zone (0.24 mile) captures the distance that greater than 50% of dispersing California tiger salamander adults and approximately 50% of dispersing California tiger salamander sub-adults will travel from the breeding pond (Trenham and Shaffer 2005).
- The second zone of 630 meters is the distance within which greater than 95% of dispersing California tiger salamanders are found (Trenham and Shaffer 2005).
- The third zone, bounded by 1 km, is based on ongoing studies that show that adults and juveniles routinely move greater than 1 km (0.62 mile) (Searcy and Shaffer 2008).
- The fourth and largest of the zones, within 2.2 km (1.3 miles) of a potential breeding pond, is based on the distance adults have been found to move from a breeding site (Orloff 2007).

(See Section 1.9.3, *Role of Bureau of Land Management*, for BLM management activities and Section 4.3, *Effects on HCP Species*, for Federal and State permit distinctions.)

4.3.7.1 Development

Development activities will not directly impact aquatic habitat. One potential breeding pond is located within the NAE, and although it will not be directly affected, it will be isolated from all other breeding habitat and will lose much of the potential upland habitat around it as a result of development.

Up to 3,740 acres of potential upland habitat for the California tiger salamander will be affected by development in designated development areas and allowable development within HMAs. Potential upland habitat within designated development areas will become unavailable to California tiger salamanders, whether or not it is removed. For the most part, these areas are on the periphery of California tiger salamander habitat because breeding habitat is concentrated in the HMAs. All upland habitat within the FONM is considered potentially suitable for California tiger salamanders, and the impact assessment assumes a loss of 278 acres. Within FONR, 7 acres would be lost. Future development in the Habitat Corridor/Travel Camp HMA could affect up to 51 acres. Portions of this area have been degraded in the past by camping activities although much of it likely still functions as upland habitat for the California tiger salamander. The expansion of camping, parking, and recreation areas could kill or injure California tiger salamanders directly and indirectly through the removal of burrows.

The Landfill Parcel contains 74 acres of potential upland habitat for the California tiger salamander. This parcel is surrounded by designated development areas and therefore would be isolated; the potential upland habitat would be lost due to the severing of movement corridors between the uplands and potential breeding ponds. The proposed cross-country course in the Oak Oval Reserve could impact 4 acres of potential upland habitat if it were to be bladed and maintained to prevent

ground squirrels or other fossorial animals from burrowing in the area. The course is expected to be 150 feet wide and should not interfere with California tiger salamander movement. The HCP requires the course to be sited and designed to minimize vegetation removal and maintain wildlife movement (Section 3.3.2.7, *County of Monterey — Oak Oval Reserve*) and Chapter 5, *Conservation Strategy*). The Laguna Seca Recreation Expansion Area (Wolf Hill and Lookout Ridge) has two potential breeding sites and 268 acres of potential upland habitat.⁷ Because the potential breeding areas in Lookout Ridge will not be directly affected, and the parking sites already exist, the impact assessment assumes there will be no direct loss of California tiger salamander habitat in these parcels. California tiger salamanders could be injured or killed by vehicles during parking events and maintenance (mowing, fuelbreaks). However, the effects of these activities will be minimized by the requirements in the HCP to preserve the pools and related watersheds, minimize erosion, prevent unauthorized vehicle access, and monitoring (Chapter 5, *Conservation Strategy*).

4.3.7.2 Future Road Corridors and Infrastructure Construction, Operations, and Maintenance in HMAs

The widening of Inter-Garrison Road would remove up to 13 acres of potential upland habitat by expanding the existing road through the Habitat Corridor/Travel Camp and East Garrison North Reserve HMAs. Another 27 acres of potential upland habitat could be affected by the construction of new MCWD facilities in HMAs. California tiger salamanders could be killed or injured during excavation and trampled by construction vehicles. Once initial construction activities are completed, California tiger salamanders could move back into areas that are backfilled with native soil. However, ongoing maintenance may preclude California tiger salamanders from re-establishing in these areas. Therefore, the impact assessment includes maintenance as a direct loss of habitat. The Marina Airport Expansion and FORTAG alignment would remove up to 45 acres of potential upland habitat.

Development in Borderlands could indirectly affect California tiger salamanders that are within the HMAs through unauthorized vehicle access, trash dumping, landscape waste dumping, introduction of non-native invasive species, and the creation of sink habitats for the California tiger salamander. The restrictions the HCP places on the Borderlands will minimize these effects (Chapter 5, *Conservation Strategy*).

4.3.7.3 Road and Trail Maintenance

Road and trail maintenance could kill or injure California tiger salamanders by vehicle strike, burial, or crushing by grading machinery, and crushing of burrows that extend into dirt roads and road edges. Maintenance activities will occur during the daylight hours and generally will not be conducted during periods of heavy rain. High berms left on road edges could expose California tiger salamanders to increased likelihood of injury if the conditions cause them to use the travel lanes; however, observations that other amphibians following straight-line paths of travel make it likely that California tiger salamanders would also attempt straight-line movements and could scale the dirt berms of most roads depending on berm steepness. Steep slopes are a potential dispersal barrier. There are 355 acres of roads and trails in the FONM. Administrative use of these roads will result in little mortality of California tiger salamanders as almost all road use would occur during

⁷ The two potential breeding sites are both located on the Lookout Ridge portion of Laguna Seca Recreation Expansion Area. Wolf Hill has no aquatic habitat.

the day when California tiger salamanders are not likely to be moving along the surface. Recreational use of roads and trails would result in similarly low mortality because most of this use takes place during the day and motorized vehicles would not be allowed.

Maintenance of the road shoulders will involve non-native species control and grading where needed to facilitate runoff and/or repair erosional damage. A total of 42 acres of road shoulder will be maintained in the FONM, another 11 acres of road shoulder maintenance is estimated in the remaining HMAs with potential California tiger salamander upland habitat. The area in which road maintenance will occur will likely be unsuitable upland habitat for the California tiger salamander and therefore is considered lost. Maintenance of road shoulders will be timed to take place outside of the period when California tiger salamander would be moving above ground to the maximum extent feasible. A total of 61 acres of trail maintenance will occur in the HMAs, approximately 36 acres of which would occur in the FONM. Maintenance activities will take place during the day, when California tiger salamanders are not likely to be moving along the surface. Therefore, minimal take of individual California tiger salamanders is anticipated.

4.3.7.4 Fuelbreak Maintenance

Mechanical and manual vegetation clearance in fuelbreaks may occasionally injure or kill California tiger salamanders by crushing burrows and crushing or burying their inhabitants when the soil is gouged. Removing a linear strip of vegetation on either side of an established road is less likely to cause the changes that may occur over a larger area, such as altering the humidity in burrow systems, altering insect food sources, or exposing California tiger salamanders to substantially increased desiccation or predation once they begin to move above ground during the wet season. Burning, chipping, or grinding piled material cleared from fuelbreaks could kill or injure California tiger salamanders during the wet season if California tiger salamanders have taken temporary shelter under the piled vegetation, or if burning is conducted near breeding sites. The take estimate assumes that the entire fuelbreak area within HMAs with potential upland habitat would be lost, which is approximately 405 acres (367 acres within the FONM and 38 acres within the non-Federal HMAs). No fuelbreaks are anticipated within potential breeding sites. Fuelbreak maintenance will be timed to occur outside of the period when California tiger salamanders would be moving above ground to the maximum extent feasible. Also, these activities will take place during the day, when California tiger salamanders are not likely to be moving along the surface. Therefore, minimal take of individual California tiger salamanders is anticipated.

4.3.8 California Red-Legged Frog

For the Federal permit, permitted activities could adversely affect breeding, feeding, sheltering, and migration of California Red-Legged Frogs through destruction of up to 2,120 acres of habitat, including 1,837 acres in designated development parcels and 283 acres in non-Federal HMAs. Most of this habitat would be permanently destroyed due to development activities. Some of the habitat in non-Federal HMAs may be repeatedly impacted by road, trail, and fuelbreak maintenance; these areas could still have some intermittent value to the species but are presumed destroyed for purposes of this analysis. The primary option to minimize the effects of habitat destruction on breeding of the California Red-Legged Frog is to minimize effects to breeding habitat. No breeding habitat would be destroyed; 3 acres of breeding habitat would be conserved within non-Federal HMAs and 1 acre of breeding habitat would be retained within areas otherwise designated for development. If the State requires an ITP for take of

this species of special concern within the 50-year term of the HCP, the 85 acres of potential and occupied aquatic habitat in FONM is also included in take evaluation. The primary option to minimize the effects of habitat destruction on feeding and sheltering of the California Red-Legged Frogs is to minimize destruction of upland habitat, especially that which occurs near breeding ponds. Upland habitat would be preserved within 1,374 acres of non-Federal HMAs. (For a State permit, an additional 12,207 acres of upland habitat is included in preservation.) (See Section 1.9.3, *Role of Bureau of Land Management*, for BLM management activities and Section 4.3, *Effects on HCP Species* for Federal and State Permit distinctions.) The primary option to minimize effects to California Red-Legged Frog migration is to minimize destruction of habitat between areas of breeding and upland habitat. The HMP was designed to minimize the loss of connectivity between conserved areas of the former Fort Ord and that strategy has been carried forward into this HCP, although one potential breeding pond and one 74-acre area of upland habitat would be isolated (see discussion in section 4.3.7.1). In addition to preservation of existing habitat, this HCP would prescribe mitigation of adverse effects to California Red-Legged Frog breeding by restoring at least two breeding ponds to provide at least 2 acres of breeding habitat (objective 14.5) and by controlling hybrid tiger salamanders within the former base (objective 14.4), which prey on tadpoles. The proposed restoration of breeding habitat will have collateral benefits to the surrounding upland habitat (upland habitat becomes more valuable when it is closer to breeding habitat), such that feeding, sheltering, and possibly migration activities will also be enhanced surrounding the restored breeding areas. Considering the proposed minimization and mitigation, we do not believe that the proposed destruction of 2,120 acres of California Red-Legged Frog habitat would have demographic consequences at the population or species level that would reduce appreciably the likelihood of the survival and recovery of the California Red-Legged Frog.

The effects on the California red-legged frog are assumed to be the same as those described for the California tiger salamander, should the species be present. California red-legged frogs use both aquatic and upland habitats and may disperse up to 2 miles from breeding habitat (Figure 4-2). The same impact assumptions used for the California tiger salamander would adequately address any future impacts on the California red-legged frog.

4.4 Cumulative Impacts

The impacts of covered activities were assessed relative to the baseline conditions documented in the HMP as amended by the various subsequent documents identified in the beginning of this chapter. Covered activities were defined as inclusively as possible to encompass a wide variety of development projects and management actions. Some activities and projects that are outside of the scope of this HCP may nonetheless contribute to cumulative impacts on covered species. Specific projects and activities not covered by this HCP that may, in conjunction with this HCP, have an impact on HCP species are identified in the EIR/EIS for this HCP.

4.4.1 Proposed Beach-Front Development Adjacent to Plan Area

Following are potential development projects anticipated to occur in beach front areas adjacent to the Plan Area.

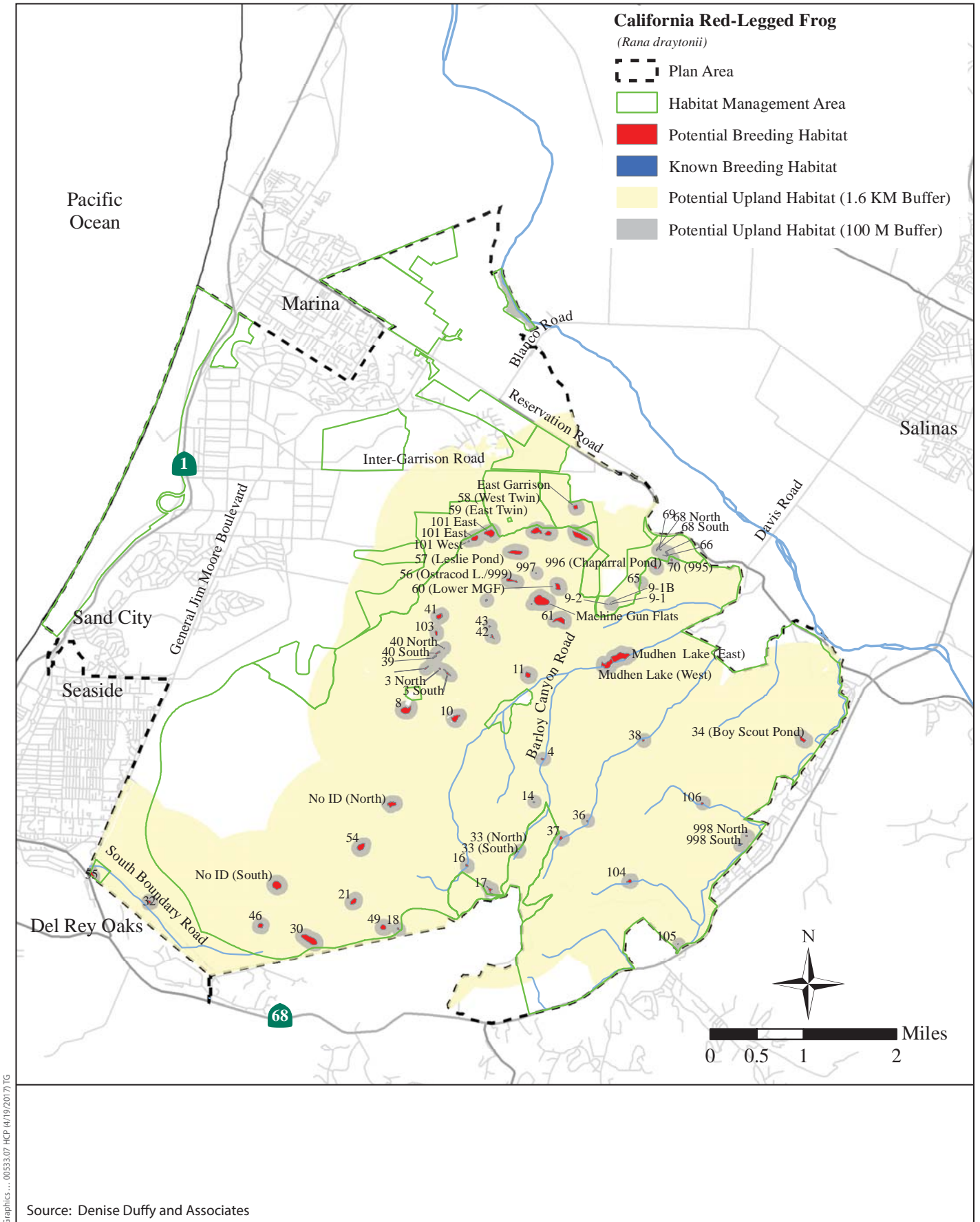


Figure 4-2
Occupied and Potential California Red-Legged Frog Habitat

4.4.1.1 Monterey Bay Shores Resort

A 39.04-acre oceanfront project is proposed for development adjacent to the Plan Area. The proposed project, Monterey Bay Shores Resort, would be located on Assessor's Parcel Number 011-501-014 in Sand City and include construction of a 341-unit mixed use "ecoresort." The resort would include a 161-room hotel, 88 visitor-serving condominium units, and 92 residential condominium units. The *Addendum to the Final Environmental Impact Report* (City of Sand City 2008) identifies potential effects to HCP species and provides mitigation for each of the effects.

- **Monterey spineflower.** The proposed project would remove 2.6 acres of Monterey spineflower. As part of the proposed mitigation, 3.4 acres of Monterey spineflower will be reestablished.
- **Smith's blue butterfly.** The proposed project would avoid impacts to Smith's blue butterfly. As part of the proposed mitigation, ice plant encroaching on the 40 buckwheat plants within the project area will be eradicated and an additional 400 plants established.
- **Western snowy plover.** The proposed project would remove potential nesting habitat. The amount removed was not quantified in the report. Species nesting surveys have been conducted since 1995. Nesting attempts recorded in the north Monterey and Sand City shoreline area (including the proposed project site) during this time period include 13 nests in 1995, 7 nests in 1996, 4 nests in 1997, 4 nests in 1998, 2 nests in 1999, 1 nest in 2000, and 4 nests in 2008. The project would implement several measures to avoid, minimize, and reduce species impacts. These include the following.
 - Preconstruction surveys and construction monitoring.
 - Preconstruction conference with equipment operators and field supervisors.
 - Preservation and establishment of a managed 2-acre nesting protection zone.
 - Nesting protection zone expansion per biologist recommendation.
 - Adaptive management and access plan.
 - Establishment of conservation easements.
 - Annual review of resort operations on biological conditions.
 - Mandatory employee biological resource education.
 - Predator management plan.
 - Coordination with Sand City and State Parks on plover management.
 - 15% allocation of environmental trust funds to plover protection.

A total of 23.2 acres of foredune, secondary dune, back dune, wetland, and coastal bluff habitat will be restored. The Monterey spineflower and Smith's blue butterfly habitat restoration is included in this amount. This includes a 4.3 acre living roof planted with coastal dune species. A conservation easement will be placed on 14 acres of the restored area around the periphery of the development. A public access easement will be designated on 6 acres of the site and provide access (two private and one public trail are included as part of the proposed project).

This proposed development could affect western snowy plover nesting success on and adjacent to the proposed project site. Although nesting attempts are currently low, the development could preclude future nesting attempts on the site due to removal of nesting habitat and increased

recreational use, both public and private. Successful implementation of the proposed project mitigation measures may reduce this adverse effect.

4.4.1.2 The Collection at Monterey Bay Project

The Collection at Monterey Bay Project is a 26-acre coastal project consisting of a 139 room hotel, 203 room resort, and 758 parking spaces is proposed west of Highway 1 in Sand City. A Draft EIR was released in November 2012 and Final EIR in 2013. Sand City approved the project in December 2013; however, the project was appealed to the California Coastal Commission and remains in the coastal permitting process.

4.4.2 Proposed Development Adjacent to Plan Area

Following are additional potential development projects anticipated to occur in inland areas adjacent to the Plan Area.

4.4.2.1 Marina Station

Marina Station (part of the Armstrong Ranch) is a 320-acre development situated on either side of Del Monte Avenue along the northern limits of the City of Marina. The proposal is to be developed using Neo-Traditional design standards. Neo-Traditional neighborhoods include all the essential needs of daily life including living, working, shopping, learning and playing areas. Entitlements call for the development of 1,360 residential units to include approximately 887 single-family lots and 473 multi-family units. Affordable housing of 20 percent will be included. Additionally, the project will include approximately 60,000 square feet of Retail space, 144,000 square feet of office space, and 652,000 square feet of business park/industrial. Parks, playgrounds and open space will complete development of the site. The Marina City Council approved the project and certified the EIR in June 2009; however, the project was put on hold during the recession. There are discussions about a new developer constructing the project.

4.4.2.2 Ferrini Ranch Subdivision

Ferrini Ranch consists of the subdivision of an approximately 866-acre property into 212 residential lots including 146 market-rate lots, 23 clustered lots for workforce housing units, and 43 lots for Inclusionary housing units; one commercial parcel fronting on River Road, and 600 acres of open space. The project site is located on the south side of State Highway 68 between River Road and San Benancio Road in the vicinity of Toro County Park. This project was approved by the County of Monterey in December 2014; however, a lawsuit was filed, and development is pending.

4.4.2.3 Corral de Tierra

The Corral de Tierra Shopping Village project site is located at the intersection of State Highway 68 and Corral de Tierra Road, approximately seven miles southwest of the city of Salinas, in the Toro area of the County of Monterey. The site encompasses two separate lots of record totaling approximately 11-acres. The proposed project consists of the subdivision of the two existing lots into seven parcels and the development of an approximately 100,000 square foot "Shopping Village" with retail buildings, a grocery store, an office building and parking. This project was approved by the County of Monterey Board of Supervisors in February 2012. The project was sued, and the Courts recently ruled in favor of the County of Monterey and the project is moving forward.

4.4.2.4 Monterey Peninsula Fixed Guideway Project

The Monterey Peninsula Fixed Guideway Service will provide light rail transit service using the existing Monterey Branch Line alignment, which was purchased by the Transportation Agency in 2003 for \$9.3 million. The 16-mile corridor extends between Monterey and Castroville on the publicly owned tracks adjacent to Highway 1. The first phase of the project will run between Monterey and north Marina with key stations in Monterey, Seaside, Sand City, Marina/CSUMB, and connecting bus service to Pacific Grove and Carmel to the south and Salinas to the east. Later phases will extend service to the planned commuter rail station in Castroville and increase the frequency of trains. TAMC is currently in the environmental review process for this project.

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Table 4-1a. HCP Plant Impact Estimation Methods and Key Assumptions

Category/Method	Key Assumptions																														
Baseline Establishment																															
<ul style="list-style-type: none">JSA survey polygon method was used to establish impact analysis baseline in 1992.<ul style="list-style-type: none">Polygons delineated on aerial photographs by drawing boundaries around land units with relatively homogeneous vegetation established the survey areas.Botanists identified the habitat type and conducted floristic inventory of each polygon in the field.Each polygon was assigned a density of occurrence (low, medium, high) based on HCP plant species found within a JSA survey polygon, then the entire polygon was given a density of occurrence (low, medium, or high). The JSA survey polygon method was used for most species, but no specific location of occurrence was provided; this method may result in higher occurrence acreages for most species than what likely actually exists.JSA survey results were updated to include survey results through 2016 including, the CNDDDB, Army GIS files (JSA 92, post-92, annual monitoring), local biologists (Sean McStay/Gage Dayton [UC FONR species]; David Styer [Yadon’s piperia]; and project-specific surveys (including, but not limited to: Marina Heights, The Dunes, Seaside Main Gate, East Garrison, CSUMB Master Plan, MCWD projects, Del Rey Oaks Resort, Cypress Knolls, FONR OU-1 monitoring data, Monterey Downs Specific Plan, California Central Coast Veterans Cemetery, and Eastside Parkway).For recent surveys that identified species occurrences within “developed” polygons, a new occurrence polygon was created to calculate acreage.	<ul style="list-style-type: none">HCP species were assumed to be absent from JSA survey polygons identified as “developed” in the 1992 baseline.The JSA survey polygon method is suitable for HCP plant species that are widespread across the Plan Area.Yadon’s piperia only occur in small isolated locations, therefore, the number of individuals is provided in addition to the acreage associated with the JSA polygons.																														
General Impact Analysis																															
<ul style="list-style-type: none">Species occurrence established using <i>Baseline Establishment</i> methods identified above.All species occurrences impacted in designated development areas, including borderlands.All HMAs: allowable development impacts were calculated first, followed by future road corridors, MCWD facilities, FORTAG, Marina Airport, and habitat management activities.State Parks: HCP species occurrence estimated within each management zone (see Table 3-11).Marina Northwest Corner: Created a 5-acre preserve area to protect the occurrence of Yadon’s piperia observed in 2007 and 2009 and surrounding suitable habitat; HCP species impacts are based on the occurrence acreage outside of the 5-acre preserve.	<ul style="list-style-type: none">Designated development area development, including Borderlands, results in removal of 100% of species present.Allowable HMA development is summarized in Table 4-2.State Parks: road and trail maintenance impacts are in addition to the 142-acre development allowance. New roads would be part of the 142-acre development allowance.Allowable development in Marina Northwest Corner will avoid all impacts to Yadon’s piperia within a 5-acre preserve area; the remaining 58 acres will be developed.81 acres of impacts (about 26%) within the Landfill Parcel.All HMAs: impacts associated with future road corridors, MCWD facilities, FORTAG, Marina Airport, and habitat management activities occur on preserved land after subtracting development allowance.																														
Future Road Corridors in HMAs																															
<ul style="list-style-type: none">DD&A coordinated with FORA and project engineers to determine future road projects and obtain project descriptions including proposed locations and road alignment corridor widths. All road improvements are proposed within development parcels with the exception of widening of Inter-Garrison Road (IG Road), which would encroach into the East Garrison North, Habitat Corridor, and Travel Camp HMAs. A conceptual alignment for the MMTC was approved in 2010; however, TAMC is currently evaluating an alternative to that alignment, which does not affect any HMAs. This analysis assumes the alternative MMTC alignment will be approved and avoid impacts to HMAs.Utilized GIS to estimate acreage of impact.Determined HMAs affected, estimated acreage of impact within HMA, estimated percent of HMA affected, applied that percentage to occurrence acreage of HCP species in HMA to determine road impacts on HCP species.	<table><tr><th>HMA</th><th>Road Corridor</th><th>Impact Area (Acres)</th><th>HMA Acreage</th><th>% of HMA</th><th>% of Species Occurrence Impacted</th></tr><tr><td>East Garrison North</td><td>IG Road</td><td>7.5</td><td>148</td><td>5</td><td>5</td></tr><tr><td>Habitat Corridor</td><td>IG Road</td><td>7</td><td>253</td><td>3</td><td>3</td></tr><tr><td>Travel Camp</td><td>IG Road</td><td>3.5</td><td>145</td><td>3</td><td>3</td></tr><tr><td>Total</td><td></td><td>18</td><td>773</td><td>11</td><td>11</td></tr></table> <ul style="list-style-type: none">O&M for IG Road Widening would not result in take because assumed road shoulders would be maintained as paved and gravel areas lacking suitable HCP species habitatAny future roadways proposed by the City of Marina Airport Master Plan Update are included in the assumptions below.	HMA	Road Corridor	Impact Area (Acres)	HMA Acreage	% of HMA	% of Species Occurrence Impacted	East Garrison North	IG Road	7.5	148	5	5	Habitat Corridor	IG Road	7	253	3	3	Travel Camp	IG Road	3.5	145	3	3	Total		18	773	11	11
HMA	Road Corridor	Impact Area (Acres)	HMA Acreage	% of HMA	% of Species Occurrence Impacted																										
East Garrison North	IG Road	7.5	148	5	5																										
Habitat Corridor	IG Road	7	253	3	3																										
Travel Camp	IG Road	3.5	145	3	3																										
Total		18	773	11	11																										

Category/Method	Key Assumptions				
MCWD Facilities within HMAs					
<ul style="list-style-type: none">DD&A coordinated with MCWD to determine future MCWD projects and obtain project descriptions including proposed locations and area of potential impact.Coordinated with BLM and removed three projects within FONM; projects would occur within paved areas. Huffman remained as part of existing easementMCWD projects are not part of BLM 2% development allowanceUtilized GIS to estimate acreage of impact.Determined which HMAs would be affected, estimated percent of HMA affected, applied that percentage to acreage of HCP species in HMA to estimate MCWD impacts on HCP species. Used same method as described above for road corridors.Existing Operation and Maintenance of facilities within HMAs – would not result in take as they would be occurring in existing easements in areas lacking suitable habitat for HCP speciesFuture Operation and Maintenance of facilities within HMAs - would not result in take because assumed access roads and easements would be maintained as paved and gravel areas lacking suitable HCP species habitat	Project	HMA	Impact (acres)	TOTAL per HMA	% of HMA
	IG Rd Pipeline	East Garrison North	1.1	1.1	0.74
	Well 29	FONR (South)	0.5	0.5	0.27
	EG Pipeline	Travel Camp	3.1	14.24	9.82
	EG Phase 4 Pipeline	Travel Camp	6.3		
	Reservoir C2	Travel Camp	3.94		
	IG Rd Pipeline	Travel Camp	0.9		
	Reservoir C2	Habitat Corridor	6.62	16.72	6.61
	IG Rd Pipeline	Habitat Corridor	0.3		
	Reservoir C2 and pipe	Habitat Corridor	9.8		
	Huffman	FONM	0.5	0.5	0.0034
	Ord Village Lift Station	State Parks	2.6	2.6	0.27
	Total		35.660	35.66	0.22
Operations and Management Activities in HMAs – Maintenance of Roads and Trails					
<ul style="list-style-type: none">Operations and Management impacts are considered temporary since the shoulders of paved roads and dirt roads and trails could be restored in the future.New roads and trails are considered as part of HMA’s “allowable development” (note: not all HMAs have allowable development and new roads and trails are not covered activities)Rerouting existing trails or roads are considered as part of HMA’s “allowable development” (note: not all HMAs have allowable development and new roads and trails are not covered activities)Closing any dirt roads or trails and any associated “restoration credit” is not included as part of this analysisQuantitative estimates of the direct impacts of road and trail maintenance were made based on the descriptions of these activities provided by BLM for the FONM, UC FONR, and the County (Table 4-3).Existing Roads (note: new roads are addressed in Future Road Corridors or would be considered as part of HMAs allowable development)<ul style="list-style-type: none">Roads are existing so travel lands and shoulders have already been established; the analysis assumes take that may result from shoulder maintenanceImpact is calculated as a one-time, permanent impact to the HCP species that occur in the HMA and assumes that 20% of the road shoulder may be occupied by the HCP species since the road shoulders are primarily gravel and do not provide much suitable habitat. For the FONM, 20% of the 213 acres of road shoulder is approximately 42 acres, which is approximately 0.2% of the HMA land area. For UC FONR, 20% of the 11.6 acres of road shoulder is 2.32 acres, which is about 0.4% of the HMA land area.All other HMAs assumed 0.3% of HMA would be impacted by road maintenanceProportion HMAs trails, with the exception of State Parks, County HMAs, and UC FONR is equal to BLM FONM. BLM manages and maintains 110 miles of existing drivable roads.Applied percent impact on each HCP species found within an HMA, as applicableTrails<ul style="list-style-type: none">Applied BLM FONM trail maintenance (0.2% of HMA) to account for trail maintenance in all HMAs with the exception of County HMAs and UC FONR.Trail maintenance for County HMAs (i.e., East Garrison North, East Garrison, South, Habitat Corridor/Travel Camp, Oak Oval, Parker Flats, Landfill, Wolf Hill, and Lookout Ridge) was determined based on trails described in the draft Fort Ord Recreational Habitat Area Master Plan. It was requested that impacts associated with 13 total acres of trails be analyzed in the HCP. Acreages per HMA were estimated and rounded to total 13 acres. UC FONR provided maintenance of 7.25 acres of trails, or 1.2% of HMA allowance = 1.6%.	<ul style="list-style-type: none">Oak Oval cross country track on eastern edge of HMA (as shown in Land Swap Assessment) is approximately 1,155 linear feet. Assuming 150 foot width, the impact acreage would be 4 acres. This impact/take assessment assumes that these 4 acres of trail would be considered the “allowable development” for the site. No other development is permitted per the conditions of the swap. Since this is a developed feature, the 4 acres is assigned to allowable development and not trail maintenance. Oak Oval was assigned impact based on FORHA and, separate and in addition to, the 4 acres of allowable development.MPRPD requested a 2 acre allowance for trail O&M at NAE HMA; since 2 ac is 11% of HMA, applied this percentage to HCP species present for take estimate				
	HMA	Road Maintenance (acres)	Trail Maintenance (acres)		
	Natural Resource Management Area	42.0	36		
	Fort Ord Dunes State Park	2.5	1.7		
	Fort Ord Natural Reserve	2.3	7.25		
	East Garrison North Reserve	0.4	1		
	East Garrison South Reserve	0.8	1		
	Habitat Corridor/Travel Camp	1.0	5		
	Oak Oval Reserve	0.2	1		
	Parker Flats Reserve	1.1	3		
	Landfill Parcel	0.7	1.5		
	Laguna Seca Recreational Expansion				
	Wolf Hill	0.1	0		
	Lookout Ridge	0.3	0.5		
	Salinas River Habitat Area	0.1	0.1		
	Marina Airport Reserve	0.4	0.3		
	Marina Northwest Corner	0.01	0.01		
	Range 45 Reserve	0.6	0.4		
	Natural Area Expansion	0.06	2		
	Total	52.57	60.76		

Category/Method	Key Assumptions		
FORTAG			
<ul style="list-style-type: none">Conceptual alignment provided by project proponents, which consisted of proposed 12-foot-wide paved recreational trail.For portions that occurred within HMAs, a 52-foot-wide corridor was applied to account for 12-foot paved trail and potential construction and engineering constraints.The portion of the alignment within FONR was not included in the take assessment because the alignment is proposed within the 50-foot-wide fuelbreak, and impacts from the fuelbreak are already included in the analysis.The portion of the alignment within the Landfill parcel was assumed to occur in addition to the allowable 81 acres of development to provide a conservative estimate of take.All other portions of the alignment occur within HMAs with no allowable development (e.g., Marina Airport, Salinas River, East Garrison North, Habitat Corridor, and NAE).The acreage of impact was calculated to be a percentage of each HMA and then the percentage was applied to all species occurrences within each HMA.	HMA	Acreage of Impact	% Impact in HMA
	Marina Airport	4.4	3.4
	Salinas River	0.5	1.1
	East Garrison North	3.5	2.4
	Habitat Corridor	3.3	1.3
	NAE	1.1	5.7
	Landfill	6.5	3.0
		19	
Marina Airport			
<ul style="list-style-type: none">City of Marina provided project description of potential future airport expansion activities, which included expansion of the runway to the west and an access road.Expansion of the runway would result in approximately 30 acres of impacts on Marina Airport HMA and 3 acres of the Salinas River HMA.The acreage of impact was calculated to be a percentage of each HMA and then the percentage was applied to all species occurrences within the HMA (23% on Marina Airport HMA and 7% on Salinas River HMA).			
	Operations and Management in HMAs—Fuelbreaks		
	<ul style="list-style-type: none">2.7% impact applied to the following HMAs: BLM FONM, Parker Flats, EG South, Oak Oval, and Range 45 Reserve; percentage applied to all species occurrence acreages in HMAs.3.99% impact applied to East Garrison North; Boundary with CSUMB = 3004 linear feet (lf) x 50 (width of fuelbreak) = 3.4 acres; boundary with Reservation Road (2,151 lf x 50 = 2.47 acres, for a total of 5.87 acres of impact); 5.87 of 147 (HMA area) is 3.99%; percentage applied to all species occurrence acreages in HMAs.3.9% impact applied to Marina Airport HMA; Category 4 Borderland occurs along boundary with Armstrong Ranch and fuelbreak would be needed on HMA if ranch is developed; 4,462 lf x 50 = 5.1 acres, which is 3.9% of total HMA area; percentage applied to all species occurrence acreages in HMAs.1% impact applied to FONR; determined fuelbreak within North Reserve; no fuelbreak maintenance proposed in Corridor or South Reserve due to existing roads.	<ul style="list-style-type: none">Fuelbreaks are parallel to roads 15 feet past shoulder.BLM road density is equivalent to Parker Flats, EG South, Oak Oval, and Range 45 Reserve; fuelbreak maintenance would take place within the 15 feet from each edge of shoulder: 110 miles x 5,280 ft = 580,800 ft x 30 ft = 400 acres (3.6 ac/mi); 2.7% of BLM land area.No fuelbreaks are in the following HMAs for the reasons identified:<ul style="list-style-type: none">State Parks (assume due to presence of Highway 1)Habitat Corridor/Youth Camp—Category 2 BorderlandsLandfill—Categories 2 and 4 Borderlands; for Category 4 portion, no fuelbreak because existing road (Imjin Parkway)Laguna Seca Wolf Hill and Lookout Ridge—Category 2 BorderlandsSalinas River—Category 2 BorderlandsMarina Northwest Corner—currently Category 4 Borderlands; should be Category 2 Borderlands around proposed 5-acre reserveNAE—Category 2 Borderlands	
Habitat Management Activities—Restoration			
	<ul style="list-style-type: none">Restoration Activities are assumed to have a net benefit to HCP species and no take is calculated.		

Table 4-1b. HCP Wildlife Impact Estimation Methods and Key Assumptions

Category/Method	Key Assumptions																														
Baseline Establishment																															
Followed previous methodology (January 2007, Zander Associates) as closely as possible but updated to include best scientific information available.																															
Previous baseline methodology included:																															
<ul style="list-style-type: none">1992 JSA methodology<ul style="list-style-type: none">Field surveys in 1992Small mammal surveys-trappingReptiles-rakingWetland wildlife-total of 26 permanent and ephemeral water bodies were surveyed for CTS and CRLF using dipnetsGeneral and riparian bird surveys-observations (included grassland habitat)Western snowy plover-walking beachZander 2007<ul style="list-style-type: none">Used JSA 1992 data except for:Smith’s blue butterfly-data from Army (1996 Holte surveys) and buckwheat mapped by HLA in 1999 and Zander in 2002Western snowy plover-State Parks provided estimate of potential habitat in 2004 (97 acres)CTS-used Army’s BA (July 2004) and BO dated March 14, 2005																															
DD&A researched and reviewed data from the following to update the data:																															
<ul style="list-style-type: none">CNDDB RareFind Reports,Army GIS files (JSA 92, post-92, annual monitoring reports through 2016),local biologists (Sean McStay/Gage Dayton for UC FONR species; David Styer for Smith’s blue butterfly; Bruce Delgado for CTS; Bill Collins for CTS),Biological Assessments and Opinions for the former Fort Ord and surrounding area; andResults recent project-specific surveys (e.g., including, but not limited to: Marina Heights, The Dunes, Seaside Main Gate, East Garrison, CSUMB Master Plan, MCWD projects, Del Rey Oaks Resort, Cypress Knolls, FONR OU-1 monitoring data, Monterey Downs Specific Plan, California Central Coast Veterans Cemetery, and Eastside Parkway).																															
General Impact Analysis																															
<ul style="list-style-type: none">Species occurrence established using <i>Baseline establishment</i> methods identified above.All species occurrences impacted in designated development parcels, including borderlands.All HMAs: Allowable development impacts calculated first, followed by future road corridors, MCWD facilities, and habitat management activities.State Parks: HCP species occurrence estimated within each management zone (see Table 3-9).Marina NW Corner: Created a 5-acre preserve area to protect the occurrence of Yadon’s piperia observed in 2007 and 2009 and surrounding suitable habitat; species impacts are based on the occurrence acreage outside of 5-acre preserve.	<ul style="list-style-type: none">Designated development parcel development, including Borderlands results in removal of 100% of species present.Allowable HMA development is summarized in Table 4-2.State Parks: road and trail maintenance impacts are in addition to the 142-acre development allowance. New roads would be part of the 142-acre development allowance.81 acres of impacts (about 26%) within the Landfill Parcel.All HMAs: impacts associated with future road corridors, MCWD facilities, FORTAG, Marina Airport, and habitat management activities occur on preserved land after subtracting development allowance.																														
Future Road Corridors in HMAs																															
<ul style="list-style-type: none">DD&A coordinated with FORA and project engineers to determine future road projects and obtain project descriptions including proposed locations and road alignment corridor widths. All road improvements are proposed within development parcels with the exception of widening of Inter-Garrison Road (IG Road), which would encroach into the East Garrison North, Habitat Corridor, and Travel Camp HMAs. A conceptual alignment for the MMTC was approved in 2010; however, TAMC is currently evaluating an alternative to that alignment, which does not affect any HMAs. This analysis assumes the alternative MMTC alignment will be approved and avoid impacts to HMAs.Utilized GIS to estimate acreage of impact.Determined HMAs affected, estimated acreage of impact within HMA, estimated percent of HMA affected, applied that percentage to occurrence acreage of HCP species in HMA to determine road impacts on HCP species.	<table><tr><th>HMA</th><th>Road Corridor</th><th>Impact Area (Acres)</th><th>HMA Acreage</th><th>% of HMA</th><th>% of Species Occurrence Impacted</th></tr><tr><td>East Garrison North</td><td>IG Road</td><td>7.5</td><td>148</td><td>5</td><td>5</td></tr><tr><td>Habitat Corridor</td><td>IG Road</td><td>7</td><td>253</td><td>3</td><td>3</td></tr><tr><td>Travel Camp</td><td>IG Road</td><td>3.5</td><td>145</td><td>3</td><td>3</td></tr><tr><td>Total</td><td></td><td>18</td><td>773</td><td>11</td><td>11</td></tr></table> <ul style="list-style-type: none">O&M for IG Road Widening would not result in take because assumed road shoulders would be maintained as paved and gravel areas lacking suitable HCP species habitat <p>Any future roadways proposed by the City of Marina Airport Master Plan Update are included in the assumptions</p>	HMA	Road Corridor	Impact Area (Acres)	HMA Acreage	% of HMA	% of Species Occurrence Impacted	East Garrison North	IG Road	7.5	148	5	5	Habitat Corridor	IG Road	7	253	3	3	Travel Camp	IG Road	3.5	145	3	3	Total		18	773	11	11
HMA	Road Corridor	Impact Area (Acres)	HMA Acreage	% of HMA	% of Species Occurrence Impacted																										
East Garrison North	IG Road	7.5	148	5	5																										
Habitat Corridor	IG Road	7	253	3	3																										
Travel Camp	IG Road	3.5	145	3	3																										
Total		18	773	11	11																										

Category/Method	Key Assumptions
	below.

MCWD facilities

- DD&A coordinated with MCWD to determine future MCWD projects and obtain project descriptions including proposed locations and area of potential impact
- Utilized GIS to estimate acreage of impact
- Determined which HMAs would be impacted, estimated percent of HMA impacted, applied that percentage to acreage of HCP species in HMA to estimate MCWD impacts to HCP species. Used same method as described above for road corridors.

Project	HMA	Impact (acres)	Total per HMA	% of HMA
IG Rd Pipeline	East Garrison North	1.1	1.1	0.75
Well 33	East Garrison South	1	1	0.36
Well 29	FONR (South)	0.5	0.5	0.08
IG Rd PRV	Habitat Corridor/Youth Camp	0.25		
EG Pipeline	Habitat Corridor/Youth Camp	3.1		
Reservoir C2	Habitat Corridor/Youth Camp	10.6		
EG Phase 4 Pipeline	Habitat Corridor/Youth Camp	6.3		
Reservoir C2 and pipe	Habitat Corridor/Youth Camp	9.8		
IG Rd Pipeline	Habitat Corridor/Youth Camp	1.2	31.25	7.85
Well 33	FONM	1		
New E Reservoir	FONM	7.3		
Huffman	FONM	0.5		
Eucalyptus Road	FONM	0.005	8.805	0.06
Ord Village Lift Station	State Parks	2.6	2.65	0.27
Total		45.255	42.255	9.11

Habitat Management Activities—Road and Trail Maintenance

- Applied percent impact on each HCP species found in an HMA, as applicable
 - Applied BLM FONM existing road and trails (0.2% of entire area) to account for road and trail construction in all HMAs with the exception of State Parks, County HMAs, and UC FONR
 - Trail maintenance for County HMAs (i.e., East Garrison North, East Garrison, South, Habitat Corridor/Youth Camp, Oak Oval, Parker Flats, Landfill Parcel, Wolf Hill, and Lookout Ridge) was determined based on trails described in the draft Fort Ord Recreational Habitat Area Master Plan. It was requested that impacts associated with 10 total acres of trails be analyzed in the HCP. Acreages per HMA were estimated and rounded to total 10 acres.
 - Applied BLM FONM road shoulder maintenance (1.4%) to all HMAs with exception of State Parks and UC FONR.
 - Impacts on UC FONR is equal to total acreage minus 6-acre development allowance = 1.6%

- Proportion HMAs trails, with the exception of State Parks, County HMAs, and UC FONR is equal to BLM FONM. BLM manages and maintains 110 miles of existing drivable roads
- Maintenance includes 10-foot travel lane and up to 8-foot shoulders on each side (max 26-foot-wide road and shoulders)
- Most roads are existing and travel and shoulders already established, so impact assessment focuses on road shoulder maintenance; approximately 213 acres of existing road shoulder (which is about 1.4% of BLM land)
- FONR linear feet and width of proposed road and trail network is 9.57 acres of impact on 600 acres (total FONR minus 6-acre development allowance is 1.6%)
- State Parks road and trail maintenance is included in their development allowance and was not calculated separately

HMA	Road and Trail Maintenance (acres)
Natural Resource Management Area	42.0
Fort Ord Dunes State Park	0.0
Fort Ord Natural Reserve	9.6
East Garrison North Reserve	1
East Garrison South Reserve	1
Habitat Corridor/Youth Camp	2
Oak Oval Reserve	1
Parker Flats Reserve	3
Landfill Parcel	1
Laguna Seca Recreational Expansion	
Wolf Hill	0.5

Category/Method		Key Assumptions	
		Lookout Ridge	0.5
		Salinas River Habitat Area	0.1
		Marina Airport Reserve	0.3
		Marina Northwest Corner	0.0
		Range 45 Reserve	0.4
		Natural Area Expansion	0.0
		Total	62.4
Habitat Management Activities—Fuelbreaks			
<ul style="list-style-type: none">2.7% impact applied to the following HMAs: BLM, Parker Flats, EG South, Oak Oval, and Range 45 Reserve; percentage applied to all species occurrence acreages in HMAs3.99% impact applied to East Garrison North; Boundary with CSUMB = 3004 linear feet (lf) x 50 (width of fuelbreak) = 3.4 acres; boundary with Reservation Road (2,151 lf x 50 = 2.47 acres, for a total of 5.87 acres of impact); 5.87 of 147 (HMA area) is 3.99%; percentage applied to all species occurrence acreages in HMAs3.9% impact applied to Marina Airport HMA; Category 4 borderland occurs along boundary with Armstrong Ranch and fuelbreak would be needed on HMA if ranch is developed; 4,462 lf x 50 = 5.1 acres, which is 3.9% of total HMA area; percentage applied to all species occurrence acreages in HMAs1% impact applied to FONR; Determined fuelbreak within North Reserve; no fuelbreak maintenance proposed in Corridor or South Reserve due to existing roads		<ul style="list-style-type: none">Fuelbreaks are parallel to roads 15 feet past shoulder.BLM road density is equivalent to Parker Flats, EG South, Oak Oval, and Range 45 Reserve; Fuelbreak maintenance would occur within the 15 feet from each edge of shoulder: 110 miles x 5,280 ft = 580,800 ft x 30 ft = 400 acres (3.6 ac/mi); approximately 2.7% of BLM land area.No fuelbreaks occur in the following HMAs for the reasons identified:<ul style="list-style-type: none">State Parks (assume due to presence of Highway 1)Habitat Corridor/Youth Camp—Category 2 borderlandLandfill Parcel—Categories 2 and 4 borderland; for Category 4 portion, no fuelbreak because existing road (Imjin Parkway)Laguna Seca Wolf Hill and Lookout Ridge—Category 2 borderlandsSalinas River—Category 2Marina Northwest Corner—currently Category 4; should be Category 2 around proposed 5-acre reserveNAE—Category 2	
Habitat Management Activities—Restoration			
<ul style="list-style-type: none">1% impact assumption applied to all species within the NRMZ		<ul style="list-style-type: none">Restoration Activities are assumed to have a net benefit to HCP species.Only State Parks has impacts associated with restoration activities; State Parks will impact 1% of the species acreage in the NRMZ	
Smith’s Blue Butterfly			
<ul style="list-style-type: none">Baseline Establishment<ul style="list-style-type: none">General sources reviewed: CNDDDB, Army GIS files (JSA 92, post-92 annual monitoring), Biological Assessments and Opinions for former Fort Ord and surrounding areaSpecies Specific data sources: Data from Army (1996 Holte surveys), local biologists (David Styer), buckwheat mapped by HLA (1999) and Zander (2002)Site specific: potential habitat east of Highway 1(DD&A 2009), Marina Airport (DD&A 2006, 2009), FONR, Marina NW Corner, and Blanco Rd, Seaside Main Gate project site (David Styer and DD&A 2009)DD&A contacted Bruce Delgado and David Styer (FO botanical experts, David is currently compiling list of all plant species on FO) to determine if there were known buckwheat on the east side of Highway 1Impacts<ul style="list-style-type: none">General Impact Analysis, Road Corridors, MCWD facilities, Habitat Management Activities—Road and Trail Maintenance, Habitat Management Activities—Fuelbreaks, and Habitat Management Activities—Restoration methods apply to this species, with the exception of development at UC FONRNo species impacts will occur from allowable development at UC FONR		<ul style="list-style-type: none">All species occurrences and potential habitat (i.e., unoccupied buckwheat occurrences) will be removed in designated development parcelsHost plant material removed from development areas in FODSP and the greater Plan Area will be cut and relocated with the surrounding duff into restoration areas with existing host plants. All plants and plant material that may be affected east of Highway 1 within the development areas will be relocated to FONRSpecies occurrences within the following HMAs will be impacted by HMA development: State Parks FODSP, Marina Northwest CornerUC FONR will avoid all species impacts from developmentGeneral Impact Analysis, Road Corridors, MCWD facilities, Habitat Management Activities—Road and Trail Maintenance, Habitat Management Activities—Fuelbreaks, and Habitat Management Activities—Restoration key assumptions apply to this species	
Western Snowy Plover			
<ul style="list-style-type: none">Baseline establishment<ul style="list-style-type: none">JSA survey method (1992): Walked beach to observe Western snowy ploverGeneral sources reviewed: CNDDDB, Army GIS files (JSA 92, post-92 annual monitoring), Biological Assessments and Opinions for former Fort Ord and surrounding areaSpecies-specific sources: State Parks provided estimates of potential habitat (2004, 2007, 2014) and Point Reyes Bird Observatory		<ul style="list-style-type: none">Species only occurs within State Parks FODSPNew roads will avoid all species impactsRoad and Trail maintenance will avoid all species impactsThree access points were identified and a 600-foot buffer was applied around each to calculate direct impacts to habitat (7 acres total)	

Category/Method	Key Assumptions
<div>Conservation Science nesting observation data (2005 to 2016)<ul style="list-style-type: none">State Parks created a polygon of potential habitat using aerial photos to estimate habitat</div> <div><ul style="list-style-type: none">Impact Analysis<ul style="list-style-type: none"><i>General Impact Analysis</i> and <i>MCWD facilities</i> methods apply to this species</div>	<div><ul style="list-style-type: none">Indirect impacts are assumed within the entire potential habitat polygon<i>General Impact Analysis</i> and <i>MCWD facilities</i> key assumptions apply to this species</div>
California Tiger Salamander	
<div><ul style="list-style-type: none">Baseline establishment<ul style="list-style-type: none">JSA survey method (1992): Permanent and ephemeral water bodies (26 total) surveyed for California tiger salamander using dipnetsGeneral data sources: CNDDDB, Army GIS files (JSA 92, post-92 annual monitoring), Biological Assessments and Opinions for former Fort Ord and surrounding area, and project-specific surveysSpecies specific: Army BA (2004) and BO (2005), local biologists (Bruce Delgado, Bill Collins). Species occurrences in Ponds 16 and 17.Impacts<ul style="list-style-type: none">All species occurrences removed in designated development parcels<i>General Impact Analysis, Road Corridors, MCWD facilities, Habitat Management Activities—Road and Trail Maintenance, and Habitat Management Activities—Fuelbreaks</i> methods apply to this species</div>	<div><ul style="list-style-type: none"><i>General Impact Analysis, Road Corridors, MCWD facilities, Habitat Management Activities—Road and Trail Maintenance, and Habitat Management Activities—Fuelbreaks</i> key assumptions apply to this speciesNo impacts to aquatic features will occur.</div>
California Red-Legged Frog	
<div><ul style="list-style-type: none">Baseline Establishment<ul style="list-style-type: none">JSA survey method (1992): Permanent and ephemeral water bodies (26 total) surveyed for California red-legged frog using dipnetsGeneral data sources: CNDDDB, Army GIS files (JSA 92, post-92 annual monitoring), Biological Assessments and Opinions for former Fort Ord and surrounding areaSpecies-specific sources: one species occurrence at Pond 998 South (larvae identified) (Bruce Delgado)Potential habitat map: potential habitat map from the 1997 HMP adapted to include 1.6 km (1 mile) radius around potential breeding sites to calculate potential upland habitat.Impacts<ul style="list-style-type: none">All species occurrences removed in designated development parcels<i>General Impact Analysis, Road Corridors, MCWD facilities, Habitat Management Activities—Road and Trail Maintenance, and Habitat Management Activities—Fuelbreaks</i> methods apply to this species</div>	<div><ul style="list-style-type: none"><i>General Impact Analysis, Road Corridors, MCWD facilities, Habitat Management Activities—Road and Trail Maintenance, and Habitat Management Activities—Fuelbreaks</i> key assumptions apply to this species.No impacts to aquatic features will occur.</div>

5.1 Overview

This chapter describes the conservation strategy for this HCP. It includes actions that avoid, minimize, and, as appropriate, mitigate for effects associated with the covered activities. The potential effects were described and analyzed in Chapter 4, *Impact Assessment and Levels of Take*. This chapter is organized as follows.

- Section 5.2, *Conservation Framework*, identifies where the conservation strategy will be implemented (designated development areas, Borderlands, and HMAs) and defines the HCP required actions of the conservation strategy AMMs and mitigation measures.
- Section 5.3, *Biological Goals and Objectives*, defines the landscape-level, natural community-level and species-level biological goals and objectives used to develop the conservation strategy.
- Section 5.4, *Measures to Avoid and Minimize Impacts*, describes details on the HCP required AMMs. These measures apply to designated development areas, Borderlands, and HMAs.
- Section 5.5, *Measures to Mitigate Unavoidable Impacts*, provides details on the HCP required mitigation measures for preserve establishment and base-wide resource management.
- Section 5.6, *Mitigation Outcomes*, summarizes the mitigation outcomes of the Fort Ord Multi-Species HCP's conservation strategy for HCP species and describes how outcomes are consistent with ESA standards.
- Section 5.7, *Monitoring and Adaptive Management*, provides a brief overview of the monitoring and adaptive management program.

5.2 Conservation Framework

HCP required AMMs and mitigation measures were developed to avoid and minimize impacts from covered activities and mitigate for impacts that cannot be avoided. These HCP required actions will be evaluated and adapted based on the results of the monitoring and adaptive management program, as described in Chapter 6, *Monitoring and Adaptive Management*. The Cooperative, on the behalf of all of the Permittees, will be responsible for aiding in and ensuring the implementation of the conservation strategy. The conservation actions required by this HCP are characterized as follows.

- **AMMs** are actions associated with covered activities that avoid and/or minimize impacts on the HCP species. Implementation of AMMs is directly tied to take authorizations under the ESA and the CESA. These actions are typically best management practices to implement the covered activities. AMMs are detailed in Section 5.4, *Measures to Avoid and Minimize Impacts*.
- **Mitigation measures** are conservation actions designed to restore, enhance, preserve, and/or compensate for any residual impacts on HCP species. Mitigation measures are detailed in Section 5.5, *Measures to Mitigate Unavoidable Impacts*.

Both AMMs and mitigation measures are required to meet criteria for issuance of Federal and State incidental take permits. Measures that will mitigate for impacts of covered activities on FONM are in addition to BLM's activities and will be funded by the Permittees. The HCP Endowment Fund (see Chapter 9, *Cost and Funding*) will fully fund these activities according to the timing indicated for each action. If there is a State Parks budget shortfall in any given year, the Implementation Assurances Fund will finance the implementation of these activities.

The conservation strategy provides for the establishment, enhancement, and long-term management of habitats that support HCP species in order to protect and enhance populations of these species and ensure their long-term viability. Specifically, the conservation strategy will accomplish the following objectives.

- Ensure covered activities will avoid or minimize impacts on HCP species and natural communities to the maximum extent practicable.
- Preserve natural communities.
- Preserve HCP species' populations and habitats.
- Restore, enhance, and maintain species' habitat and natural communities to mitigate for direct and indirect impacts on particular species.
- Manage preserved HMAs, including appropriate natural processes, to maximize the functions of habitats for HCP species.

For the Federal permit, BLM will assist Permittees to allow Permittee-funded mitigation measures on BLM's FONM. These measures include up to 2 acres of aquatic habitat enhancement for CTS and CRLF, weed abatement, and restoration of grasslands and maritime chaparral. For the Federal permit, Permittees do not receive mitigation credit for BLM habitat restoration or management activities funded through their normal operations. At the end of Section 5.7, Table 5-7 illustrates responsible parties for each HCP mitigation measure to clarify which ones may serve as mitigation for the Federal permit.

For the State permit, the entirety of BLM's preserved and actively managed HCP species habitat within the FONM, as prescribed in the BLM's Resource Management Plan (RMP), is included as mitigation within the Plan Area.

5.2.1 Avoidance and Minimization Measures

Substantial AMMs have already been built into the redevelopment of the Plan Area through the Army's HMP process (see Section 5.4.1.1, *Original Site Planning*). The parcels dedicated for conservation (i.e., HMAs) and parcels dedicated for development (U.S. Army Corps of Engineers, Sacramento District 1997) were selected based on the distribution and abundance of HCP species, and the size, shape, and location of parcels to maximize conservation value for the HCP species. Accordingly, the HMAs are areas of high species density, large size, minimal edge-to-area ratio, and adjacent to existing preserved areas or other HMAs. Through the HMP planning process, covered activities already avoid many impacts by being located in areas with lower species density and lower habitat value. (See Section 3.1, *Background*, for a summary of the relationship between the HMP planning process, Fort Ord Reuse Plan, and the HCP.)

The AMMs identified in Section 5.4, *Measures to Avoid and Minimize Impacts*, serve to augment those measures adopted during HMP establishment. The subsequent AMMs developed for this HCP will be

applied as conditions on covered activities in designated development areas, Borderlands, or HMAs to ensure that impacts on HCP species and their habitats are avoided and minimized to the maximum extent practicable during HCP implementation.

5.2.2 Mitigation Measures

HCP required mitigation measures were developed to offset any impacts resulting from implementation of the covered activities and AMMs. Mitigation measures will be applied at the landscape level, natural community level, and species level. These mitigation measures are directly linked to HCP biological goals and objectives. Landscape-level mitigation measures are applied over the entire Plan Area and relate to establishment, planning, design, and management of designated HMAs. Landscape-level mitigation measures address ultimate disposition (ownership and management responsibilities) of the land and the management activities and commitments necessary to maintain a well-functioning habitat reserve and corridor system. Natural community-level mitigation measures apply to each natural community within the HMAs. These natural community-level mitigation measures were determined by the habitat needs of HCP species and by actions needed to conserve and manage natural communities. Mitigation measures at this level will conserve most HCP species indirectly through conservation and management of their habitats. However, some species-level mitigation measures will provide additional conservation tailored to a particular HCP species at the individual or population level. These species-specific mitigation measures will augment the landscape-level and natural community-level mitigation measures. Species-level mitigation is required in designated development areas, borderlands, and HMAs. Natural community-level and species-level mitigation measures include requirements for habitat revegetation, restoration, and enhancement, prescribed burning and alternative vegetative management, non-native invasive species control, erosion control for habitat restoration, enhancement, and management, and evaluation of alternatives to burning. The types of conservation tools prescribed for the mitigation measures are defined below.

- **Habitat Preservation.** The primary means of protecting HCP species and natural communities is preservation of high-quality habitat, as land preservation is critical to the conservation strategy at the landscape, natural community, and species levels. Identifying and setting aside those areas with important ecosystem functions, linkages, known species occurrences, and other characteristics suitable to support and sustain HCP species is the foundation of the conservation strategy.
- **Habitat Management.** Habitat preservation is only one branch of the conservation strategy; alone, it does not necessarily ensure long-term habitat protection and sustainability in the absence of some form of human intervention. Especially in an increasingly urbanized environment, designated natural open spaces require periodic attention to maintain their natural resources, restore degraded and disturbed areas, and enhance habitat values. Habitat management is the broad term that encompasses all aspects of human stewardship of the preservation areas established by this HCP, including habitat maintenance, enhancement, and restoration.
- **Habitat Maintenance.** At a minimum, natural community-level mitigation measures are expected to maintain current conditions and populations of HCP and other native species in the HMAs. A basic assumption of the conservation strategy is that existing population levels, distribution, habitat quality, and other characteristics will be sustained and enhanced in perpetuity. In some cases, populations of HCP species and habitats are expected to increase and

expand through the maintenance of existing conditions without additional enhancement or restoration efforts. Habitat maintenance is a primary requirement for all habitat types included in this HCP.

- **Habitat Enhancement.** Habitat enhancement is the improvement of an existing degraded vegetation community. Enhancement involves improving one or more ecological factors, such as native species richness, native species diversity, overall vegetative cover, and wildlife habitat function. Habitat enhancement activities typically occur on soils that are largely intact (e.g., soils that have not been tilled or otherwise disturbed). An example of enhancement would be planting coast live oak seedlings in an existing stand of oaks to increase cover and density and improve the age-class structure of the oak population. Improving wildlife habitat function might include removing barriers or reducing hazards to animal movement such as removing fences, adding or resizing culverts, or regulating traffic use on roads through habitat areas.

Enhancement measures will differ according to each natural community and site. For example, some communities may have inherently low productivity, low species richness, or low vegetation cover. Enhancement of these communities may be measured by percent cover of native plants or the lack of soil compaction. The appropriateness of habitat enhancement will be considered on a site-by-site basis and in the context of the biological and management goals and objectives. Habitat enhancement is specifically required in certain areas in conformance with the goals and objectives of this HCP but also may be undertaken on all acreage within HMAs (where appropriate) to conserve populations of HCP species and maintain or improve ecological processes.

- **Habitat Restoration.** Habitat restoration is the establishment of a vegetation community in an area that historically supported it, but no longer does because of the loss of one or more required ecological factors. Restoration may involve altering the substrate or removing major impediments to improve a site's ability to support the historic natural community. For example, iceplant-dominated coastal dunes could be restored to viable coastal dune scrub habitat by physically (or chemically) removing large iceplant mats, straw crimping, and seeding with native species. The use of pesticides, including herbicides and rodenticides, is not covered by the Federal permits because the USFWS has not authorized the Environmental Protection Agency to certify their use. In this HCP, habitat restoration is only specified in those vegetation communities or land cover types for which techniques are generally proven and where restoration would substantially enhance habitat for HCP species and native biological diversity.

Mitigation measure implementation starts at permit issuance and not after Resource Management Plans (RMPs) are developed (see Section 5.5.2, *Development of Resource Management Plans for Specific HMAs and Base-Wide Management Strategies* and Chapter 7, *HCP Implementation*). There will be an interim management period consistent with the HMP and HCP "care-taker" responsibilities. In essence, there will be three management periods: Pre-RMP; RMP, but pre-full funding; and RMP with full funding (Chapter 9, *Cost and Funding*). The cooperative and HMA managers will coordinate with the Wildlife Agencies on identifying appropriate mitigation actions for each period.

5.2.3 Conservation Framework Relationship with HCP Land Use Designations

The conservation framework of this HCP is based on the habitat conservation area and corridor system developed in the HMP (U.S. Army Corps of Engineers 1997). The framework applies to land designated as HMAs, Borderlands, and designated development areas as described in Section 3.2, *HCP Land Use Designations*. The following subsections describe how the conservation strategy applies to each of the HCP land use designations and provides an overview of the HCP required AMMs and mitigation measures.

5.2.3.1 Designated Development Areas

Designated development areas include viable habitat referred to as natural lands. These habitat areas are not considered essential in order to meet the HCP biological goals and objectives (see Section 5.3, *Biological Goals and Objectives*). However, these resources could be lost as a result of covered activity implementation. To avoid potential impacts to HCP species associated with these lands, AMMs are required for designated development areas. AMM implementation will allow for the avoidance of species impacts. Section 5.4, *Measures to Avoid and Minimize Impacts* identifies the HCP required actions for covered activities implemented in designated development areas.

5.2.3.2 Borderlands

Borderlands are designated development and HMA parcels at the urban/wildland interface where specific planning and design considerations and management activities are required. Borderland establishment was part of the original HMP planning process, and their incorporation in the HCP is considered a landscape-level AMM. These areas will be planned and managed according to category-specific requirements as introduced in Section 3.2.2, *Borderlands*. They include incorporation of fire-wise design principles, establishment and maintenance of fuelbreaks, siting and design of facilities, controlling access into the adjacent HMAs from the Borderland parcels, controlling the spread of non-native species, and monitoring effects at the urban/wildland interface. Section 5.4, *Measures to Avoid and Minimize Impacts*, identifies the actions required by this HCP associated with covered activities implemented in parcels designated as Borderlands.

5.2.3.3 Habitat Management Areas

The HMAs include large tracts of land that support biologically diverse natural communities and are contiguous or otherwise connected through established corridors. Together, the HMAs compose the habitat reserve system. HMA establishment is a landscape-level mitigation measure (Mitigation Measure-2). Each HMA will be managed to benefit HCP species and natural communities through implementation of site specific AMMs and mitigation measures. Implementation of these HCP required actions will achieve landscape, natural community, and species-level biological goals and objectives (see Section 5.3, *Biological Goals and Objectives*). Section 5.4, *Measures to Avoid and Minimize Impacts*, and Section 5.5 *Measures to Mitigate Unavoidable Impacts* identify the HCP required actions associated with implementation of covered activities in HMAs.

5.3 Biological Goals and Objectives

The conservation strategy is designed to achieve the biological goals and objectives established for each natural community and for the HCP species associated with those natural communities. Biological goals are broad, guiding principles based on the conservation needs of the resource. Goal statements describe the desired future condition for each natural community and HCP species with full implementation of the HCP. Objective statements are expressed as conservation targets or actions, or as studies to collect information necessary to implement adaptive management.

Landscape-level and natural community-level biological goals are not required for HCPs, but they are included here because this HCP takes a habitat-based approach to conserving HCP species. Some of the goals and objectives overlap among species and between species, their habitats, and the natural communities and landscapes in which they occur. This overlap illustrates that many HCP required actions will achieve multiple objectives to conserve HCP species, natural communities, and landscapes.

Biological goals and objectives were developed using several sources, including the following.

- Ecological data from species profiles and habitat descriptions.
- Biological opinions and recovery plans for Federally listed species.
- Critical habitat rules for Federally listed species.
- State and Federal resource planning documents.
- Input from resource specialists.
- Documentation of ongoing resource management in the HCP Plan Area.

Biological goals and objectives are divided into three groups: landscape-level, natural community-level and species-level. Landscape-level goals and objectives are broad in scope (i.e., at the level of the Plan Area) and apply to all of the HMAs. Natural community-level goals and objectives are specific to natural community types in the HMAs. Species-level goals and objectives are species-specific and are in addition to natural community-based and landscape-based targets.

5.3.1 Landscape-Level Goal and Objective

Goal 1: Protect and maintain landscapes comprised of HCP species, their habitats, and natural communities in the habitat reserve system.

Objective 1.1: Create a habitat reserve system within the Plan Area, ahead of impacts, that adheres to the principles of conservation biology and reserve design described in AMM-1 and AMM-2.

5.3.2 Natural Community-Level Goals and Objectives

5.3.2.1 Maritime Chaparral

Goal 2: Preserve, enhance, and maintain the quality and extent of maritime chaparral habitat within HMAs.

Objective 2.1: Use prescribed burning, commencing in year 20 of Plan implementation, on 1,000 to 1,500 acres each decade to provide a range of successional stages, maintain native species

diversity, and maintain habitat for herbaceous HCP plant species within the Fort Ord National Monument (FONM).

Objective 2.2: Within all maritime chaparral preserved in the HMAs, test alternative vegetation treatments to provide a range of successional stages, maintain native species diversity, and maintain habitat for HCP plant species for those areas where chaparral canopy is closed or increasing and where prescribed burning is particularly difficult to conduct due to existing residential development. This includes target maritime chaparral areas within the FONM, East Garrison Reserve, Parker Flats Reserve, FONR, and Range 45 Reserve.

Objective 2.3: Provide an adequate disturbance regime to sustain maritime chaparral species that require openings often associated with early seral-stage maritime chaparral following fire within the 337 acres of maritime chaparral within the FONR.

Objective 2.4: Protect against noxious weed infestations on approximately 1,000–1,500 acres of managed lands each decade in maritime chaparral in the FONM.

Objective 2.5: Augment 69 acres of prior maritime chaparral restoration by seeding restored sites with HCP plant species and other native species. The Permittees will augment prior active and passive restoration efforts on 69 acres of maritime chaparral at FONM by seeding sand gilia, seaside bird's beak, and Monterey spineflower, and seeding and planting later successional stage species (e.g., manzanitas and ceanothus).

Goal 3: Restore maritime chaparral habitat in targeted areas.

Objective 3.1: Restore up to 15 acres of maritime chaparral annually in the FONM and other HMAs east of Highway 1 for a total of 100–150 acres over the term of this HCP.

Objective 3.2: Restore at least 9 acres of maritime chaparral within the FONR Corridor Reserve by year 25 of HCP implementation.

5.3.2.2 Coastal Strand and Dunes

Goal 4: Preserve and maintain coastal strand habitat in the Fort Ord coastal area.

Objective 4.1: Protect and actively manage approximately 280 acres of existing coastal strand, beaches, bluffs, and blowouts along the former Fort Ord shoreline within FODSP.

Goal 5: Restore, enhance, and maintain coastal dune scrub habitat within the Fort Ord coastal area.

Objective 5.1: Restore at least 420 acres of disturbed or degraded land to coastal dune scrub habitat within the permit term within FODSP.

Objective 5.2: Encourage and/or facilitate the establishment of sand gilia (*Gilia tenuiflora* ssp. *arenaria*) and Monterey spineflower (*Chorizanthe pungens* var. *pungens*) through targeted restoration and management actions within 50%, or 210 acres, of the restoration target described in objective 5.1.

Objective 5.3: Limit coverage of iceplant or other noxious weeds in restored coastal dune scrub to less than 5% the total area of restored habitat within FODSP.

Objective 5.4: Protect coastal strand and dune habitat quality on approximately 550 acres within the FODSP by limiting public access.

5.3.2.3 Oak Woodlands

Goal 6: Preserve and maintain the quality, canopy cover, and extent of oak woodlands in HMAs.

Objective 6.1: Combat pathogen and disease outbreaks to minimize loss of oak trees and maintain the extent of oak woodland habitat documented during adjusted baseline surveys.

Objective 6.2: Within all oak woodland habitat preserved in the HMAs, maintain healthy populations of HCP species and mixed age-class structure stands.

Objective 6.3: Promote the reestablishment of natural biotic systems, including interacting microbial, invertebrate, and vertebrate communities within all oak woodland habitat preserved in the HMAs by allowing for the accumulation of fallen trees, standing dead trees, and duff.

Objective 6.4: Reestablish appropriate oak species, canopy cover, and associated understory species in areas that had been degraded by historical uses within all oak woodland habitat preserved in the HMAs.

5.3.2.4 Grasslands

Goal 7: Preserve, enhance, and maintain grassland plant communities within the HMAs.

Objective 7.1: Preserve and maintain or enhance the quality of native grassland species, including native forbs and grass species, where they occur, using methods such as reducing fuels, controlling non-native invasive grasses and forbs, and reducing thatch buildup, within all the grassland plant communities preserved in the HMAs.

Objective 7.2: Where possible, reestablish or introduce appropriate native species in areas that were degraded by historical uses or that are otherwise determined suitable for restoration within all the grassland plant communities preserved within the HMAs.

5.3.2.5 Aquatic and Riparian/Wetland Habitats

Goal 8: Preserve and maintain the quality and extent of aquatic and riparian/wetland habitats within HMAs.

Objective 8.1: Maintain the value of aquatic and riparian/wetland habitats for HCP species by preserving and actively managing all aquatic and riparian/wetland habitat areas documented during adjusted baseline surveys and preserved in the HMAs.

Objective 8.2: Maintain upland habitat quality in proximity to all wetlands, ponds, and riparian corridors preserved in the HMAs to support the life-history requirements of wetland-dependent HCP species.

Objective 8.3: Restore at least 5 acres of aquatic and riparian/wetland habitat in the FONM over the life of the HCP.

Goal 9: Control activities in the watershed of aquatic and riparian/wetland habitats within HMAs.

Objective 9.1: Restore selected degraded or destroyed areas within the watershed of aquatic and associated riparian/wetland habitat preserved in the HMAs.

Objective 9.2: Control public and educational visitation to locations of aquatic and riparian/wetland habitats preserved in the HMAs to preclude loss of habitat or degradation of habitat quality.

Objective 9.3: Eliminate illegal vehicle/motorcycle trespass into all aquatic and riparian/wetland habitats in the HMAs.

5.3.2.6 All Natural Communities**Goal 10: Control non-native plant species, non-native fish and wildlife, and diseases that could threaten HCP species and/or degrade habitat quality.**

Objective 10.1: Control the spread and reduce the abundance and distribution of noxious weed infestations using integrated vegetation management methods, with a goal of limiting the overall area of individual infestations of target species to no more than 5% of the total area of habitat. The Technical Advisory Committee TAC will generate categories of target species in collaboration with the Monterey County Weed Management Area (WMA) based on a local assessment of distribution, impact and invasiveness of each species. The categories will be site-specific to Fort Ord and will be derived from noxious weeds (as defined by the California Department of Food and Agriculture) and invasive exotic plants listed by the California Invasive Plant Council (California Invasive Plant Council 2007 or latest list). If an area has a current weed cover of target species less than 5%, a more aggressive target shall be set based on the results of the adjusted baseline and incorporated into its RMP to ensure that habitat for HCP species is enhanced. In addition, noxious weed control may also include the removal of non-native annual grasses and seeding with native grasses to encourage their propagation.

Objective 10.2: Minimize use of chemical herbicides for controlling non-native invasive plant species within all HMAs over the term of the HCP.

Objective 10.3: Eliminate or reduce non-native wildlife that could threaten HCP species and/or degrade habitat quality within all HMAs.

Objective 10.4: Eliminate or reduce plant and animal diseases that have or may spread into the Monterey area and that could affect HCP species and their habitats within all HMAs.

Goal 11: Control and reduce erosion and restore disturbed sites.

Objective 11.1: Reduce accelerated erosion caused by roads, paved areas and other impervious surfaces adjacent to and through the HMAs.

Objective 11.2: Restore disturbed areas to recreate characteristics similar to natural, functioning, undisturbed parts of the nearby landscape where possible.

5.3.3 Species-Level Goals and Objectives

5.3.3.1 HCP Plant Species

Goal 12: Preserve and maintain or enhance the HCP plant species populations within the HMAs.

Objective 12.1: Maintain or increase the distribution of HCP plant species within each HMA wherever surveys indicate occurrence.

Objective 12.2: Maintain or increase the abundance of HCP plant species within each HMA wherever surveys indicate occurrence.

Objective 12.3: Reduce anthropogenic factors which negatively impact HCP plant species, including exotic plants and unnatural disturbances and erosion.

Objective 12.4: Increase understanding of the ecological factors influencing the distribution, abundance, and population persistence of the HCP plant species within the HMAs in order to inform management and monitoring.

5.3.3.2 HCP Animal Species

Goal 13: Preserve and manage coastal strand and coastal dune areas as suitable habitat for western snowy plover (*Charadrius nivosus* ssp. *nivosus*) and Smith's blue butterfly (*Euphilotes enoptes smithi*).

Objective 13.1: Control public access of all the coastal strand areas preserved within FODSP to protect western snowy plover during its nesting period, typically March–September.

Objective 13.2a: Improve habitat quality for western snowy plover within all the coastal strand areas preserved within FODSP.

Objective 13.2b: Maintain a 3-year running average rate of 1.3 young fledged per male, 11 breeding males per year, and 15 chicks fledged per year within FODSP. Take remedial measures,¹ such as increased predator management, public access restrictions, and habitat restoration, if the running averages drop more than 10% below the values above.

Objective 13.3: Preserve 113 acres or as established by adjusted baseline, whichever is larger, of existing habitat for Smith's blue butterfly in coastal dune scrub within FODSP.

Objective 13.4: Include Smith's blue butterfly's buckwheat host plants as 10% of all plants propagated and introduced as part of the 420-acre dune scrub restoration program at FODSP. One or both buckwheat species may be appropriate, depending on the location (see Mitigation Measure-9). Coast buckwheat (*Eriogonum latifolium*) tends to occur in dune habitat north of 8th Street, and seaciff buckwheat (*Eriogonum parvifolium*) tends to occur in dune habitat south of 8th Street (Arnold 2008).

¹ See Section 6.8, *Adaptive Management Strategy*, for more detail.

Objective 13.5: Create a continuous migration corridor through the former Fort Ord coastal area for Smith's blue butterfly within FODSP by increasing Smith's blue butterfly's buckwheat host plant to at least 10% absolute vegetative cover.

Goal 14: Preserve, maintain, and restore occupied and suitable aquatic and upland habitat for California tiger salamander (*Ambystoma californiense*) and California red-legged frog (*Rana draytonii*) in the HMAs.

The objectives and specific actions for aquatic and wetland habitats, as well as grasslands and oak woodlands are expected to help achieve this goal. Following are the objectives targeted for these species.

Objective 14.1: Maintain the value of all aquatic habitats in the HMAs known to support or with potential to support California tiger salamander and California red-legged frog (see Chapter 2, *Environmental Setting / HCP Species*, for habitat definitions and Appendix A for habitat maps).

Objective 14.2: Maintain suitable and accessible upland habitat adjacent to all known or potential breeding ponds in the HMAs for California tiger salamander and California red-legged frog (see Chapter 2, *Environmental Setting / HCP Species*, for habitat definitions and Appendix A for habitat maps).

Objective 14.3: Eliminate or reduce non-native wildlife that depredates California tiger salamander and California red-legged frog in known and potential upland and aquatic habitat within HMAs.

Objective 14.4: Control hybrid California tiger salamanders in aquatic habitat.

Objective 14.5: In addition to objective 8.3, restore and manage East Garrison Pond (see Figure 4-1), and at least one additional aquatic feature totaling at least two acres, to provide suitable aquatic breeding habitat for California tiger salamander and California red-legged frog.

5.4 Measures to Avoid and Minimize Impacts

Activities covered by an HCP must avoid and minimize effects on HCP (i.e., covered) species to the maximum extent practicable. This section identifies 53 AMMs for designated development areas, Borderlands, and HMAs. AMMs were designed to prevent or minimize potential impacts to HCP species at the landscape, natural community, and species levels and achieve biological goals and objectives. Often, a single AMM benefits multiple HCP species and contributes to the achievement of multiple biological goals and objectives. Each AMM or mitigation measure is identified by a unique code. These codes will facilitate compliance tracking by the Cooperative during HCP implementation.

The relationship between AMMs and the biological goals and objectives is summarized in Table 5-1. Table 5-2 identifies the species that will benefit from each AMM.

Covered activities that implement the AMMs described herein will be in compliance with the avoidance and minimization requirements of the HCP. These measures are required for the indicated covered activities. It will be the responsibility of the Permittees and BLM to ensure covered activities are designed and implemented in compliance with these measures. (See Section 1.9.3 *Role of Bureau of Land Management* for BLM management activities.) The locations (i.e.,

development areas, Borderlands, HMAs) where AMMs are required to be implemented are summarized in Table 5-3.

AMMs required for covered activities implemented in Borderlands require additional discussion. In some instances, the Cooperative will be responsible for AMM implementation on the behalf of the land owner. For example, the Cooperative will be responsible for implementation of AMMs related to invasive species control, erosion control, fuel break maintenance, and access control (see Table 5-3 for the AMMs that the Cooperative is responsible for implementing within the Borderlands on behalf of the landowner). A Borderlands Fund will be established to fund the implementation of these AMMs (see Section 9.3.1.1.5, *Borderlands Funds*). In other cases, the project proponent will be responsible. For example, project proponents will be responsible for implementation of AMMs related to the development design elements, access controls (through design), and fire-wise planning consistent with the HCP. The Permittees are ultimately responsible for enforcing implementation of AMMs. Additional detail regarding responsibilities and mechanisms for enforcement can be found in Chapter 7, *HCP Implementation*.

5.4.1 Avoidance and Minimization Measures for all Covered Activities

This section describes AMMs applicable across all parcels for all covered activities, as specified in Section 3.3, *Covered Activities*.

5.4.1.1 Original Site Planning

AMM-1. Implement site plan as identified in the HMP, *Fort Ord Reuse Plan (1997)*, and subsequent updates². The habitat reserve system was designed to avoid and minimize impacts on HCP species and habitats. Development was concentrated in and adjacent to areas previously developed to minimize impacts on HCP species and habitats, and HMAs were designed to conserve identified significant resources. The habitat reserve system and development areas are the result of the HMP (Section 7 requirement for the Army Biological Opinion [1997]), *Fort Ord Reuse Plan (1997)*, and subsequent updates. Prior to adoption of the HMP, an analysis was conducted to evaluate and minimize the loss of specific plant and wildlife species and their habitats resulting from disposal and reuse of former Fort Ord. The analytical steps and principles used to design the HMAs (and therefore the habitat reserve system of this HCP) were as follows. Because the HCP habitat reserve system was already designed using these steps and principles, no further application of AMM-1 is required.

- **Identify species and habitats to be considered in the HMP.** Species selection was based on legal protection under the ESA and the CESA, listing status, and the relative importance of existing populations and habitats at former Fort Ord to the continued survival of the species. Habitats were identified based on their ability to support or be restored to support selected species. All habitats identified and included under the HMP (HMP species) were also selected as important habitats under the HCP.

² Subsequent updates to these plans include changes resulting from land use modifications in the East Garrison Reserve and Parker Flats Reserve areas, relocation of the multi-modal transportation corridor, the Seaside/State Parks land swap, and other changes since the HMP and the base reuse plan were finalized.

- **Develop a conservation area and corridor system.** A preliminary conservation area and corridor system was developed to define the minimal area necessary to preserve HMP species populations and habitats according to ecological principles and known biological resource distributions at former Fort Ord. Ecological principles included the following.
 - **Conservation area size.** Large, continuous tracts of land support more species than isolated patches. Large, preserved landscapes generally allow species to move across the landscape in response to environmental stressors and allow a greater diversity and complexity of natural communities to be preserved.
 - **Conservation area shape.** The shape of a habitat patch influences the effective size of habitat. More geometric-shaped habitat is more effective in size than a long, thin habitat strip. The edge of a habitat patch is often different in structure and composition than the interior due to vulnerability to invasion by non-native species and changes in biotic structure due to edge effects such as windthrow and desiccation.
 - **Conservation area location.** At the landscape level, the location of a habitat patch in relation to other habitat patches and populations is critical for the long-term viability of the populations. At a population level, the location of a conservation area in an area of high habitat suitability would be advantageous.
 - **Conservation area connectivity.** Connections between populations (i.e., corridors) can effectively create a dynamic regional population (e.g., metapopulation). Connected areas allow species to disperse across landscapes as part of population expansion and in response to environmental stressors.
 - **Management considerations for conservation areas and corridors.** Active management is often required to maintain the ecological integrity of habitats within conservation areas and corridors. Management requirements may be constrained or aggravated by adjacent land uses. To minimize potential conflicts, conservation areas should be established where adjacent land uses are compatible with management actions necessary with the conservation area.

An analysis of HMP species distributions resulted in the selection of conservation areas and corridors by combining the distribution of the following resources³.

- Sites supporting high or medium densities of known populations of sand gilia and Monterey spineflower.
 - Sites supporting high- and medium-quality habitat (as defined by density of buckwheat) or known occurrences of Smith's blue butterfly.
 - Sites supporting potential or known coastal nesting habitat for western snowy plover.
 - Study polygons supporting the highest richness of HMP species (seven or more species or suitable habitat occurrences).
- **Compare land requests and conservation area and corridor system.** The locations of land requests and proposed land uses for former Fort Ord were compared with the locations of minimum conservation areas and corridors. Conservation area and corridor system size and

³ The analysis was based on data included in the Flora and Fauna Baseline Study of Fort Ord, California (U.S. Army Corps of Engineers, Sacramento District 1992a).

location was adjusted based on former Fort Ord reuse scenarios. Certain land uses would be allowed within corridors if uses were compatible with proper corridor functioning. The loss of some valuable habitat within the conservation areas would be replaced by expanding the conservation areas in other locations.

- **Create final conservation area and corridor system.** The conservation area and corridor system was modified to create a final conservation area and corridor system that considered the land uses proposed for former Fort Ord and includes sites necessary for mitigation of impacts on HMP species. This reserve system is proposed for the HCP, plus additions to account for impacts not considered in the HMP.
- **Develop HMP guidelines.** Protection, enhancement, mitigation, monitoring, management, and funding guidelines were developed to allow for an installation-wide means of accomplishing mitigation. These guidelines were integrated into and expanded upon in the HCP.
- **Implement the HMP.** The HMP was signed by all responsible parties, and conservation, management guidelines, monitoring, and enforcement will be implemented by each party as described in HMP Chapter 4, *Impact Assessment and Levels of Take*. Many of these responsible parties to the HMP are Permittees under the HCP. BLM was also a responsible party. They are currently implementing the HMP.

5.4.1.2 Stay-Ahead Provision

AMM-2. Maintain compliance with stay-ahead provision. Impacts on HCP species and habitats will be avoided until mitigation for those impacts is in place. A “stay-ahead” provision was developed to ensure conservation is always ahead of impacts. The stay-ahead provision requires HMA establishment and protection and management of each HCP species’ habitats to occur before any permissible impacts on those habitats occur. Section 7.6, *Stay-Ahead Provision*, provides an explanation of the stay-ahead provision, a quantified example, and requirements.

5.4.1.3 California Tiger Salamander

Permittees, third-party applicants, and BLM will coordinate with the Cooperative to ensure that project-specific California tiger salamander AMMs are implemented. As part of the HCP concurrence determination process, Permittees and third-party applicants will contract services or hire personnel to fulfill the roles of Designated Biologist, Designated Monitor, and Cooperative Liaison (defined below) for covered activities related to HMA allowable development, development in designated development areas, road corridors and infrastructure construction, and HMA O&M – Road Construction.

- **Designated Biologist** will work under the Cooperative Liaison and will have sufficient qualifications and approval from the Wildlife Agencies to capture and handle HCP species if required to prevent direct take. The Designated Biologist will perform all required activities at the required frequency and will have the authority to stop all activities until appropriate corrective measures have been completed. Capture and handling approval is species-specific. For example, in the case of the Designated Biologist assigned to California tiger salamander AMM tasks, proof of sufficient qualifications and approval for that species is required.
- **Designated Monitor** has the same roles and responsibilities as the Designated Biologist, though this individual is not approved to conduct any handling activity of HCP species. In the event that an HCP wildlife species individual is found and handling is required, a Designated Biologist will

be required. In that situation, the Designated Monitor will stop work until a Designated Biologist can be brought to the work site. The designated monitor will perform all required activities at the required frequency and will have the authority to stop all activities until appropriate corrective measures have been completed.

- **The Cooperative Liaison** will serve as the main point of contact between the Permittee and third-party applicants. The Cooperative Liaison will be responsible for coordinating all communication and ensuring that the proper AMMs have been developed (Education Program, Relocation Plan, and Exclusion Fencing Methods) and are being applied. Prior to any ground-disturbance activity, the Cooperative Liaison will review the applicable AMMs to ensure they are being appropriately implemented. Dependent on their qualifications, the roles of the Cooperative Liaison and Designated Biologist/Monitor can be fulfilled by a single individual.

AMM-3. Perform construction restriction review. This measure applies to all activities on non-Federal lands within Zones 1 and 2 (Figure 4-1).⁴ All activities with the potential for ground disturbance will be reviewed by the Cooperative representative to determine which specific California tiger salamander AMMs must be applied. Suitable California tiger salamander habitat must contain habitat factors most important to the health and survival of the species, including seasonally ponded aquatic habitat and upland habitat with small mammal burrows.

AMM-4. Employ weather and timing restrictions. This measure applies to all activities on non-Federal lands within Zones 1 and 2 (Figure 4-1).⁴ Open construction period is June 15–October 31 (or first significant ground-soaking event). Construction restriction period is November 1 (or first significant ground-soaking event) through June 14.

- **Timing:** Night work is not allowed during construction restriction period; work shall terminate 30 minutes prior to sunset and shall not start until 30 minutes after sunrise.
- **Weather:** During the construction restriction period, all work will cease if there is a 70% or greater prediction for rainfall within 48 hours (2 days) of any project activities. In addition, all work will cease if rain exceeds 1/4 inch during a 24-hour period.

AMM-5. Perform California tiger salamander construction monitoring. During the Construction Restriction Review for all activities on non-Federal lands within Zones 1 and 2,⁴ the Cooperative will determine the required level of construction monitoring. The Wildlife Agencies will have review and approval authority over level of construction monitoring prior to implementation. Factors influencing the decision will include the type of equipment being used (heavy equipment, light equipment, manual), the proximity to a potential aquatic resource, and any additional site-specific information that may influence the potential for the area to support California tiger salamander. The level of monitoring may vary from full-time monitoring to full-time monitoring during initial site disturbance or morning checks, or the site may not require monitoring. Monitoring will be conducted by either the Designated Biologist or Designated Monitor. The Cooperative will send a list of staff to the Wildlife Agencies for review and approval. Any alterations to the list will need to be approved by the Wildlife Agencies.

⁴ Zones 1 and 2 are defined as the 630 meter buffer (0.39 miles) of land surrounding Known and Potential Aquatic Habitat (See Figure 4-1). Refer to Chapter 4, Section 4.3.7, *California Tiger Salamander* for a complete description of the four zones.

When monitoring is necessary, a daily monitoring report will be prepared documenting all monitoring and clearance activities for the day. The Designated Biologist/Monitor will monitor compliance with measures identified in this plan. All non-compliance issues will be immediately reported by the Designated Biologist/Monitor to the Cooperative. In the event of a major environmental incident, the Designated Biologist/Monitor will stop construction to avoid affecting sensitive resources, including California tiger salamander. Any spills of any fluids that may be hazardous to aquatic fauna (gasoline, hydraulic fluid, motor oil, etc.) in areas that may contain California tiger salamanders will be reported to the Cooperative within 1 hour of occurrence. To prevent inadvertent entrapment of California tiger salamander or any other animals during the construction phase of the Project, Permittee shall ensure that all excavated, steep-walled holes or trenches are covered, ramped, and inspected as described below (this measure does not apply to burrows excavated for salvaging California tiger salamander until such excavation is complete and no HCP species remain in the burrow; see AMM-7 below). At least 30 days before ground-disturbing activities, the Permittees or third-party applicants will work with the Cooperative to obtain approval for all biologists monitoring ground-disturbing activity. The Cooperative will be responsible for ensuring that the designated individuals have the qualifications to fulfill the given role. The Wildlife Agencies will have review and approval authority over Designated Biologists prior to implementation. Any proposed alterations to approved personnel will be coordinated with the Cooperative, and covered activities will not begin until concurrence has been granted by the Wildlife Agencies.

AMM-6. Provide education program for construction personnel. A Designated Biologist/Monitor will provide environmental training to all construction personnel and other applicable staff working within Zones 1–4⁴ prior to any ground-disturbing activities. The training will address special-status species, including the California tiger salamander and other sensitive resources that could exist in the project area. A detailed description of the California tiger salamander, including color photographs and maps showing the location of habitat suitable for California tiger salamander, will be provided during the training. The training will include locations of the sensitive biological resources, their legal status and protections, measures to be implemented for avoidance of sensitive resources, the Federal and State Endangered Species Acts, and the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; fire protection measures; protocol in the event a California tiger salamander is encountered; and a contact person in the event of the discovery of dead or injured wildlife.

A list of personnel who have completed the environmental training will be maintained by the Cooperative. The list will be updated as required when new personnel start work; no staff member may work in the field without participating in the environmental training.

AMM-7. Implement California tiger salamander relocation and mortality reduction measures. Within the entire Plan Area, all work will stop if a California tiger salamander is found and at risk of being harmed. The California tiger salamander will be relocated (only by a Designated Biologist) to the nearest suitable upland or aquatic habitat outside of the work area. The distance that animals are relocated will be minimized; long distance relocation will be avoided to reduce artificial gene flow. Potential suitable relocation sites will be determined based on the condition of the vegetation, soil, and other habitat features and the proximity to human activities before any ground-disturbing activities begin. Handling of California tiger salamander will be minimized; to avoid transferring disease or pathogens between aquatic habitats during surveys and handling, all activities will follow the Declining Amphibian Population Task Force's Code of Practice (1991).

The following measures apply to all activities on non-Federal lands within Zones 1 and 2 (Figure 4-1).

- California tiger salamander Mortality Reduction and Relocation Plan. Prior to initiating Covered Activities, the Designated Biologist(s) shall prepare, and submit to CDFW and USFWS for written approval, a *California Tiger Salamander Mortality Reduction and Relocation Plan*. The *California Tiger Salamander Mortality Reduction and Relocation Plan* shall include, but not be limited to: a discussion of the Pre-Activity Clearance Surveys, hand excavation, capture, handling, and relocation methods; identification of where the salvaged individuals will be relocated to; and identification of a wildlife rehabilitation center or veterinary facility where injured individuals of the California tiger salamander will be taken. The *California Tiger Salamander Mortality Reduction and Relocation Plan* must indicate the following: (1) that only the approved Designated Biologist(s) is/are authorized to capture and handle individuals of the California tiger salamander; (2) that burrow excavation and active relocation will be the primary technique employed to relocate the California tiger salamander; and (3) phased passive relocation will only be implemented after obtaining express written authorization from CDFW and USFWS.
- Small Mammal Burrow Excavation. All small mammal burrows identified and flagged within 380 meters of known or potential California tiger salamander breeding habitat and that cannot be avoided by 50 feet, shall be fully excavated under the direct supervision of the Designated Biologist(s) in accordance with the *California Tiger Salamander Mortality Reduction and Relocation Plan*. Burrows outside of the Permittee's access do not have to be excavated. Live individuals of the California tiger salamander which are found shall be relocated by the Designated Biologist in accordance with the *California Tiger Salamander Mortality Reduction and Relocation Plan*. Excavation shall occur no more than 14 days after the completion of the Pre-Activity Clearance Surveys described in the *California Tiger Salamander Mortality Reduction and Relocation Plan*.

AMM-8. Exclusion fencing and work area impact minimization. During the Construction Restriction Review for all activities on non-Federal lands within Zones 1 and 2,⁴ the Cooperative will require exclusionary fencing if suitable habitat is present on or adjacent to the site. If needed, a Designated Biologist/Monitor will be present to help determine the boundary of the area to be fenced. All workers will be advised that equipment and vehicles must remain within the fenced work areas. A Designated Biologist/Monitor will direct the installation of the fence. Nocturnal surveys will be conducted after rain events. If California tiger salamanders are found within the fenced area, they will be moved to suitable habitat outside of the fence. If California tiger salamanders are found in a construction area where fencing was deemed unnecessary, work will cease until a Designated Biologist/Monitor moves the tiger salamanders. The Designated Biologist/Monitor, in consultation with the Cooperative, will determine whether additional surveys or fences are needed.

Temporary exclusionary fencing, when required, will be constructed along the perimeter of the work area. The fence will consist of fabric or plastic at least 2 feet high and be staked firmly to the ground, with the lower 1 foot of material stretching outward along the ground and secured with a continuous line of gravel bags. All materials shall be removed when the work is complete.

Coverboards no smaller in size than 2 feet by 2 feet in size shall be placed at 50-foot intervals both around the outside and inside of the exclusion fence to provide artificial refugia and shall be left in place from November 1 through May 15. Coverboards within the exclusion fence shall be inspected

by the Designated Biologist/Monitor for the California tiger salamander each morning after a rainfall event and coverboard inspection shall terminate no later than by 10 a.m. Pacific Standard Time. Coverboards shall also be inspected by the Designated Biologist prior to vegetation- or ground-disturbing activities within the exclusion fence and when a 50-foot no disturbance buffer cannot be observed from the coverboard. All California tiger salamander discovered under the coverboards within the exclusion fencing shall be relocated in accordance with the *California Tiger Salamander Mortality Reduction and Relocation Plan*. Coverboards shall be removed no later than June 1 each year the exclusion fencing is installed and in place.

AMM-9. Construct permanent barriers between the East Garrison South Reserve and development areas. Permanent barriers will be constructed between the East Garrison South Reserve and development areas to protect California tiger salamander. Construction of barriers will be the responsibility of the developer of East Garrison, Phase II, in conformance with conditions of the East Garrison/Parker Flats Land Use Modifications (Zander Associates 2002).

5.4.1.4 Smith's Blue Butterfly

The purpose of this measure is to address concerns regarding the protection of Smith's blue butterfly.

AMM-10. Implement Smith's blue butterfly removal and relocation protocol. If a covered activity will affect a Smith's blue butterfly habitat patch in FODSP, species presence will be assumed, and removal and relocation of host plant material must be employed. These patches will be identified during the habitat mapping phase of the Smith's blue butterfly monitoring program (Chapter 6, *Monitoring and Adaptive Management*). East of Highway 1, if pre-construction surveys indicate presence of host plant, plants will be flagged and avoided. If plants cannot be avoided, salvage and relocation will be required, as described below and in Section 5.4.1.4.2.

The purpose of this protocol is to address concerns regarding the protection and salvage of Smith's blue butterfly and its host plants. This protocol is consistent with projects conducted within the habitat range of the species, per the Programmatic Biological Opinion for Highway 1 Management Activities that Affect Smith's Blue Butterfly in Monterey and San Luis Obispo Counties, administered by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 2008) and following the protocol for Presence-Absence Surveys of the Endangered Smith's Blue Butterfly on the Los Padres National Forest in Monterey and northern San Luis Obispo Counties, California (Arnold 2002). The following pre-construction surveys and salvage are required as specified.

5.4.1.4.1 Pre-Construction Survey

Pre-construction surveys will be required throughout the Plan Area. A description of the project will be provided, which will include a topographic map of the area with impacts demarcated. The Designated Biologist (defined in Section 5.4.1.3) will survey the entire project footprint, verifying the location of buckwheat plants and project components. The biologist will determine if project activities have the potential to directly affect buckwheat plants. The pre-construction surveys will be conducted no more than 30 days prior to project commencement. Monitoring (Chapter 6) for indirect effects of covered activities will continue throughout the plan term and be managed adaptively (*Section 6.8, Adaptive Management*).

East of Highway 1, the project proponent may choose to conduct present/absence surveys. During these surveys, the Designated Biologist would look for Smith's blue butterfly individuals or larvae.

All buckwheat plants that are present in the project area but will not be removed by project activities will be flagged for avoidance. If any Smith's blue butterfly life stage is observed, salvage will be required. If the project proponent does not conduct presence/absence surveys for Smith's blue butterfly, all buckwheat within the project area that are not avoided will be salvaged.

Sampling for Smith's blue butterfly will occur twice per month during the flight season, from June to September (total of six visits). Mature larval surveys will be conducted in areas where it would be difficult to observe adults (such as dune bluff edges with recurring strong winds). The first mature larvae are usually present 3 to 4 weeks after the start of the adult's flight season. Larval surveys will require an appropriate USFWS permit. Surveys must be conducted during temperatures of at least 60 degrees Fahrenheit, with full sun and minimal wind (less than 6 miles per hour). This sampling design may be updated at the recommendation of the Designated Biologist, and in consultation with the USFWS, if the first few years of surveys indicate that these dates are not sufficient to capture annual variations in the flight season.

Walking surveys for adults will be conducted around the perimeter of a buckwheat patch. Surveyors should look for adults on the flower and stems as well as the ground and adjacent vegetation. Depending on the size of the patch, or if gaps are present, surveyors may need to walk through the habitat patch. When a potential Smith's blue butterfly is observed, remain still and 3 to 30 feet away. Look for indicative behavior and markings that confirm the individual is a Smith's blue butterfly.

Surveys for larvae will require searching each flowerhead on each buckwheat plant. Begin by visually scanning each flowerhead for Smith's blue butterfly larvae. Larval surveys may require pulling apart the flowerhead, but this method should be used only if no larvae are observed after all flowerheads have been visually scanned.

5.4.1.4.2 Salvage

The Designated Biologist will relocate buckwheat plants, duff, and/or soil prior to the commencement of project activities. Removal and relocation will occur by hand and in coordination with the Cooperative. Plants west of Highway 1 will be relocated in coordination with State Parks, while plants east of Highway 1 will be relocated in coordination with the University of California, for restoration as part of the HCP concurrence process. The Designated Biologist will record the number of buckwheat plants that are moved and record the transplant location using GPS. If this method does not prove effective, the Cooperative will adjust the management strategy in the Adaptive Management framework (Section 6.8, *Adaptive Management*) and work with the Wildlife Agencies to adapt the management strategy.

5.4.1.5 Yadon's Piperia

The purposes of this measure are to quantify impacts to Yadon's piperia occurrences and to salvage Yadon's piperia that would otherwise be impacted by covered activities in the designated development areas, for translocation to suitable habitat in the HMAs. AMM-11 and other AMMs identified in Table 5-2 will also benefit Yadon's piperia in the HMAs. The impacts to Yadon's piperia quantified through implementation of this AMM will be used to determine the amount of restoration needed to satisfy Mitigation Measure-37 (i.e., restoring occurrences of Yadon's piperia at a ratio of 2 : 1 [restored : impacted]).

AMM-11. Quantify impacts to Yadon's piperia and implement Yadon's piperia salvage and relocation protocol. If a covered activity has the potential to impact Yadon's piperia within the

designated development areas, the project proponent will be required to conduct surveys within suitable habitat to determine the presence or absence of Yadon's piperia and to quantify impacts to Yadon's piperia. Suitable habitat in designated development parcels includes maritime chaparral, coastal scrub, and the understories of Monterey pine and Monterey cypress trees, as determined by a qualified biologist. Suitable habitat also includes disturbed, remnant, and/or mixed types of these habitats, as determined by a qualified biologist. The project proponent will provide for the translocation of salvaged plant material and cultivated plant material to be planted in suitable habitat in the HMAs.

5.4.1.5.1 Reconnaissance Surveys

Reconnaissance surveys will be required for covered activities that cause ground disturbance in suitable habitat in designated development areas, as defined above. At the initiation of the environmental review process for covered activities within designated development areas, a Designated Biologist (defined in Section 5.4.1.3) will perform a desktop review for the covered activity. The project proponent will provide a complete project description to the Designated Biologist, which will include detailed information on the temporary and permanent impacts and a topographic map of the area with impacts demarcated. The Designated Biologist will compile information on all extant California Natural Diversity Database (CNDDB) occurrences and occupied habitat and other available literature and survey results for Yadon's piperia in and adjacent to the Plan Area to inform the assessment of potential impacts to Yadon's piperia. The covered activity area will be examined on Google Earth to identify any locations that can be reasonably excluded from surveys, such as developed or landscaped areas.

During the environmental review process, in compliance with the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA) (if applicable), the Designated Biologist(s) will survey all suitable habitat within the entire activity area for Yadon's piperia.

Surveys will be performed according to the current applicable guidelines of CDFW and USFWS for plant surveys (except no floristic surveys are required), and the requirements in this condition. The results of the survey will be included in the final environmental document prior to project approval.

Surveys will be conducted in two phases, annually. Two surveys will be conducted between mid-January and early April, at least four weeks apart. This early season survey will be used to search for vegetative rosettes of the genus *Piperia*, which emerge sometime after fall or winter rains and wither by May or June, when the plant produces a single flowering stem (U.S. Fish and Wildlife Service 2009b). Identified rosettes will be placed under cages to prevent herbivory and ensure that positive identification can be made in the flowering season. Rosettes will be marked with a brightly colored pin flag and the location will be recorded with a GPS. Summer surveys will occur three times during the flowering season (June 1 – August 15 [Baldwin et al. 2012, CNPS 2017]), once during each month of June, July, and August. This sampling design may be updated by the Cooperative, at the recommendation of the Designated Biologist and in consultation with the USFWS, if survey results and additional information indicate that these survey periods are not sufficient to capture annual variations in the flowering season.

The Designated Biologist will conduct each survey within suitable habitat over the entire covered activity area using census methods adapted from Appendices G and H. The Designated Biologist will sub-divide the suitable habitat areas into sectors (e.g., as created by overlaying a 50 meter (164 feet) x 50 meter (164 feet) grid upon a recent aerial photograph of the parcel) to organize survey efforts, and to ensure that the suitable habitat areas are thoroughly covered during each survey. The size of

the sectors may vary depending on the size of the areas being surveyed. The suitable habitat will be systematically searched for Yadon's piperia. Once each sector has been thoroughly searched, the Designated Biologist will move onto the next sector. If Yadon's piperia is not present, no additional surveys are required.

Because only a small proportion of a population flowers in a given year (U.S. Fish and Wildlife Service 2009b), if Yadon's piperia is observed during the reconnaissance surveys, surveys must be conducted for a minimum of two additional years (both phases, see above) (U.S. Fish and Wildlife Service 1992) prior to ground disturbance to accurately quantify the number of individuals that will be impacted. Areas surveyed will still be required to be surveyed during subsequent surveys, where Yadon's piperia are not found.

The GPS-recorded locations of Yadon's piperia will be used to delineate patches of occupied habitat by "connecting the dots" between the outermost individuals in the surveyed areas, as described in Appendix H for areal mapping. The size of the impacted area of occupied patches will be used to determine the amount of restoration needed to satisfy Mitigation Measure-37. Yadon's piperia will be counted in each patch to determine the total number of individuals. By marking and recording the location of each individual plant with a GPS, only previously undocumented individuals should be recorded during subsequent surveys and added to the count of total number of individuals.

Results of the surveys will be reported to the Cooperative, annually. All Yadon's piperia that will be impacted will be salvaged for translocation to suitable habitat in the HMAs by the Cooperative or the Designated Biologist under the direction of the Cooperative, according to the salvage and translocation protocol to be developed for Mitigation Measure-38.

5.4.1.5.2 Avoidance

The project proponent may elect to avoid an occupied patch, or a portion of an occupied patch, in order to reduce impacts to Yadon's piperia. Avoided areas will not count towards the area of an impacted occupied patch. To qualify as avoided, a setback buffer, as determined by the Cooperative and approved by USFWS, will be established around the delineated occupied patch on any project site or in an adjacent area that could be affected by construction traffic or activities. The setback buffer will be adequate to prevent or minimize impacts during or after project implementation. The plants and buffer area will be protected from encroachment and damage during construction by installing temporary construction fencing. Fencing will be bright-colored and highly visible. Fencing will be designed to keep construction equipment away from plants and prevent unnecessary damage to or loss of plants on the project site. Fencing will be installed under the supervision of the Designated Biologist to ensure proper location and prevent damage to plants during installation. Fencing will be installed before any site preparation or construction work begins and will remain in place for the duration of construction. Construction personnel will be prohibited from entering these areas (the exclusion zone) for the duration of project construction.

AMM-30 will be applied to all avoided Yadon's piperia to protect plants from herbivory.

5.4.1.5.3 Salvage

Mitigation Measure-38 requires the Cooperative to develop a salvage and translocation protocol (for approval by USFWS) within the first two years of Plan implementation. All salvage operations will be conducted by the Designated Biologist in collaboration with Cooperative. The Designated Biologist will collect seeds and relocate Yadon's piperia consistent with the salvage protocol. The

location, timing, and methods for translocation will be dictated by the protocol and may be conducted by the Cooperative or Designated Biologist. Covered activities in the designated development areas may not directly impact Yadon's piperia until the salvage protocol has been developed. To ensure enough time to plan salvage operations, project proponents will notify the Cooperative of their schedule for relocating Yadon's piperia. Translocation to appropriate habitat will be coordinated by the Cooperative and the HMA manager (if the manager is not the Cooperative).

5.4.1.6 State-Listed Plant Species

AMM-12. Implement planning, protocol-level surveys, and seed collection for state-listed plant species

At the initiation of the environmental review process for all covered projects, all occurrences of state-listed plant species relevant to the proposed project will be compiled and reviewed and applied in project siting (planning stage). The requirements for protocol-level surveys will be based on the three land use designations in the Plan Area: Designated Development Areas, Borderlands, and HMAs (described in Chapter 3). Protocol-level surveys for state-listed plant species will be conducted in all areas containing suitable habitat in the area of interest. In designated development areas and Borderlands, the area of interest comprises the entire parcel. In HMAs, the area of interest includes the project footprint and the surrounding area (to identify potential project alternatives). Seed collection is required when state-listed plant species will be directly affected. The planning, protocol-level survey, and seed collection stages are described in more detail below.

5.4.1.6.1 Planning

A Designated Biologist, defined in Section 5.4.1.3, will perform a desktop review for the project in the area of interest. In designated development areas and Borderlands, the area of interest comprises the entire parcel. In HMAs, the area of interest includes the project footprint and the surrounding area (to identify potential project alternatives). The project proponent will provide a complete project description to the Designated Biologist, which will include detailed information on temporary and permanent impacts and a topographic map of the area with impacts and limits of construction demarcated. The Designated Biologist will compile all extant California Natural Diversity Database (CNDDDB) occurrences and occupied habitat and other available literature and survey results for covered state-listed plant species. Data from ongoing surveys in HMAs, as required by the HCP, will also be included in the desktop review/planning. The area of interest will be examined on Google Earth to identify any locations that can be reasonably excluded from surveys, such as developed or landscaped areas.

5.4.1.6.2 Protocol-level Surveys

The area of interest (as described above) will be surveyed during the environmental review process in compliance with CEQA and the NEPA, if applicable, to identify the location of covered state-listed plant species, to inform site design, and inform the CEQA/NEPA process. Surveys will be conducted to conform to the "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities" (CDFW 2018) and the "CNPS Botanical Survey Guidelines (CNPS 2001). The results of the survey will be included in the final environmental document prior to project approval. In HMAs, the surrounding area(s) will be surveyed as potential project alternatives only if plants are found in the project footprint and will be directly affected. In designated

development areas and Borderlands, surveys are required throughout the entire parcel because the HCP does not require baseline surveys in these land use designations. In addition, existing surveys are 20 years old and will be updated to help understand the level of take.

Prior to surveying, at least one member of the survey team will review a nearby reference site (i.e., a known occurrence of covered state-listed plant species) to ensure that the plant species is identifiable. If plants are not present and/or identifiable at the reference site, the survey will be conducted at appropriate time for identification. Surveys for covered state-listed plant species will occur throughout the entire area of interest, unless a portion has been identified as clearly unsuitable.

Surveys will be conducted during the flowering period for covered state-listed plant species. The Designated Biologist(s) will walk parallel transects spaced 15 to 30 feet apart. When an individual plant is found, it will be clearly marked with a brightly colored pin flag and recorded using GPS.

5.4.1.6.3 Seed Collection

Seed collection will be used to salvage these annual plant species. Seed collection by a Designated Biologist is required when the project will take covered state-listed plant species in designated development areas, Borderlands, and HMAs. Mature seed will be collected from a representative sample of individuals. Topsoil may also be collected and stored; the Designated Biologist will determine if this is necessary and possible. Seed and topsoil collection locations will be mapped with GPS.

Seed will be labeled and stored according to the land use type and location in which it originated. If necessary, seed storage studies will be conducted to determine the best storage techniques for each species. A seed storage facility will also be contacted and consulted regarding collecting and storage requirements of the facility. In restoration efforts, the Cooperative, in coordination with CDFW and the HMA manager or project proponent, will use seed collected within the same land use designation area to maintain genetic diversity, in consideration of minimizing artificial gene flow.

5.4.2 Avoidance and Minimization Measures for Siting and Design of New Development in and Adjacent to HMAs

AMMs for siting and design of new development in and adjacent to HMAs are required for the following covered activities in locations indicated in Table 5-3.

- Development in Borderland parcels in designated development areas and HMAs (i.e., Category 1, 2, 3, and 4 Borderlands).
- Allowable development in HMAs.
- Road corridors and infrastructure construction, operations, and maintenance in HMAs.
- Fuelbreaks and trail maintenance.

New development within and adjacent to HMAs has the potential to adversely affect HCP species and natural communities within the HMAs. Damaging effects may include vandalism, dumping of trash, trampling, mountain bike use, and off-road vehicle use; runoff from adjacent streets and landscaped areas containing lawn fertilizer, pesticides, and vehicle waste (petroleum byproducts); introduction of invasive non-native species; lights and noise from nearby development; unregulated movement of domestic animals; and a lack of barriers to HCP wildlife entering developed areas. New

development in these areas will incorporate siting and design AMMs to avoid and minimize development direct and indirect impacts on HCP species in habitat reserves.

AMM-13. Minimize ground-disturbing activities in the area mapped as potential Yadon's piperia habitat within HMAs. Minimize clearing, grading, excavation, or other forms of development or disturbance, except for HCP-required mitigation measures, until the results of the 10-year base-wide monitoring program are final. Once the results are available, work may occur in these areas but require pre-construction surveys and construction monitoring.

AMM-14. Establish and maintain fuelbreaks. Fuelbreaks or fuel buffers, including parking areas, irrigated lawns/fairways, or cleared land must be incorporated into fire-wise planning for Borderland parcels and designed to 1) stop fire movement across the urban/wildland boundary, 2) provide adequate access for fire suppression and fire prevention equipment and personnel to conduct controlled burns, and 3) provide adequate access for fire suppression and fire prevention equipment and personnel to fight wildfires. Fire-wise planning will occur in the design stage in coordination with fire-wise consultants and/or informed local fire departments and reserve managers. Criteria used to site and design the fuelbreak will consider topography, surrounding vegetation (fuels), type of development, and configuration of the development. The following actions will be required as part of fuelbreak establishment and maintenance.

- Establish fuelbreaks within existing roads and trails to the extent possible. Fuelbreaks will be located at the urban/wildland interface (not necessarily at the parcel boundary). The size of the fuelbreak will be determined by fire-wise planning (see AMM-15).
- Conduct maintenance of fuelbreaks during summer months to the maximum extent possible within potential California tiger salamander upland habitat to avoid impacts on this species.
- Maintain fuelbreaks necessary to support a prescribed burn or to contain a potential wildfire to the HMA, not for other uses.
- Remove vegetation with hand tools, chainsaws, ASVs, or mowers.
- Manage cut vegetation to avoid impacts on HCP species. Limit placement of chipped vegetation in areas cleared for fuelbreaks to allow for reestablishment of annual HCP plant species.
- Avoid mowing or use of heavy equipment in maintaining fuelbreaks during the wet season (November 1 through June 15).
- Maintain fuelbreaks to ensure fuel loads are kept low enough to prevent the spread of fire.
- Establish and maintain fuel management buffer to protect HMA and property. Borderland parcels will establish a fuel management buffer between the edge of development and the boundary of the HMA.

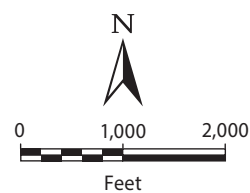
UC/NRS will develop fuels management strategies in Category 4 Borderlands, especially in areas of fire prone vegetation that abut existing development to lessen the chance of wildfire moving towards or from these areas (Figure 5-1). Existing fuel buffers will be maintained through and around the perimeters of FONR areas in Category 4 Borderlands where the risk of wildfire could pose a threat to public health and safety; however, Category 4 Borderlands adjacent to existing roads will not require fuel management on the FONR as the road will serve as an adequate break; these areas include:

1) FONR Borderlands on the south reserve that run parallel to Reservation Road and Imjin Road (shown in orange on Figure 5-1).



Legend

- Category 4 Borderlands
- Category 2 Borderlands
- Category 4 Borderlands adjacent to existing roads



Note: Category 4 Borderlands applies to HMAs that abut areas of existing development in the Plan Area or areas of development outside of the Plan Area. The orange Category 4 Borderlands are adjacent to existing roads and will not require fuel management on the FONR as the road will serve as an adequate break.

2) Category 4 Borderlands in the Corridor Reserve, as adequate space currently exists on the developed parcels to reduce fire risk and the reserve is adjacent to Imjin and Reservation Roads (which will function as breaks), and 3) the Category 4 FONR Borderlands along Neeson Road (deed restrictions have been placed on the land). An emergency access road may be maintained along a portion of the southern boundary of the North Reserve and through the South Reserve (Old County Road) (approximately 4 acres) for as long as the road is in use. This road between CSUMB Category 2 Borderlands and the FONR will serve as a fuelbreak, as long as it is in proximity between the development and the FONR. Because deed restrictions have been placed on the land, fuel breaks on FONR lands along Neeson Road are not required.

Maintenance could occur annually or as infrequently as every 2 to 4 years, depending on vegetation type, rainfall amounts, and specific locations.

AMM-15. Implement fire-wise planning. For new development on all Borderland parcels, fire-wise planning is required by state law (PRC 4290). Fire-wise planning principles are to be applied to new development in Borderland parcels and to new development on all parcels within 0.5 mile of the urban/wildland boundary around the core reserve area that includes the FONM and contiguous HMAs. Each local jurisdiction will establish a Fire-wise Planning Zone, as illustrated on Figure 3-2, which extends beyond the immediate Borderland parcels in some cases. Each covered project for which fire-wise planning is required, will submit a plan to the governing jurisdiction for review and approval prior to project approval.

No new development is allowed within 200 feet of the habitat area until fuelbreaks are determined and a fire-wise plan is reviewed and adopted by the governing jurisdiction. Through fire-wise plan adoption, the 200-foot buffer may be reduced depending on the site design controls put in place. However, in general, due to the high level of fuels that can accumulate in maritime chaparral, no flammable structures are allowed within 200 feet of the habitat area boundary where maritime chaparral occurs. The plan shall address the location of structures and materials to be used in construction, and it shall demonstrate consultation with fire-wise consultants and/or informed local fire departments and reserve managers.

The fire-wise plan shall include an educational program for homeowners to encourage ongoing maintenance and construction, such as landscaping, fencing, outbuildings, and housing additions, be done in a fire-wise manner.

AMM-16. Conduct an access assessment during the planning process to identify necessary access controls for all Borderland parcels. In some cases, structures including fences or other appropriate barriers may be required within the new development parcel to control access into the habitat area. An assessment of access issues and necessary controls shall be completed as part of the project planning process for all Borderland parcels. The assessment shall be submitted to the governing jurisdiction, Cooperative, and Wildlife Agencies for review and approval prior to project approval.

Signs, interpretive displays, or other information shall be provided at the urban/wildland interface that illustrate the importance of the adjacent habitat area and prohibit trespass, motor vehicle entry, dumping of trash or yard wastes, pets off-leash, and other unauthorized activities. Access controls shall be implemented as identified in AMM-27.

AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs. Detention ponds, ornamental lakes, and other water features associated with new

development shall be sited as far from the urban/wildland interface as possible. Suitable barriers shall be located between these features and the habitat area boundary to prevent these features from becoming “sinks” for HCP animal species, as well as sources for invasive non-natives that could then move into the adjacent habitat area.

If detention ponds, artificial ponds or other waterbodies are proposed within Borderlands, a specific management program addressing control of non-native animals (e.g., bullfrogs) must be prepared and submitted to the governing jurisdiction, the Cooperative, and Wildlife Agencies for review and approval, prior to project approval.

A low wall or other suitable barrier to migration shall be constructed along the urban/wildland interface where habitat in the Borderlands no longer exists and where this interface comes within 1 kilometer (0.62 mile) of a known California tiger salamander breeding pool, unless USFWS and CDFW determine this barrier is unlikely to substantially minimize take of California tiger salamander.

Landscaping within the Borderlands will consist of native species that will not colonize preserve areas. Lists of approved species will be developed by the Cooperative in early implementation and provided to the governing jurisdiction for use in the project review process. All landscape plans and replacement plantings proposed for Borderland parcels shall be reviewed by the governing jurisdiction for consistency with the approved plant palette.

AMM-18. Limit artificial lighting at the urban/wildland interface. Outdoor lighting associated with new development will be low intensity, focused, and directional to preclude night illumination of the adjacent habitat area.

Outdoor lighting will be placed as far from the urban/wildland interface as possible given safety constraints. Public facilities such as ball parks and fields that require high intensity night lighting (i.e., flood lights) will be sited as far from the urban/wildland interface as possible. High-intensity lighting will not face the habitat areas and will be directional and as low to the ground as possible to minimize long distance glare.

AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and sedimentation. All new development projects in Borderlands and HMAs will be required to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and to reduce potential for increased erosion and sedimentation by implementing the following actions. Compliance with this AMM will be documented prior to implementation of the project, consistent with the application process.

- Conduct a hydrology and drainage assessment to determine baseline drainage conditions and make recommendations for maintaining pre-development drainage and water quality conditions, using a qualified hydrologist.
- Prepare stormwater drainage plans that describe 1) how stormwater will be captured and directed off the development site, 2) what measures will be employed to prevent degradation and siltation of ephemeral drainages from Borderland runoff, 3) what specific erosion control measures will be implemented, and 4) what measures will be taken to protect the adjacent habitat areas. All new development must comply with the drainage plan as well as employ best management practices during construction. These plans will be submitted to the governing

jurisdiction for review and approval prior to development and will include review through the Cooperative if project approval is appealed.

- Design onsite drainage systems to capture and filter out urban pollution to the extent feasible. Drainage plans will be submitted to the governing jurisdiction for review and approval prior to development, which will include review through the Cooperative if project approval is appealed.
- Incorporate measures in development plans to minimize runoff and maximize infiltration in groundwater recharge areas.
- Design site drainage to decrease or maintain pre-development offsite stormwater runoff flow rates and to prevent the direct discharge into drainages. Drainage systems will be designed to maintain the quality, quantity, and seasonal pattern of water drainage from the parcels. The drainage systems will include installation and maintenance of oil/grease filters, fossil filters, or other pollution prevention devices to prevent non-point source pollutants in any drainage. The devices will be maintained on a regular basis to remove pollutants, reduce high pollutant concentrations, prevent clogging of the downstream conveyance system, and maintain the sediment trapping capacity.
- Manage stormwater runoff through the use of basins, detention/retention ponds, percolation wells, pits, infiltration galleries, or any other appropriate technical or engineering method to maintain the quality, quantity, and seasonal pattern of water drainage and decrease or maintain pre-development offsite stormwater runoff.
- Design stormwater detention basins or other water features so that they do not attract breeding California tiger salamanders, unless designed to function as a population source. Source design, as a higher quality habitat that creates a local demographic population surplus, will be determined through consultation with USFWS and CDFW. Accordingly, the eventual number of adult California tiger salamanders produced at the site must exceed mortality such that the breeding site does not function as a sink (lower quality habitat that creates a local demographic deficit). If California tiger salamanders are found on the property, the owner will work with the Cooperative to implement monitoring and management actions as necessary.

AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities. Allowable development is detailed for each HMA in Section 3.3.2, *Allowable Development in HMAs*, and acreages are summarized in Table 3-8. The following measures will be employed to minimize effects of this development on HCP species and natural communities; unless otherwise stated, these measures apply to all allowable development within HMAs.

- Conduct biological planning surveys to establish occupied or potential HCP species habitat prior to development. Site allowable development to avoid and minimize impacts on HCP species to the maximum extent practicable.
- Site allowable development to minimize impacts on remnant stands of native grassland.
- Site allowable development to avoid occupied or potential sand gilia habitat, wetlands, and known or potential breeding habitat for California tiger salamander in the FONM. Development siting will not compromise BLM's ability to successfully manage the FONM.
- Site and design facilities to avoid existing occupied habitat for western snowy plover and Smith's blue butterfly and to minimize impacts on annual HCP plant species within FODSP. When determining where the new park facilities and beach access routes will be located, State Parks took into account where known western snowy plover nesting concentrations have been

documented during the window survey and demographic monitoring. Existing potential Smith's blue butterfly habitat will be avoided to the extent possible when locating new facilities within allowable development zones in the FODSP. In addition, open space within management zones designated for facility development will be configured to provide Smith's blue butterfly habitat migration corridors within the zone. Recreation and other park-related facilities outside of the Natural Resource Zone will be sited, planned, and designed not to pose barriers or other impediments to potential Smith's blue butterfly movement and migration. Such facilities will include appropriately located open space areas that could be landscaped with buckwheat and other suitable native plants so that a continuous corridor can be maintained.

- Target FONR facility development in areas such as non-native grassland, previously disturbed parking areas, or other locations to avoid or minimize disturbance of habitat or take of HCP wildlife species.
- Limit removal of native vegetation within the existing campground (Areas 1–9) in the Habitat Corridor/Travel Camp and avoid or minimize impacts on habitat occupied by HCP species when developing facilities in these areas.
- Compare new trail and road construction plans to the adjusted baseline surveys. New trails and roads will be sited to avoid and minimize impacts to high density populations of HCP species in non-federal HMAs.
- Site and design the proposed cross-country equestrian course through the eastern end of the Oak Oval Reserve to minimize vegetation removal and maintain wildlife movement corridors between habitat reserves. The proposed cross-country equestrian course must be accommodated within the allowable development acreage (see Chapter 3, Section 3.3.2.7, *County of Monterey-Oak Oval Reserve*. No buildings, grandstands, corrals, parking areas, or other developments will be allowed in the Oak Oval Reserve.
- Site public access and recreational facilities within the designated 81 acres on the Landfill Parcel to avoid and minimize impacts on HCP species (see Chapter 3, Section 3.3.2.8, *County of Monterey-Landfill Parcel*). The Cooperative will prepare an assessment of public recreational use of the Landfill Parcel as part of the baseline studies and present it to the TAC for review. If directed public access is considered desirable in certain areas and funding is available, some existing trails may be designated and improved for general public use. Other passive recreational facilities (e.g., picnic areas, interpretive displays) may also be installed but would only be located in appropriate areas of the Landfill Parcel if they do not conflict with habitat preservation and restoration goals or public safety requirements. This will occur no later than 3 years from transfer of the property from the Army or from the issuance of the permits under this HCP, whichever is later.
- Prohibit future facility expansion beyond areas already disturbed by current facilities within Laguna Seca Recreational Expansion (see Chapter 3, Section 3.3.2.9, *County of Monterey-Laguna Seca Recreation Expansion* and Figures 3-13 and 3-14). In addition, construction of barriers (e.g., curbs, walls, drainage gutters) that would impede or entrap California tiger salamander will be prohibited.
- Site and design development in the Marina Northwest Corner parcel so that it does not adversely affect Yadon's piperia.
- Permittees shall not construct roadways with steep curbs, berms, or dikes, which prevent HCP wildlife from exiting the roadway. If curbs are necessary for safety and/or surface runoff,

Permittee shall design them to allow HCP wildlife to walk over them. Caltrans' Standard Plan Type E curbs and Type D and Type E dikes are preferred designs and shall be used where possible (see Caltrans' Standard Plan A87, Curbs, Dikes, and Driveways <http://www.caltrans.ca.gov/>). These rounded or gently sloping structures allow Covered Species to crawl over them. If steep dikes are required, design shall include over-side drains or curb/dike breaks spaced at intervals of 25 feet to allow HCP wildlife passage.

AMM-21. Limit road corridor and infrastructure projects in HMAs. The road corridor and infrastructure projects in HMAs that are authorized under this HCP include the future road corridors described in Section 3.3.4.1, *Future Road Corridors Construction and Operations and Maintenance in HMAs*, and the MCWD facilities described in Section 4.2.4.2, *Marina Coast Water District Facilities*. Siting of these facilities has been determined, and minimization measures were considered. All facilities will be designed and sited to avoid and minimize impacts to HCP species, as well as the HMAs. Reservation Road and Inter-Garrison Road through the East Garrison Reserve have been designed to avoid isolating and fragmenting habitat in the reserve, and the Multi-Modal Transportation Corridor alignment was changed and now follows the existing alignment of Inter-Garrison Road and the proposed East Garrison connector road. MCWD facilities include one pipeline and four storage tanks. The pipeline may be installed below existing roads and, accordingly, would not require removal of vegetation associated with natural communities. The construction and maintenance of the three proposed tanks could affect 3.4 acres within the HMAs. FORTAG (see Section 4.2.4.3, *Fort Ord Rec Trail and Greenway*) will cross FONR, Marina Airport Habitat Reserve, Salinas River Habitat Area, East Garrison Reserve–North, Habitat Corridor, Natural Area Expansion, Northwest Corner, and Landfill Parcel. To the extent possible, the trail is aligned within Borderlands of the HMAs.

AMM-22. Equip all new and existing buildings and utility poles within or adjacent to western snowy plover habitat with anti-perch devices to prevent avian predators from depredating western snowy plover. All existing facilities shall be retrofitted with anti-perch devices to deter avian predators from perching and hunting from infrastructure within or adjacent to western snowy plover habitat. Further, all new facilities will be designed with anti-perching devices; facilities include new buildings, signs, fences, and utility poles. To the extent feasible, utility lines will be constructed underground, and tree planting is prohibited to limit expansion of avian predator perches within FODSP. Removal of existing trees will be informed through adaptive management (see Section 6.8, *Adaptive Management*) if monitoring reveals them to be a problem.

AMM-23. Limit construction of new roads in HMAs. Access for habitat management and property maintenance will be provided by existing roads and trails in all HMAs to the maximum extent practicable. Roads and trails determined unnecessary or redundant for access or fire safety, or deemed harmful to HCP species' habitat, will be removed and restored to natural vegetation. Where new roads are required, they will be sited to avoid or reduce take of HCP species and to maintain safe movement routes for HCP animal species such as Smith's blue butterfly and California tiger salamander. The area of disturbance when doing new road construction will be limited and staging areas will be located in previously disturbed sites to the maximum extent possible. Any areas temporarily disturbed for road construction will be seeded and/or planted with native plants that are on the list of species approved by the Cooperative and Wildlife Agencies (see Section 5.4.2, *Avoidance and Minimization Measures for Siting and Design of New Development in and adjacent to HMAs*, AMM-17). Plant material (e.g., seeds, cuttings) from the Plan Area or otherwise local will be used to the maximum extent practicable.

AMM-24. Relocate roads and trails away from aquatic and riparian/wetland habitats where it is evidenced that erosion, access, or other potential disturbances are resulting in significant damaging effects (as determined through the implementation of the monitoring measures in Chapter 6) and remove unneeded hardstand areas consistent with priorities established through watershed inventories. Road and trail removal and relocation, hardstand removal, and site restoration would be completed as described in Section 5.5.3, *Habitat Restoration, Enhancement, and Management*.

AMM-25. Site and design necessary roads or structures so they do not prevent California tiger salamander from traversing known or possible movement routes. Necessary roads and structures will be sited and designed so they do not create a barrier between known or potential breeding ponds for California tiger salamander and suitable upland habitat.

5.4.3 Avoidance and Minimization Measures for Construction in and adjacent to HMAs

Construction activities within and adjacent to HMAs have the potential to indirectly affect HCP species and natural communities in the habitat areas. AMMs for construction in and adjacent to HMAs are required for the following covered activities in locations indicated in Table 5-3.

- Development in Borderland parcels in designated development areas and HMAs (i.e., Category 1, 2, 3, and 4 Borderlands).
- Allowable development in HMAs.
- Road corridors and infrastructure construction, operations, and maintenance in HMAs.

Project applicants will need to demonstrate compliance with these AMMs to the governing jurisdiction.

AMM-26. Implement construction management best management practices. The following best management practices must be followed.

- Seed areas temporarily disturbed by construction with native plants approved by the Cooperative and Wildlife Agencies.
- Prepare and implement a hazardous substance control plan that addresses the handling, storage, transport, and/or disposal of hazardous waste materials. The plan shall be prepared by the project applicant and submitted to the governing jurisdiction for review and approval prior to development; review through the Cooperative will occur if project approval is appealed.
- Prepare and implement an air quality analysis to determine the potential for proposed construction projects to exceed the 82-pound per diem inhalable particulate threshold established by the Monterey Bay Unified Air Pollution Control District (2008). As a general guideline, a project may have a significant construction-related impact if it would disturb 1.2 acres or more per day through grading and/or excavation. Projects with the potential to exceed this threshold shall implement measures to substantially reduce the amount of airborne dust or particulate matter generated. The analysis shall be submitted to the governing jurisdiction for review and approval prior to construction.

- Prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP will be prepared by the project applicant and will describe the best management practices to be implemented and monitored during construction.
- Direct all artificial night lighting required during construction away from the habitat area.
- Implement best management practices during project construction to prevent sediments or other pollutants from entering stormwater discharge.

5.4.4 Avoidance and Minimization Measures for Public Use in HMAs and Property Ownership of Borderlands

Access control and management AMMs will be required to avoid and minimize impacts from public use and property ownership of borderlands. These measures will allow the enjoyment, appreciation, and conservation of the species and habitats at former Fort Ord while maintaining ecological functions and values. Access or certain types of access will be limited, restricted, and/or prohibited in areas where habitat values or public safety could be compromised. HMA managers will work with the Cooperative in the identification and siting of appropriate access control measures in both HMAs and Borderlands. AMMs for public use in HMAs and property ownership adjacent to HMAs are required for locations indicated in Table 5-3.

AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.

The following actions will be implemented consistent with RMPs and/or upon approval of the TAC (see Mitigation Measure-3 in Section 5.5.2.1, *HMA-Specific Resource Management Plans*). The access controls described below are required at all HMAs and Borderlands, except for those actions targeting species with localized occurrences in the Plan Area.

HMA managers will oversee security patrols (e.g., law enforcement officers, lifeguards, biologists, visitor support staff) and install and maintain barriers, signs, fencing, trail staging areas, etc., to avoid and minimize impacts on HCP species and natural communities. Managers will remedy problems by removing trash, increasing patrol frequency, restoring disturbed areas within the habitat area boundary, constructing additional or more effective barriers, and using similar means. HMA managers will identify restricted access locations associated with the internal road network in the HMAs and secure against unauthorized entry by motorized vehicles with either a gate or a vehicle barrier. The adjacent Borderland manager, not the HMA manager, will hold responsibility for measures such as fences, barriers, signage, and other means to prohibit unauthorized motor vehicle access from Borderland parcels into the HMAs. The adjacent Borderland manager will also be responsible for installing and maintaining gates to provide emergency vehicle access if fences are used, and the HMA manager, Borderland manager, and other appropriate agencies shall be provided keys to the gates. In the case of Range 45 reserve, the HMA manager and the Borderland manager will be the Cooperative.

HMA managers will work with security patrols and management staff to implement the following specific access controls. The need for these access controls will be determined during the planning process (see Section 5.4.2, *Avoidance and Minimization Measures for Siting and Design of New Development in and adjacent to HMAs*, AMM-16).

- Use signs, brush piles, fencing, or other measures to identify trails, fire roads, or other access points that are officially closed to the public where monitoring identifies adverse impacts on HCP species.
- Eliminate vehicle use in aquatic and riparian/wetland habitats.
- To minimize disturbance on beaches in dune and coastal strand habitat, areas targeted for habitat restoration, and western snowy plover nesting habitat, install permanent no-climb fencing and post signs to prohibit public activities. Although it is currently disallowing no-climb fencing in beach areas, the California Coastal Commission has given express permission to State Parks to utilize no-climb fencing for protection of HCP species. Prohibited activities include dog walking, campfires, kite-flying, equestrian use, hang gliding or paragliding launch sites, remote-control vehicles, and driftwood collection on beaches in dune and coastal strand habitat and known western snowy plover nesting areas to minimize disturbance. These prohibited activities will remain in effect even if monitoring indicates that no western snowy plovers are using the coastal strand area. Additional prohibited activities may be identified through the adaptive management process (see Section 6.8, *Adaptive Management*, for adaptive management actions and the decision-making process). If monitoring indicates that nesting western snowy plovers are being affected by beachgoers accessing the beach from a particular corridor, the route will be closed during the western snowy plover nesting season to prevent impacts. Adaptive management will determine if temporary beach access closure is required to protect specific western snowy plover nesting areas but will be employed only if fencing and signage do not resolve impacts on western snowy plover nesting (see Section 6.8.1, *Adaptive Management Measures*, Measure-12). This could include closing parking lots and restrooms at access points to dissuade beachgoers from entering the beach at that location. Signs clearly stating the purpose for the access route closure would appear in the parking area and on the beach. USFWS will be updated throughout the breeding season and involved in closure decisions. State Parks and the Cooperative will implement closures if biological goals and objectives are not being met and USFWS determines that other adaptive management measures have not been effective in rectifying the situation.
- Park staff and volunteers will patrol the beach and sand dunes to ensure compliance with seasonal closures and prohibited activities. Patrols will occur daily during the western snowy plover nesting season (March–September). Five days a week, Cooperative funded biologists will manage illegal beach use activities observed while conducting monitoring activities (generally during the morning). Park rangers will patrol the beach as frequently as possible. Patrols will be conducted on foot or with all-terrain vehicles, such as quads. In all but emergency situations, vehicular beach patrols will utilize the “low and slow” method. Although roads are not proposed within western snowy plover habitat, all-terrain vehicles will use the “low and slow” driving method. This method requires vehicles to remain on wet sand during low tide, traveling 10 miles per hour or less, and establish the maximum distance possible between the vehicle and symbolic fencing, (i.e., post and cable fencing). If tides do not allow, the patrol will be postponed until the “low and slow” method can be employed. Volunteers may also be employed to increase the frequency of patrols. Fines and other penalties will be imposed on violators.
- Fence western snowy plover habitat to minimize disturbance of nesting snowy plovers and maintain a western snowy plover nesting population on the beach. State Parks will place symbolic fencing at the high-tide line to protect potential nesting habitat. The post-and-cable fencing will extend between the access point for stretches of beach that contain nesting habitat. The fence will extend from each access point to guide pedestrian access to the beach and then

run parallel to the beach front along the high-tide line. All suitable nesting habitat will be fenced. Signs prohibiting entry and identifying the area as western snowy plover nesting habitat will be placed along the fence. The fence will be installed as early as possible when conditions allow. Conditions that will be used to determine when the symbolic fencing can be installed include the high-tide magnitude, amount of dry sand available, storm frequency and severity, and wind severity and duration. The fence line may need to be shifted throughout the nesting season to adjust to monthly variations in the high-tide line. If mating behavior is observed, every effort will be made to fence, at a minimum, a portion of the dry sand beach. At the latest, symbolic fencing will be installed by April 1. When nests are initiated outside of the fenced area, the symbolic fencing will be repositioned to include the nest and provide (to the extent possible) a buffer between the nest and symbolic fencing. Locations for new fencing and adjustments to currently installed fencing will be determined by the results of annual monitoring as part of the adaptive management program.

- Monitor recreational use during the Fourth of July holiday from 2 p.m. to 10 p.m. Utilize as many individuals as necessary, including biologists (e.g., western snowy plover monitors), State Park rangers, docents, and volunteers, to adequately control illegal activities. The staff will rotate between beach patrols, public education, and access route compliance. Manage Fourth of July staffing adaptively based on the previous year's beach use totals.
- Inspect and evaluate boundary areas for trespass, motor vehicle entry, trash or yard waste dumping, off-leash pets, and other unauthorized activities, and take steps to preclude such activities, such as issuing citations.
- Install and maintain a barrier along the border of parcels E31 and NAE where topography allows vehicle access.
- Limit motorized vehicles within the HMAs to roads that are managed for public access except for emergency use and required management and maintenance.
- Limit public access within dune habitat areas—including all restored coastal dune scrub habitat—to designated routes identified by signs, boardwalks, paving, and/or fences.
- Limit public beach access to no more than three pedestrian access routes within FODSP. The access routes will be located, mapped, and identified on the ground. They will be selected primarily to avoid disturbance of western snowy plover nesting and foraging areas and Smith's blue butterfly host plants or movement corridors. No-climb fencing will be installed to prevent access at locations other than designated access routes. The Cooperative Program Administrator, in coordination with State Parks, USFWS, and the Coastal Commission may close public access routes during the western snowy plover nesting season if monitoring indicates that nesting western snowy plovers are being impacted by beachgoers accessing the beach from those locations.
- Limit riding and equestrian activities to designated trails and courses in the Oak Oval Reserve.
- Install trash receptacles that are inaccessible to predators in areas with substantial public use, such as access routes and parking lots within FODSP. Predator control will be implemented if predators are facilitated by human use and impairing plover nesting success.
- Organize volunteer beach cleanup days outside of the western snowy plover nesting season. Volunteers will be educated on western snowy plover issues before entering the habitat.

- Based on the results of routine patrols conducted by State Parks, limit seasonal use of roads, trails, campsites, etc. Informal recreational observation during western snowy plover monitoring will indicate if dune habitat and/or western snowy plover nesting degradation is resulting from the occupation of these public areas.
- Minimize ground disturbance and vegetation removal when installing access controls (e.g., barriers, gates, signs). Barriers within potential California tiger salamander upland habitat will not inhibit movement to or from breeding ponds.
- Maintain installed barriers, signs, trail staging areas, etc.
- Post beach rules at all access points.
- Post boundary signs prior to each public event (e.g., motorsport races) and patrol during events at Laguna Seca. Redirect public and educational visitors away from locations where visitor use could degrade the quality or quantity of aquatic and riparian/wetland habitat.
- Restrict pets from aquatic and riparian wetland areas.
- Develop an annual implementation plan that describes the specific management actions to be employed for access control. The implementation plan will be based on the previous year's monitoring and will be submitted to the Cooperative for review and comment by the TAC. The annual implementation plan will be submitted to USFWS and CDFW through the Cooperative as part of the annual report.

Depending on the amount of visitor use, signs, interpretive displays, and other information at the urban/wildland interface will be installed that illustrate the importance of the adjacent habitat area. The signs or other informational postings will identify the prohibited activities including trespass, motor vehicle entry, dumping of trash or yard wastes, allowing pets off-leash, and other unauthorized activities. In some cases, structures such as fences or other appropriate barriers may be required within a new development parcel to control access into the habitat area.

AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species. The program will emphasize controlling erosion and the potential spread of non-native invasive plants. Trails may be closed and/or rerouted based on the monitoring program.

AMM-29. Fence Smith's blue butterfly habitat to minimize disturbance and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass.

HMA managers will oversee, install, and maintain barriers such as signs and fencing to avoid and minimize impacts on HCP species and natural communities. HMA managers will identify restricted access locations associated with the internal road network in the HMAs and secure against unauthorized entry by motorized vehicles with either a gate or a vehicle barrier. Signs, interpretive displays, or other information at the urban/wildland interface will be installed that illustrate the importance of the adjacent habitat area. The signs or other informational postings will identify the prohibited activities including trespass, motor vehicle entry, dumping of trash or yard wastes, allowing pets off-leash, and other unauthorized activities. In some cases, structures such as fences or other appropriate barriers may be required within a new development parcel to control access into the habitat area.

AMM-30. Fence a portion of the FONR seaside bird's beak population to prevent over browsing by deer. At least half of the seaside bird's beak at the one locality on the north reserve

will be fenced to prevent deer browsing from inhibiting seed production and input to the seed bank. Annual monitoring will evaluate the distribution, abundance, and seed set of this population. Impacts/benefits of fencing will be evaluated and either continued or modified to address impact/benefits on seaside bird's beak.

AMM-31. Maintain cages around current known occurrences and cage new occurrences of Yadon's piperia found during baseline surveys and subsequent monitoring to protect plants from herbivory. Cages should be anchored in place by driving lengths of PVC pipe into the soil at a minimum distance of 4 inches from a piperia plant or plants. Holes will be drilled into the pipes so that anchoring wires can be attached (Yadon 2007). Dense stands of more than two square feet can be fenced with 2-inch wire mesh fencing reinforced with rabbit fencing at the base.

AMM-32. Develop and implement a public outreach and education plan. The public outreach and education plan will include, at a minimum, the following actions. HMA managers or the Cooperative will implement these actions consistent with and upon approval of the RMP.

- Install and maintain interpretive signs/displays that illustrate the importance of the HMA and methods for maintaining its habitat values. Interpretive signs installed by the Army will be maintained and updated/replaced as needed. New interpretive signs, displays, trailhead markers and other signs advising on activities such as trash removal, limiting ground disturbance, restraining pets, discouraging capture or harassment of wildlife, and prohibiting the collection of HCP plant species will be installed.
- Increase public education interpretive programs (e.g., visitor education program) to describe the life history and sensitivity of HCP species such as the western snowy plover and Smith's blue butterfly, in order to reduce the level of disturbance from recreational use. These programs may include ranger presentations, guided tours, and docent programs. A volunteer docent program shall be initiated on the weekends when beach patrols are the most infrequent.
- Develop and implement educational/informational programs for campers and other users. A natural resource host (voluntary position) will educate campground users about HCP species, including the western snowy plover during the western snowy plover nesting season.⁵ Install and maintain interpretive signs and displays throughout the Travel Camp area describing the importance of the area as a corridor and methods for maintaining habitat values such as removing trash, limiting ground disturbance, restraining pets, and discouraging capture or harassment of wildlife and collection of plants.
- Identify groups who utilize the beach during the western snowy plover nesting season, such as surf camps and junior lifeguard programs. Develop and implement on-site educational programs for these groups yearly. The on-site educational program will be conducted in areas where western snowy plover does not nest.
- Educate landowners and visitors about wildfire risks. Every 2 years, maritime chaparral stands that are adjacent to developed or future development lands at East Garrison Reserve will be assessed to determine fire threats to communities at risk and to educate visitors and landowners about wildfire risk.

⁵ State Parks has a Volunteers in Parks Program. The host positions are filled through an application process and traditionally filled on a seasonal basis. The natural resource host, or camp host, will be trained to educate campers and park visitors about the western snowy plover and other HCP species at FODSP. In the event that the host position is vacant, a State Park staff member would fulfill these duties in the interim.

- The HMA Manager or the Cooperative will develop and implement a fire-wise planning educational program for ongoing maintenance and construction, such as landscaping, fencing, outbuildings, and housing additions for homeowners.
- The HMA Manager or the Cooperative will provide educational materials (e.g., newsletters) to all new property owners in Borderland parcels, no less than annually, to ensure compliance with design and management requirements.

5.4.5 Avoidance and Minimization Measures for Road Corridors and Infrastructure Construction, Operations, and Maintenance in and adjacent to HMAs

The following AMM is required for road corridors and infrastructure construction, operations, and maintenance in HMAs for locations indicated in Table 5-3. These covered activities and associated AMM would typically be implemented by a permittee or third party applicant who is not the HMA landowner or manager.

AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs. Prior to conducting maintenance on facilities in HMAs, the permittee or third-party applicant will contact the appropriate HMA manager to describe and discuss the proposed maintenance activities and best management practices. Areas to be temporarily disturbed will be restored per recommendations from the HMA manager. The permittee or third party applicant will use existing roads to access facilities unless no road exists, or an emergency arises. Debris from authorized vegetation management activities will be disposed of appropriately so that it does not affect HCP species or degrade natural communities. The size of the working corridor for operations and maintenance activities will be limited to the smallest area needed to perform the activity. Vegetation management within corridors will retain HCP plant species.

5.4.6 Avoidance and Minimization Measures for Road and Trail Maintenance in HMAs

The following AMMs are required for road and trail maintenance covered activities in HMAs, as described in Section 3.3.3.1, *Maintain and Improve Roads and Trails*, for the locations indicated in Table 5-3. These covered activities and associated AMMs would typically be implemented by an HMA land owner or manager.

AMM-34. Selectively clip and trim perennial vegetation along minor roads and trails to reduce canopy closures. Vegetation trimming along minor trails on a rotational (likely 10-year) schedule would maintain the open sandy habitats associated with annual HCP species, especially sand gilia. Any trimming would be implemented in accordance with the recommendations of the vegetation and fire management program developed and approved through the RMP process. This AMM applies to all HMA managers.

On FONR, the North Reserve perimeter road (part of which also serves as a fuel buffer) and Old County Road in the South Reserve, designated as primary access roads, may require road maintenance or additional work if emergency access or erosion problems are identified that require grading or recontouring. Other trails and roads through FONR may be lightly used but will remain unsurfaced and kept as sandy tracks without regular grading or recontouring. These trails are

expected to provide open substrates for annual HCP species such as sand gilia and Monterey spineflower.

AMM-35. Implement maintenance rotations for roads and trails to prevent excess wear on trails and to provide additional open habitat for annual plant establishment and contribution to the seed bank. Location and frequency of rotations would be implemented in response to monitoring and as part of an adaptive management strategy, in accordance with the recommendations of the vegetation and fire management program developed and approved through the RMP process. This AMM applies to all HMA managers.

AMM-36. Install silt fences, fiber rolls, sand bags, straw bale barrier, or other sediment control devices where there is potential for sediment to move offsite and degrade natural communities, particularly vernal pools, ponds, creeks, or seasonal wetlands.

AMM-37. Seed and straw disturbed areas outside of the road or trail corridor to facilitate revegetation. Seed mixture will be composed of native plants species approved by the Cooperative and Wildlife Agencies. Only certified weed-free straw will be used. This measure will also be implemented consistent with AMM-42 below.

AMM-38. Limit herbicide and pesticide use and apply in accordance with AMMs identified for non-native species control. Protocols and refinements through monitoring and adaptive management are described in AMM-45 and AMM-46.

AMM-39. Apply seasonal restrictions to maintenance activities to avoid or minimize adverse effects on western snowy plover and Smith's blue butterfly. All maintenance activities in the coastal strand area will be completed outside of the western snowy plover nesting period (March 1 through September 30) and Smith's blue butterfly flight season (June 15 to September 15) whenever feasible to minimize adverse effects. If maintenance activities must be performed within these seasonal restrictions for essential activities (e.g., to address public health or safety, or for emergency repairs) and in areas with the potential for adverse effects on western snowy plover or Smith's blue butterfly, a qualified monitor will be present on the site during the activity to ensure that adverse effects on the species are minimized to the maximum extent practicable.

AMM-40. Clean mowing equipment before use in habitat areas to prevent the spread of non-native noxious weeds. The most common non-natives being eradicated are: spotted knapweed (*Centaurea maculosa*), Spanish broom (*Spartium junceum*), French broom (*Genista monspessulana*) African iceplant (*Carpobrotus edulis*), Slender iceplant (*Conicosia pugioniformis*), Crystalline iceplant (*Mesembryanthemum crystallinum*), Scotch thistle (*Onopordum acanthium*), European gorse (*Ulex europaeus*), waxy mannagrass (*Glyceria declinata*), mustard (*Hirschfeldia incana*), jubata grass (*Cortaderia jubata*) and pampas grass (*Cartaderia selloana*).

AMM-41. Maintain travel lanes and shoulders of roads in sandy soils as open sandy habitat for annual HCP plant species, to the extent possible, consistent with the purpose of the road.

5.4.7 Avoidance and Minimization Measures for Erosion Control

AMMs for erosion control are required for the following covered activities and associated with locations indicated in Table 5-3.

- Development in Borderland parcels in designated development areas and HMAs (i.e., Category 1, 2, 3, and 4 Borderlands).

- Allowable development in HMAs.
- Road corridors and infrastructure construction, operations, and maintenance in HMAs.
- Implementation of erosion control for habitat restoration, enhancement, and management mitigation measures.

AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas. This avoidance and minimization measure will be fulfilled through incorporation into the RMP or on a-project-by-project basis. Erosion control measures will be required where vegetation removal or soil disturbance occurs as a result of all facility construction and maintenance, including trail, road, or fuelbreak construction/maintenance, access controls, or stormwater management, consistent with existing stormwater management plans. Specific measures to be implemented shall be detailed in an erosion control plan. Project specific erosion control plans will be submitted with the HCP application package for review and approval as part of the HCP Concurrence Process (Chapter 7, *HCP Implementation*). The erosion control plan will include, at a minimum, the following measures.

- Re-contour eroded areas. Where significant erosion has occurred because of previous or existing storm drain outfalls on State Parks property, revegetation and other alternative stabilization measures may be implemented in lieu of recontouring with heavy equipment.
- Maintain and grade areas along the reserve perimeter and main roads as appropriate to avoid washouts. Gullies will be repaired as needed. (Heavy use by the OU1 cleanup operation has caused some gullying and the Army will be responsible for repairs and restoration required as a result of that operation.)
- Install drainage features such as outlet ditches, rolling dips (similar to waterbars), and berms as needed to facilitate the proper drainage of storm runoff.
- Add soil amendments such as fertilizers and gypsum for designated development areas only.
- Site erosion control fences in the FODSP so that no barrier is created between western snowy plover dry sand nesting habitat and wet sand foraging habitat; also, do not site fences in the middle of an area where there has been a concentration of western snowy plover nests in the past.
- Prevent sediments from entering basins or swales that could be used by HCP species during erosion control activities.
- Design and conduct erosion control measures to minimize the footprint of the structures and repairs, and design structures to minimize potential impacts on California tiger salamander and California red-legged frog that may be moving between breeding and upland habitats.
- Use weed-free mulch, weed-free rice, sterile barley straw, or other similar functioning product where needed for erosion control. Seed native plant species to stabilize soils disturbed by erosion control activities and prevent colonization by invasive weeds. Incorporate native plant species to the extent practicable.

5.4.8 Avoidance and Minimization Measures for Habitat Restoration, Enhancement, and Management

AMMs for habitat restoration, enhancement, and management are required for the following covered activities within locations indicated in Table 5-3.

- Development in Borderland parcels in designated development areas and HMAs (i.e., Category 1, 2, 3, and 4 Borderlands).
- Allowable development in HMAs.
- Road corridors and infrastructure construction, operations, and maintenance in HMAs.
- Implementation of habitat restoration, enhancement, and management mitigation measures.

AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-specific RMP. At a minimum, the following actions will be implemented. A habitat restoration, enhancement, and management plan can be developed as part of the RMP or on a project-by-project basis.

- Target disturbed sites rather than occupied habitat for restoration projects.
- Flag areas adjacent to restoration sites that are occupied by HCP species and that will not be disturbed. Prohibit vehicle and foot traffic, stock piling, or any other activity which may have a negative effect in the flagged area.
- Where and when applicable to protect environmentally sensitive areas,⁶ develop fencing plans to protect these and habitat restoration areas from anthropogenic impacts. Appropriate fencing types include no-climb, post and cable or split rail fencing combined with interpretive panels indicating why an area is closed.
- Stockpile topsoil from restoration areas occupied by HCP plant species prior to rain events of any given growing season where heavy equipment or other ground-disturbing site-preparation activities are anticipated to occur. Once ground-disturbing activities associated with restoration are complete, the soil will be redistributed in its former location prior to January 15 to provide sufficient time for germination, growth, and seed production. Avoid implementation of restoration projects in wetland basins that are in nearby upland areas within FONM if the restoration would be likely to cause increased sedimentation or erosion in the basin or swale system.
- In the FODSP, schedule restoration activities that have the potential to indirectly affect wildlife to avoid the nesting season for western snowy plover and the flight season for Smith's blue butterfly, if the Cooperative determines that restoration activities may affect western snowy plover and Smith's blue butterfly.
- Seed or plant recontoured and restored areas with native plant species from former Fort Ord genetic stock, if seed production is sufficient, to expedite the recovery of native vegetation.

⁶ The Coastal Act defines "environmentally sensitive area" as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (§§ 30107.5).

Species selected for planting or seeding will represent the typical associates of the desired plant community and/or mimic the closest adjoining habitat considered a reference site of healthy habitat. Native seed may be broadcast by hand or hydroseeded and/or native seedlings may be propagated from native seed under nursery/greenhouse conditions and outplanted (typically during late fall or winter).

- Use local genetic stock for native and HCP species revegetation, through the use of seed and propagules collected from Fort Ord, or as close to Fort Ord as possible. Use non-local plant materials only when important restoration projects need to be completed and Fort Ord stock is not available. Use these materials only with approval from the Cooperative and monitor their use. Restoration projects require monitoring of success criteria.
- Incorporate native grasses and forbs in the plant palette when restoring degraded areas in grassland habitat.
- Collect seed according to CNPS standards to avoid depletion of any specific area. Seed collection must be conducted by a Designated Biologist.
- Collect seed and propagules from the nearest known population to avoid the loss of site-specific adaptations when establishing new HCP species populations.
- Only local stock will be used for coast and seacliff buckwheat, the host species of the Smith's blue butterfly, even if restoration projects must be delayed until local stock is available. Seeding and/or outplanting of seedlings are often unnecessary after iceplant is treated with herbicide or physically removed because there is a natural seed bank already in the soil. Buckwheat seed will be collected by hand, by a Designated Biologist, to minimize effects on Smith's blue butterfly.
- Remove invasive weeds from restoration projects.
- Minimize establishment of non-native grasses on restoration sites through experimentation using manual (hand) removal and cutting, propane torches, grass-specific herbicides, mulching, and other methods.

5.4.9 Avoidance and Minimization Measures for Prescribed Burns and Alternative Vegetative Management

AMMs are required for prescribed burns and alternative vegetative management mitigation measure implementation (Mitigation Measure-22 and Mitigation Measure-34) in locations indicated in Table 5-3.

AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP. At a minimum, the following actions will be implemented consistent with the RMP; however, project-specific measures may be developed.

- Conduct prescribed burns on a rotational basis with a patchwork of burned and unburned areas to maintain food and shelter for HCP animal species inhabiting planned burn sites.
- Conduct prescribed burns from July 1 to December 31 and before winter rains to minimize effects on HCP species.

- Use existing fuelbreaks and established dirt roads to the maximum extent possible to limit construction of new roads and fuelbreaks. If new fuelbreaks are necessary, ensure they are located and constructed to avoid and minimize effects on HCP species and wetlands. Following completion of a prescribed burn, restore redundant roads and fuelbreaks.
- Use fire retardants and foams without sodium ferrocyanide.
- When using fire retardants and foams, maintain a buffer of 300 feet from vernal pool locations or ponds to prevent equipment, fire retardants, and foams from entering wetlands and to reduce the likelihood that prescribed burn activities will contaminate wetlands.
- Conduct prescribed burns after annual HCP plant species have produced seed and before germinating rains.
- Limit those areas that are subject to alternative vegetation management (see Section 5.5.3.6, *Evaluate Alternatives to Burning*) to the minimum required to meet biological goals and objectives and that current research has proven effective in promoting HCP plant species.
- Limit vehicle passes over vegetation to as few as possible to reduce soil disturbance where mechanical mowing is conducted.
- Implement tree trimming in accordance with the recommendations of the vegetation and fire management program—which will be developed and approved through the RMP process—or the best available scientific information. This AMM applies to all HMA managers.

5.4.10 Avoidance and Minimization Measures for Non-Native Invasive Species Control

AMMs for non-native invasive species control are required for the following covered activities within locations indicated in Table 5-3.

- Development in Borderland parcels in designated development areas and HMAs (i.e., Category 1, 2, 3, and 4 Borderlands).
- Allowable development in HMAs.
- Road corridors and infrastructure construction, operations, and maintenance in HMAs.
- Non-native invasive species control mitigation measure implementation.

AMM-45. Minimize use of chemical herbicides for controlling non-native invasive plant species for the term of the HCP. The Cooperative, in consultation with the HMA managers, will continually refine the integrated pest management program through monitoring and adaptive management in an effort to reduce dependence on herbicides. The goal of the program is to eliminate or substantially reduce the size of existing populations of invasive non-native plants and reduce activities that introduce and/or contribute to the spread of those species so that future eradication efforts can also be reduced. Herbicides will only be applied when there is minimal risk to HCP species.

AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control. All weed abatement done by staff or volunteers would be supervised by persons trained in the identification of HCP species. The overview will include guidance for implementing the following actions. The

timing, location, and method of herbicide application will be adjusted in conformance with BLM's vegetation management protocols and California Invasive Plant Council best management protocols.

- Use herbicides in accordance with product labels, such as the following:
 - Apply herbicide when wind speeds do not exceed 10 miles per hour, preferably when there are no winds during the early morning hours.
 - Apply herbicides during dry weather, outside, and not adjacent to drainage structures that contain running or standing water.
- Limit herbicide mixing and equipment cleaning activities to pre-identified locations where spillage can be contained. Avoid the possibility of runoff into vernal pools or ponds.
- Implement isolated spot spraying and/or hand clearing to reduce non-target plant species herbicide exposure. These are the only approved methods of removal in areas where buckwheat is present. Spot spraying will be implemented in ways to ensure that coast or seacliff buckwheat is not sprayed.
- Time herbicide use within potential upland habitat for California tiger salamander outside of the period when the salamanders are aboveground. If herbicide use within the watershed of a vernal pool, a non-Federal HMA manager will seek USFWS and CDFW approval prior to herbicide use.
- When using a propane torch during a non-native invasive species spot treatment, use under wet or rainy conditions after 2 inches of rain have fallen during any given wet season to increase the effectiveness of the application and to ensure safety from fire.
- Provide supervision of all weed abatement done by staff or volunteers by persons trained in HCP species identification.
- Cease all weed abatement until after seed set in any given year, if any HCP plant species are observed in work areas during weed abatement.
- Use existing roads and pathways for vehicle travel during weed abatement activities.
- Minimize soil disturbance while using hand tools to abate invasive weeds.

AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.

AMM-48. Limit livestock water use to no more than three ponds annually to prevent negative effects on aquatic habitat.

AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.

AMM-50. Develop and implement a strategy to ensure that water features do not become a source for non-native species, such as bullfrogs, which could move into nearby habitat areas.

5.4.11 Avoidance and Minimization Measures for Monitoring

AMMs are required for monitoring measures implemented in all HMAs and Borderlands (Table 5-3).

AMM-51. Disinfect equipment according to the Declining Amphibian Population Task Force's Code of Practice to avoid transferring disease or pathogens between aquatic habitats. All individuals conducting aquatic monitoring or entering wetlands during management, research, or educational programs will ensure that their equipment has been properly disinfected. Care will be taken so that all traces of disinfectant are removed from all equipment before use in a new aquatic habitat.

AMM-52. Use existing roads and trails when using vehicles to access monitoring locations.

AMM-53. Clean boots and equipment to prevent the spread of non-native plant species and pathogens. The exterior and interior of all vehicles (including tires, treads, wheel wells, undercarriages, and other surfaces) as well as equipment and tools must be clean and free of debris, soil, and mud prior to arrival at a site. Interiors (cabs, etc.) may be vacuumed or washed; exteriors should be washed with a high-pressure washer. Compressed air may be used to ensure that soil and debris are completely removed. This is especially important during the wet season. In general, work shoes should be kept clean—inspect shoe soles and knock mud, debris, and soil off treads before moving to a new location. Once soil or debris has been removed, an appropriate sanitizing agent with ethyl or isopropyl alcohol (at least 70% concentration) must be used to kill pathogen spores that may be present on boot soles or tools (sanitizing agent may be applied by using spray bottles filled with alcohol to wet the surface thoroughly). Boot soles and hand tools must be sprayed with enough alcohol so that surfaces are fully coated and wet.

5.5 Measures to Mitigate Unavoidable Impacts

The Permittees propose the following measures to mitigate for unavoidable covered activity impacts. These measures are required in addition to the AMMs described in Section 5.4, *Measures to Avoid and Minimize Impacts*. Table 5-4 provides a summary of the relationships between the biological goals and objectives and the mitigation measures. Species benefited by each mitigation measure are identified in Table 5-5. The locations where mitigation measures will be implemented are identified in Table 5-6 and are limited to HMAs. Table 5-7 distinguishes which mitigation measures will be implemented by the Permittees, BLM, or both, as mitigation for the HCP. (See Section 5.2, *Conservation Framework*, for more background on Table 5-7.)

Mitigation Measure-1. Adopt implementing ordinance or policy. Each Permittee will adopt an implementing ordinance or policy to implement the HCP on the local, agency, or institutional level. The ordinance or policy will incorporate the relevant components of the HCP for private applicants and clearly identify the requirements for development on former Fort Ord (see Section 7.4, *Local Implementing Ordinances and Policies*, for full requirement discussion).

5.5.1 Habitat Preservation

Land preservation is the foundation of this conservation strategy. Reserve configuration is based on four fundamental goals: to fully mitigate the impacts of covered activities, to contribute to the recovery of HCP species and natural communities, to maintain ecosystem processes, and to conserve biodiversity. The primary objective is to establish a base-wide, connected habitat reserve system in the Plan Area totaling 18,540 acres of land (Table 3-8, Figure 3-1). Because they support large concentrations of HCP species, maritime chaparral and coastal dune habitats were singled out in the original HMP analysis used to determine optimum habitat reserve areas and corridors. In the HMP

they were given special status and management requirements as Habitat Management Plan Habitats. While this HCP recognizes the significance, regional ecological importance, and benefits to HCP species of actively managing those habitat types, it also addresses mitigation measures for other habitat types/natural communities that occur on the former Army base.

Mitigation Measure-2. Establish a base-wide, connected habitat reserve system in the Plan Area. A habitat reserve system will be established on lands transferred to the Permittees and BLM from the Army.

Habitat managers will be responsible for preserving, maintaining, and managing the full range of native habitats and viable populations of HCP species and natural communities across 18,540 acres associated with 14 HMAs (Table 3-8). The HMAs that compose the habitat reserve system are listed below. The Cooperative will be responsible for the implementation of all HCP required mitigation measures identified below on the behalf of Monterey County, the City of Marina, Monterey Peninsula College, and Monterey Peninsula Regional Park District. The Cooperative may conduct the HCP required mitigation measures itself as the habitat manager, partner with other habitat managers within the HCP (e.g., BLM, State Parks, UC), or contract implementation to a third party, as needed. If selected, the third party would have the appropriate qualifications and authorizations if the management activity could result in take of an HCP species.

- BLM will establish, preserve, and manage the 14,645-acre FONM, in the central section of the former base, as a contiguous habitat reserve supporting maritime chaparral, oak woodlands, grasslands, aquatic, riparian, and wetland habitats. Allowable development would occur on up to 292 acres within FONM.
- State Parks will establish the 979-acre FODSP, in the coastal area of Fort Ord west of Highway 1, to preserve, manage, and maintain 834 acres, including restoration of a minimum of 700 acres of coastal strand, coastal dune scrub, beaches, bluffs, and blowouts habitat.⁷
- UC will establish the 606-acre FONR, near the Marina Airport and Reservation Road in the northern part of the former base, as a habitat reserve and corridor to preserve and manage maritime chaparral, coastal scrub, oak woodlands, and grasslands habitat. Resource management, education, and research facilities would be developed on 6 acres ($\pm 1\%$). In addition, 1.89 acres in the FONR Extension may be developed.
- Monterey County will establish, preserve, and manage 1,853 acres of land as follows (Table 3-8).
 - Establish, preserve, and manage 423 acres of land transferred from the Army to Monterey County via FORA at East Garrison Reserve as a habitat reserve supporting maritime chaparral and oak woodland habitat.
 - Establish, preserve, and manage a habitat reserve and corridor connection between the FONM and the East Garrison North Reserve by maintaining and managing native oak woodland habitat on 301 acres of the 398-acre Habitat Corridor/Travel Camp parcel.
 - Establish, preserve, and manage the 372-acre Parker Flats Reserve as a habitat reserve supporting maritime chaparral, oak woodland, and grassland habitat.
 - Establish, preserve, and manage the 73-acre Oak Oval as a habitat reserve supporting oak woodland habitat.

⁷ The minimum 700 acres of FODSP restoration includes 210 acres of these habitats already restored at FODSP.

- Establish, preserve, and manage 219 acres of the 308-acre Landfill Parcel as a habitat reserve to maintain, at a minimum, the approximate extent, percent cover, and mix of plant communities and habitat values for HCP species known from or potentially occurring in this area.
- Establish, preserve, and manage 135 acres (49 acres at Wolf Hill and 86 acres at Lookout Ridge) of the 275-acre Laguna Seca Recreational Expansion as natural watershed and upland grassland habitat.
- The City of Marina will establish, preserve, and manage 236 acres of land as follows (Table 3-8).
 - Establish, preserve, and manage 43 acres along the bluffs adjacent to the Salinas River as a habitat reserve supporting oak woodland, coastal scrub, riparian vegetation, and grassland communities for HCP species.
 - Establish, preserve, and manage 130 acres at the westerly end of the Marina Airport to preserve a minimum of 103 acres of grassland and coastal scrub plant communities and habitat for HCP species.
 - Preserve and manage the 63-acre parcel located at the northwest corner of former Fort Ord and establish and manage at least a 5-acre habitat reserve for Yadon's piperia within it that includes known occurrences and appropriate buffer area.
- Monterey Peninsula College will establish, preserve, and manage 206 acres at the Range 45 Reserve as a habitat reserve supporting maritime chaparral habitat.
- The Monterey Peninsula Regional Park District will establish, preserve, and manage 19 acres at the southwest corner of Fort Ord to maintain the mix of plant communities and habitat for HCP species.

5.5.2 Development of Resource Management Plans for Specific HMAs and Base-Wide Management Strategies

Active management is required to maintain the ecological integrity of habitats within the designated HMAs. Controlled burns or alternative vegetation management methods in chaparral and scrub will be necessary to provide a mosaic of successional stages and maintain high native species diversity. Large-scale removal of iceplant mats and dune stabilization will be required in the coastal area. Active management may also entail limiting public access or controlling various uses in the HMAs to prevent habitat degradation and/or protect certain HCP species.

All habitat managers will be required to evaluate the characteristics and site-specific management issues relative to each HMA, develop and implement a management program, monitor its success over time, and adapt management protocols in response to monitoring results and/or changed circumstances. The primary management requirements applicable to all HMAs are presented below.

5.5.2.1 HMA-Specific Resource Management Plans

Mitigation Measure-3. Develop HMA-specific resource management plans. Resource management plans (RMPs) will be developed for BLM FONM, State Parks FODSP, and UC FONR to identify how the HCP relates to overall HMA management. The Cooperative will work with Monterey County, the City of Marina, Monterey Peninsula College, and Monterey Peninsula Regional Park District to develop a single RMP to cover the HMAs owned by these entities.

The RMP will, on the basis of site-specific conditions (i.e., adjusted baseline for the areal extent of natural communities) and overall HCP objectives, identify and describe the management actions (as presented in this section) necessary to ensure that desired ecosystem characteristics and functions are preserved and maintained. Existing management plans used by HMA managers may be incorporated into HMA-specific RMPs; however, elements may need to be added or revised to be consistent with the HCP. Draft management plans will be prepared by each habitat manager within 3 years of property transfer or issuance of permits, whichever is later. All draft management plans will be reviewed by the Cooperative in consultation with the TAC to ensure consistency with the HCP. Plans shall be submitted to USFWS and CDFW for review and comment through the Cooperative (Section 7.9.3, *Reporting*). Plans must be consistent with existing funding and permit obligations. Management actions will follow the standards and procedures established by this HCP. Ongoing management actions may be modified in response to comments from the TAC. BLM's preparation of its RMP is subject to Federal Law, but not local or State laws. BLM may voluntarily choose to submit their RMP to the Cooperative and CDFW for their review. However, it is not required. The RMPs are to include the following information.

- Describe specific protocols for managing biological resources to meet the overall goal of the HCP and the landscape-level, natural community-level, and species-level goals and objectives. Each plan will be HMA-specific and will provide further detail for HCP required action implementation. The sub-programs that may be implemented under the HMA-specific RMPs include the following.
 - Fire and alternative vegetation management
 - Grazing
 - Restoration, enhancement, and management
 - Erosion control
 - Non-native species controls
 - Security and access controls
 - Public outreach and education
 - Vegetation management
 - Road and trail maintenance
- Describe interim management in the event that full funding for management is not in place at the time of permit issuance, with management tasks prioritized and implemented commensurate with funds available.
- Describe short-term and long-term plans for development and land use, public access, recreation, and other non-habitat-specific uses for the HMA. Identify measures which will be implemented to avoid and minimize impacts on HCP species and natural communities that could occur due to siting, construction, occupation, and/or maintenance of allowable facilities and uses (Section 5.4, *Measures to Avoid and Minimize Impacts*).
- Identify project-level monitoring that is specific to the HMA and describe how the base-wide monitoring program is being implemented in the HMA (Chapter 6, *Monitoring and Adaptive Management*).

The Permittees will coordinate with the Wildlife Agencies during development of all RMPs. The HMA manager will revise the draft strategy based on the Wildlife Agencies' comments, if any, and will provide a revised draft to the Wildlife Agencies. If an initial draft strategy or any subsequent revised strategy adequately addresses a Wildlife Agency's comments, the Wildlife Agency will so notify the Cooperative, and the strategy will be deemed to be approved by that Wildlife Agency. The Cooperative will incorporate comments submitted by the Wildlife Agency in the revised strategy.

Adjusted baselines studies for all HCP species, with the exception of Yadon's piperia, will be completed within the first 5 years after permit issuance. The first revisions to the RMPs will be 5 years later (year 8). Plans will be revised every 10 years thereafter. Yadon's piperia baseline studies will be completed after 10 years and brought into synch with RMP revisions. For more information about adjusted baseline studies, please see Section 6.3.1.

5.5.2.2 Base-Wide Management Strategies

Mitigation Measure-4. Develop base-wide management strategies. There are a number of HMA-specific mitigation measures that will require additional planning and analysis for implementation. For these actions, the Cooperative and HMA managers will work together to develop base-wide management strategies during the elaboration of the HMA-specific RMPs. This will allow for the identification of specific strategies that support development and definition of tasks identified in the RMPs. Base-wide management strategies include the following.

- Identification and control of non-native plants, non-native wildlife, and diseases that could threaten HCP species and/or degrade habitat quality. This includes development of a priority weed list for each HMA that will be derived from the California Department of Food and Agriculture and the California Invasive Plant Council's invasive exotic plants list (California Invasive Plant Council 2007 or latest list), which may include trees, shrubs, herbs, and vines. The Cooperative, in coordination with each HMA manager, will develop a list of the priority non-native species within the boundaries of the HMA. The list will include three priority classes. Class one will include species with a limited distribution in the HMA that should be eradicated while it is still relatively easy to do so. Class two will include species that are already abundant, with containment as the primary goal. Class three species will include widespread non-native species that are deemed locally impactful and therefore require containment/eradication. Class one weeds will be continually managed, while class two and three weeds will be treated every few years, as necessary.
- An integrated pest management program will be developed to prevent the introduction and proliferation of pests and noxious and invasive weeds as part of the base-wide management strategies.
- Identification and control of high priority erosion control and restoration sites.
- Road closure and rehabilitation.
- Identification of maritime chaparral, coastal scrub, oak woodland, grassland, and aquatic restoration and enhancement sites, and identification of phasing of restoration and enhancement.

Base-wide management strategies will be appended to each HMA resource-specific management plan, as applicable, and reviewed, submitted, and updated in conjunction with the HMA resource-specific management plans (the process for which is described above).

5.5.3 Habitat Restoration, Enhancement, and Management

Habitat restoration, enhancement, and management actions will occur within appropriate HMAs for both the natural communities in the Plan Area and the HCP species they support. Directed, species-level mitigation measures are often unnecessary in the context of well-considered landscape-level preservation actions coupled with natural community-level mitigation measures. However, some species-level mitigation measures⁸ will be implemented in the Plan Area to provide further assurance that certain species will be preserved and protected in perpetuity. Species-level mitigation measures are discussed if a given species requires direct population management, population augmentation, or other measures that will provide additional conservation tailored specifically to that species. The following is an overview of the types of natural community-level and species-level measures that will occur in the HMAs.

- **FONM.** The FONM HMA is managed to protect the objects and values of the monument which correspond to the terms of the HMP. BLM's adherence to the HMP helps to ensure the Permittees comply with the terms of the HCP. These terms emphasize preserving, enhancing, maintaining, and restoring (as appropriate) habitat quality of maritime chaparral and other habitat types within the FONM and promoting the preservation of all HCP species therein. BLM's assistance in the HCP reflects the management goals and objectives of its RMP, the HMP, the FONM proclamation, and BLM's governing statutory and regulatory authorities, including FLPMA, 43 USC 1701 et seq. For the State permit, BLM will be responsible for mitigation measure implementation in the FONM. Under the Federal Permit, only those additional mitigation measures implemented or funded by the Cooperative on the FONM will be credited to Permittees. These mitigation measures are identified as such, below.
- **FODSP.** State Parks will restore large areas in the FODSP to native vegetation and HMP species' habitat. Restoration and management activities will target coastal strand and dune habitats for the benefit of western snowy plover, Smith's blue butterfly, Monterey spineflower, and sand gilia. State Parks will be responsible for mitigation measure implementation in the FODSP.
- **FONR.** Because of its mission and role as a UC/NRS reserve, mitigation measures on the FONR include experimental and descriptive research that will assist in developing and enhancing management of HCP species, native habitats, and public safety. The character of a natural reserve is important in that it provides for the study of natural, ecological processes. The UC/NRS limits manipulative work on natural reserves to operations that will not have significant and lasting negative impacts.⁹ Management activities on FONR include, at a minimum, those activities necessary to support the UC/NRS reserve and its programs and to meet the requirements of the 1997 HMP and this HCP.

UC/NRS will emphasize protection for native species diversity and habitat quality in general, for HCP species, and also for locally important species such as the black legless lizard, the coast

⁸ Species-level mitigation measures are required in designated development parcels, borderlands, and HMAs as described in the specific measure.

⁹ Details of UC/NRS administrative principles can be found at <http://nrs.ucop.edu/Admin-Handbook.htm>.

horned lizard, harvester ants, and all native plant and animal species. Some management activities are unique to certain habitat types or plant communities and others are procedures that apply throughout FONR. UC/NRS will be responsible for mitigation measure implementation in the FONR.

- **East Garrison Reserve.** In the East Garrison North Reserve, special attention will be given to maintaining or enhancing the HCP plant species' populations and to maintaining north-south trending linear habitat, such as unpaved roads, sandy openings, and firebreaks. This will enhance the potential for genetic exchange between sand gilia populations from the FONM to the south and the FONR to the north. The habitat will be maintained in a condition suitable for continued occupation by the HCP annual plant species. In addition, HCP species gene flow and dispersal will be maintained if the Multi-Modal Transportation Corridor is developed. Maritime chaparral in the East Garrison South Reserve will be managed in a manner consistent with the adjacent FONM.

The Cooperative will be responsible for mitigation measure implementation on the behalf of Monterey County. It will also coordinate with BLM, the California Department of Forestry, CDFW and others to determine suitable habitat management practices to retain and potentially enhance habitat values within the oak woodlands in the East Garrison North Reserve.

- **Habitat Corridor/Travel Camp.** Mitigation measures in the Habitat Corridor/Travel Camp will focus on preserving and managing habitat to retain high habitat values and to allow movement of wildlife and dispersal of plant seeds and pollen by various methods. AMMs will prevent habitat degradation due to Travel Camp activities. Interpretive signs and displays will be installed at the park entrance and in selected locations throughout the park and camping areas.

The Cooperative will be responsible for mitigation measure implementation on the behalf of Monterey County. It will coordinate with BLM, the California Department of Forestry and Fire Protection (CDF), CDFW, and others to determine suitable habitat management practices to retain and potentially enhance habitat values within the oak woodlands.

- **Parker Flats Reserve.** Mitigation measures required in this reserve are similar to those in the FONM and in the East Garrison Reserve. A prescribed burn program was initiated in 2004 in part of the Parker Flats Reserve to promote the regrowth of annual HCP species and to explore how pre-burn treatments influence species composition in maritime chaparral. Burning was conducted in September and October of 2005. Approximately 111 acres within the reserve were burned and post-burn monitoring has begun. The results of this monitoring will help direct future prescribed burn programs and will guide management activities in this parcel. The Cooperative will be responsible for mitigation measure implementation on the behalf of Monterey County.
- **Oak Oval Reserve.** The Oak Oval Reserve will be managed to preserve oak woodland, maintain wildlife movement corridors, and minimize habitat impacts from equestrian use. The Cooperative will be responsible for mitigation measure implementation on the behalf of Monterey County.
- **Landfill Parcel.** The Landfill Parcel will be managed to maintain, at a minimum, the approximate extent, percent cover, and mix of plant communities and habitat values for HCP species known from or potentially occurring in this area as documented during the adjusted baseline surveys. Measures will promote the reestablishment and long-term sustainability of these habitat types in disturbed areas of the parcel, including on the landfill caps. Where

possible, appropriate species will be reestablished in areas that were degraded by historical uses. The Cooperative will be responsible for mitigation measure implementation on the behalf of Monterey County.

- **Laguna Seca Recreation Expansion.** The primary mitigation measures in the Recreation Expansion Area are to reduce and control erosion to minimize the potential for accelerated sedimentation into the adjacent ponds on BLM lands. The Cooperative will be responsible for mitigation measure implementation on the behalf of Monterey County.
- **Salinas River Habitat Area.** Management of this area will focus on maintaining the population of Monterey spineflower on the site and maintaining potential habitat for the California red-legged frog. The City of Marina will review all proposals for land uses adjacent to the Salinas River Habitat Area to ensure that appropriate setbacks, drainage and erosion controls, non-native species controls, and other measures necessary to preserve and protect habitat quality in the reserve are incorporated into those proposals. The Salinas River Habitat Area will be managed to maintain, at a minimum, the approximate extent, percent cover, and mix of plant communities and habitat values for HCP species known from or potentially occurring in this area as documented during the adjusted baseline surveys. Management activities will promote the reestablishment and long-term sustainability of these habitat types and habitat diversity appropriate to support species known from or potentially occurring in this area. The Cooperative will be responsible for mitigation measure implementation on the behalf of the City of Marina.
- **Marina Airport Habitat Reserve.** Habitat in the parcel will be managed to promote the conservation of HCP species, especially Monterey spineflower. This will include maintaining small areas with disturbed sandy soils. Management may be coordinated with the adjacent FONR North Reserve. Native grasslands will be preserved and maintained or enhanced where they occur in the Airport Habitat Reserve. The extent of native grassland habitat will be evaluated during baseline surveys for community types. Where possible, appropriate native grassland species will be reestablished or introduced in areas that were degraded by historical uses or otherwise determined suitable for restoration to grassland. The Cooperative will be responsible for mitigation measure implementation on the behalf of the City of Marina.
- **Marina Northwest Corner.** Focused surveys following approved protocol for Yadon's piperia (Appendices G and H) are required to establish the adjusted baseline and determine the size and location of the habitat reserve area. Interim habitat management of the parcel is required during that period and the Yadon's piperia observed in 2006 and 2007 will be protected through directed preservation and management efforts and monitoring activities. An appropriate conservation area with adequate buffers and setbacks from development shall be established based on the results of this survey work. The size of the conservation area will be based on the best available information at the time to determine what is needed to protect the population from adjacent uses and to maintain those ecological factors important to persistence of the Yadon's piperia population (e.g., hydrology, pollinators, and associated native vegetation). The Cooperative will be responsible for mitigation measure implementation on the behalf of the City of Marina.
- **Range 45 Reserve.** The mitigation measures for this reserve are similar to those specified for the FONM, the Parker Flats Reserve, and the East Garrison Reserve. The area will be managed to maintain and restore maritime chaparral habitat. The Cooperative will be responsible for mitigation measure implementation.

- **NAE.** The NAE is adjacent to the existing Monterey Peninsula Regional Park District Frog Pond Wetland Preserve. The NAE will serve to protect the watershed area that feeds into the pond located on the Frog Pond Wetland Reserve. The Cooperative will be responsible for mitigation measure implementation on the behalf of Monterey Peninsula Regional Park District.

5.5.3.1 Site Restoration Plans

Site restoration plans are required for restoration-related mitigation measures. Restoration plans, including design specifications, will be developed for individual restoration and enhancement sites. Restoration plans will be based on data regarding site-specific geomorphic or hydrologic conditions, extent and quality of existing habitats, existing wildlife use and plant occurrences, and the potential for adverse effects (e.g., disturbance and/or removal of existing habitat). Restoration plans will include the following components:

- Restoration goals and objectives, performance indicators, and success criteria;
- Baseline data on the site to determine suitability for restoration (e.g., soil type and suitability for planting, hydrologic studies, past land use history/alterations, existing vegetation, wetlands, hazardous waste, cultural resources);
- Suitable/feasible restoration measures;
- Detailed restoration designs (plans and specifications) that identify and describe construction methods, plant palette, planting areas and methods (including collection and propagation methods), and maintenance requirements;
- Monitoring methods and schedule; and
- Alternative strategies if success criteria are not met.

The Wildlife Agencies will review and approve the site restoration plans prior to implementation.

5.5.3.2 Revegetation, Restoration, Management, and Enhancement

5.5.3.2.1 Maritime Chaparral

The maritime chaparral natural community will be managed to maintain the viability and populations of species and their habitats covered within the HCP using those habitat areas documented during adjusted baseline surveys. Over the 50-year life of the HCP, populations of individual HCP plant species are expected to fluctuate through normal succession such that early seral-stage species will become less evident as maritime chaparral stands age. Similarly, early seral-stage species will become more evident after older maritime chaparral stands burn. The HCP recognizes that protecting the seed banks within the soil of early seral-stage species is an important component of managing older stands of maritime chaparral.

Habitat restoration, enhancement, and management mitigation measures were designed to benefit the maritime chaparral natural community. Restoration will recreate, upon a disturbed landscape, the abiotic and biotic characteristics and processes that produce equilibrium landforms bearing the highest quality habitat given the constraints of the region. The models for specific restoration sites will be suitable reference sites selected from natural, functioning, undisturbed parts of the nearby landscape. The resulting restoration project should be indistinguishable from the surrounding terrain, given enough time to evolve toward the biotic and abiotic reference site. Mitigation measures listed below are required to meet natural community-level biological objectives 2.1 and

2.2 and species-level biological objectives 11.1, 11.2, and 16.1 (see Section 5.3, *Biological Goals and Objectives*, and Table 5-4). They are intended to benefit the maritime chaparral natural community as well as sand gilia, Yadon's piperia, Monterey spineflower, and seaside bird's beak. Mitigation measures identified in Section 5.5.3.3, *Prescribed Burning and Alternative Vegetative Management*; Section 5.5.3.4, *Non-Native Invasive Species Control*; Section 5.5.3.5, *Erosion Control for Habitat Restoration, Enhancement, and Management*; and Section 5.5.3.6, *Evaluate Alternatives to Burning* will also benefit the maritime chaparral natural community and the HCP species it supports.

Mitigation Measure-5. Restore up to 15 acres of maritime chaparral annually for a total of 100–150 acres within the HMAs. These acreage goals may be adjusted based on the results of studies of maritime chaparral and recovery. From 2009 to the present, the BLM has restored over 69 acres of degraded sites (including redundant roads) into productive natural habitat. The Cooperative and HMA managers will identify and prioritize sites for restoration, erosion control, and/or weed abatement.

To implement this Mitigation Measure, the Permittees will restore at least 30.9 acres of maritime chaparral, including 10 acres on FONM. BLM has already restored 69.1 acres of maritime chaparral on FONM. If suitable areas are no longer available for the Permittees to restore 10 acres of maritime chaparral on FONM, the balance of the 10 acre commitment to restore maritime chaparral on FONM will be restored as grassland in areas suitable for grassland restoration.

Restoration conducted by the Permittees will include passive and active measures (e.g., removal of invasive species, thinning vegetation to create early successional stages, direct seeding, plantings of seedlings) to create a diversity of successional stages of maritime chaparral, and to increase the distribution and abundance of sand gilia, Yadon's piperia, Monterey spineflower, and seaside bird's beak on FONM. Restoration will include spreading locally-sourced seed of HCP plant species in suitable habitat.

The following criteria will apply to the Permittee's restoration, to measure the status and progress of restoration efforts:

- Monterey spineflower: increase the density of Monterey spineflower occurrences from zero to low, low to medium, and/or medium to high on at least five restored acres. Densities of Monterey spineflower in the Plan Area are described in Chapter 2, Section 2.2.3, Monterey Spineflower (*Chorizanthe pungens* var. *pungens*) and shown in Figure A-3a.
- Yadon's piperia: increase the distribution and/or abundance of Yadon's piperia above baseline within the Marina Northwest Corner.
- Seaside Bird's Beak: increase the density of occurrence of seaside bird's beak from zero to low, low to medium, and/or medium to high on at least five restored acres. The distribution and density of seaside bird's beak are described in Chapter 2, Section 2.2.4, Seaside Bird's Beak (*Cordylanthus rigidus* ssp. *littoralis*) and shown in Figure A-4.

Timing: Annually for first 25 years or until restoration goals are achieved.

Mitigation Measure-6. Augment prior maritime chaparral restoration by seeding restored sites with HCP plant species and other native species. The Permittees will augment prior active and passive restoration efforts on 69 acres of maritime chaparral at FONM by seeding sand gilia, seaside bird's beak, and Monterey spineflower, and seeding and planting later successional stage

species (e.g., manzanitas and ceanothus) using locally collected plant material. **Timing:** within the first 25 years.

Mitigation Measure-7. Phase restoration of the Corridor Reserve by identifying sites during adjusted baseline beginning with vegetation mapping and implementing weed control techniques at target sites. UC will restore a portion of the Corridor Reserve in conformance with the habitat management requirements of the HMP namely “all artificially created landscape features within the parcel (i.e., lawns, sports fields) will be removed and the area restored to sand hill maritime chaparral.” UC will evaluate the condition of the parcel, including all types of degradation such as weed coverage, trash dumping, and other degradations identified during baseline surveys and initiate the appropriate restoration protocol based on that condition.

Each site requiring restoration will be subject to the best weed control actions available with a 3-year monitoring program for weed coverage and the natural recovery of native species before any additional measures are implemented. Appropriate chaparral species will be introduced (i.e., plant or seed), including sand gilia and Monterey spineflower, according to a specific restoration project plan if natural succession does not restore any artificially created landscape areas to maritime chaparral as expected. A restoration plan is required with success criteria that allows for passive restoration as the primary revegetation method and then active restoration secondarily, if necessary. **Timing:** Within first 25 years or when success criteria are achieved.

5.5.3.2.2 Coastal Strand and Dunes

The highest diversity of dune habitat and species is best maintained in dunes with conditions ranging from active to stabilized and a variety of topography with foredunes and rear dunes, dune crests, interdune valleys, and north- and south-facing slopes. Much of the dune habitat at former Fort Ord has been colonized over the years by extensive mats of ice-plant. In addition, military use of the dunes for firing ranges and other activities has left large areas of disturbance. Noxious weed infestations will be reduced and controlled and replaced with native species. If necessary, State Parks, CDFW, and USFWS will confer and determine if dune stabilization is needed. Establishment of HCP species will be encouraged and/or facilitated through targeted restoration and management actions. Actions may include the use of small scale prescribed burns and the use of heavy equipment to prepare sites for habitat restoration and to reduce/eliminate noxious weed infestations. Large areas will be restored to native vegetation and HCP species habitat. The base year for calculating restored acreage will be the 1995 baseline to ensure that State Parks receives credit for restoration completed to date.

The mitigation measures listed below were designed to meet natural community-level biological objectives 3.1, 4.1, 4.2, 4.3, and 4.4, and species-level biological objectives 9.1, 11.1, 11.2, and 11.3. They are intended to benefit the coastal strand and dune natural community, as well as western snowy plover, Smith’s blue butterfly, Monterey spineflower, seaside bird’s beak, and sand gilia.

Coastal strand areas are also highly desirable for human use and recreation, which can often conflict with habitat and species protection goals, especially for sensitive, beach-nesting species like the western snowy plover. Directed beach closures, use restrictions, and other access controls are equally important—or possibly even more important—than habitat restoration in these areas (see AMMs in Section 5.4.3, *Avoidance and Minimization Measures for Public Use in HMAs and Property Ownership of Borderlands*). In addition, Park facilities within Smith’s blue butterfly habitat will be sited, planned, designed, and constructed to avoid or reduce effects on Smith’s blue butterfly movement and migration (see Section 5.4.2, *Avoidance and Minimization Measures for Siting and*

Design of New Development in and adjacent to HMAs). Mitigation measures identified in Section 5.5.3.3, *Prescribed Burning and Alternative Vegetative Management*; Section 5.5.3.4, *Non-Native Invasive Species Control*; Section 5.5.3.5, *Erosion Control for Habitat Restoration, Enhancement, and Management*; and Section 5.5.3.6, *Evaluate Alternatives to Burning* will also benefit the coastal strand and dunes natural community and the HCP species it supports.

Mitigation Measure-8. Relocation of host plant material. Per AMM-12, if a covered activity will affect coast and seaciff buckwheat plants (i.e., Smith's blue butterfly habitat), then those plants will be removed and relocated. The Designated Biologist, who will be capable of identifying all life stages of the Smith's blue butterfly and its host plants, will survey the entire project footprint, verifying the location of coast and seaciff buckwheat plants and project components. This may require reviewing existing habitat patch data and conducting a host plant survey within the project boundaries. If the species' habitat (i.e., buckwheat) is present and would be affected by construction and if the project area is on the west side of Highway 1, plant material will be removed and relocated in coordination with State Parks; however, if the project area is on the east side of Highway 1, plant material will be relocated in coordination with the University of California. The plant material will be removed and relocated by the Designated Biologist. Individual buckwheat plants will be cut at the base and moved, along with the surrounding duff and topsoil, to the nearest unaffected adjacent habitat patch.

Host plant material removed from development areas in FODSP and the greater Plan Area will be cut and relocated with the surrounding duff into restoration areas with existing host plants. All plants and plant material that may be affected east of Highway 1 within the development areas will be relocated to FONR. **Timing:** Ongoing throughout the permit term or until buildout is complete.

Mitigation Measure-9. Include one of the two species of buckwheat that are host plants for Smith's blue butterfly in all habitat restoration projects within FODSP. In general, a minimum of 10% of all plants propagated and introduced into habitat restoration areas in the park shall be coast or seaciff buckwheat species. Depending on location of the restoration project, one or the other species of buckwheat may be more appropriate. Plants salvaged from development areas will be incorporated into FODSP or UC habitat restoration projects, depending on the location of the existing material, as described in MM-9 above. Plantings of these two species of buckwheat generally should not be mixed in the same area, and mixing will be avoided unless CDFW and USFWS agree that it is appropriate (e.g., if a project occurs at an ecotone where both species naturally occur). **Timing:** Within first 25 years or until restoration goals are achieved.

Mitigation Measure-10. Treat and/or hand remove iceplant mats and other dominant non-native plants at restoration sites. Use herbicide (typically Roundup Pro®) to kill undesirable plants and leave them in place to avoid disturbance of native species which are often interspersed with the exotics. The dead mats of iceplants often serve as effective mulch, inhibiting the germination of weeds and holding moisture in the sand. Iceplant may also be removed by manual or mechanical methods. **Timing:** Annually.

Mitigation Measure-11. Give high priority to habitat restoration projects in areas where Smith's blue butterfly populations have been documented. Enhance and expand suitable habitat for Smith's blue butterfly in areas where it occurs or has been known to occur. Treat and/or remove iceplant mats and other exotics from locations in and near colonies of occupied buckwheat and introduce a high percentage (greater than 10%) of buckwheat seed or seedlings with other species to revegetate those areas as appropriate. **Timing:** Within first 25 years or until restoration goals are achieved.

Mitigation Measure-12. Manage approximately 50% of restored lands within FODSP to support annual species including sand gilia and Monterey spineflower. This mitigation measure will be incorporated into a restoration plan that will be reviewed and approved by the Wildlife Agencies. Existing occurrences of these species will be preserved and surrounding habitat enhanced to encourage the expansion of the populations. Actions may include the use of small scale prescribed burns and the use of heavy equipment to prepare sites for habitat restoration and reduce/eliminate noxious weed infestations. Seed and/or seedlings will be introduced into suitable restored sites following review by the TAC. A species list shall be provided for review to USFWS and CDFW through the Cooperative as part of the annual report. **Timing:** Annually.

Mitigation Measure-13. Identify and restore sites along FODSP's north-south axis that could provide a continuous migration corridor for Smith's blue butterfly. Work toward establishing a series of restored areas extending from the north end to the south end of the park where buckwheat patches already exist and can be enhanced or expanded, or where buckwheat could be introduced to create a habitat corridor for Smith's blue butterfly. **Timing:** Within first 25 years or until restoration goals are achieved.

Mitigation Measure-14. Manage the approximately 4-mile stretch of ocean beach and associated bluffs and sandy blowouts as undeveloped beach frontage to benefit western snowy plover. As part of beach management, an annual western snowy plover management plan will be developed and implemented prior to the breeding and nesting season. The management plan will describe specific western snowy plover management actions for the 71.03 acres of potential habitat within FODSP. The plan will be based on western snowy plover nesting and foraging patterns documented during monitoring throughout the 5 years prior. The plan will be submitted to the Cooperative each year by January 15, and the Cooperative will provide the document to the TAC for review and comment. At the same time, the Cooperative shall present information to the USFWS and CDFW for review as part of the annual report. USFWS and CDFW will provide comments to State Parks on the annual implementation plan within 30 days of receipt, allowing time to adjust the plan if needed prior to the beginning of western snowy plover nesting in early March. **Timing:** Annually.

5.5.3.2.3 Oak Woodlands

Maintaining the canopy cover, mix of size and age classes, seedling recruitment, and understory viability of oak woodlands requires active management. Where coast live oak woodland intergrades with maritime chaparral, prescribed burning or alternative vegetation management methods may be necessary to enhance and restore chaparral habitat quality, manage fuel loads, and reduce oak invasion into chaparral habitats. Understory clearance to control exotic invasive species and provide opportunities for seedling germination and sapling growth may also be necessary. Finally, active restoration through seed collection, propagation, and outplanting could be required to rehabilitate disturbed or degraded areas of oak woodland. Disease outbreaks in oak woodlands (e.g., sudden oak death) would be minimized to prevent the loss of oak trees (see Chapter 8, *Assurances and HCP Amendments*, for HCP required actions).

Oak woodlands will be managed to promote the reestablishment of natural biotic systems, including interacting microbial, invertebrate, and vertebrate communities within oak woodlands. Appropriate oak species, canopy cover, and associated understory species will be established in areas that had been degraded by historical uses. As of 2009, BLM had restored over 13 acres of oak woodland habitat in the FONM. BLM expects it will continue to restore or improve oak woodland habitat in the FONM over the life of the HCP. Restoration acreage goals may be formed and adjusted based on the

results of studies of oak woodland regeneration and recovery and preparation of the BLM's Areas of Critical Environmental Concern (ACEC) and Special Recreation Management Areas (SRMA) Management Plan.

Oak woodlands will also be managed to support woodland wildlife. Collecting of wood in areas known to provide habitat will be prohibited with any combination of the following mechanisms, as suitable for the area: signage, fencing, and regular security patrols. The approximate extent, crown cover, and quality of oak woodlands as documented in adjusted baseline surveys will be maintained or enhanced. Remnant oak woodlands will be managed to permit natural regeneration and to maximize the cover and dominance of native plant species, while reducing current noxious weed infestations.

Mitigation measures listed below are required to meet natural community-level biological objectives 5.1, 5.2, 5.3, and 5.4 and species-level biological objectives 11.1, 11.2, 13.2, and 15.1 (see Section 5.3, *Biological Goals and Objectives*, and Table 5-4). They will benefit the oak woodland natural community, as well as sand gilia, Monterey spineflower, California tiger salamander, and California red-legged frog. Mitigation measures identified in Section 5.5.3.3, *Prescribed Burning and Alternative Vegetative Management*; Section 5.5.3.4, *Non-Native Invasive Species Control*; Section 5.5.3.5, *Erosion Control for Habitat Restoration, Enhancement, and Management*; and Section 5.5.3.6, *Evaluate Alternatives to Burning* will also benefit the oak woodland natural community and the HCP species it supports.

Mitigation Measure-15. Identify potential restoration sites, evaluate oak woodland regeneration within existing stands, and plant native oak seedlings and other oak woodland species where appropriate to improve habitat quality. Since land transfer of 7,200 acres in 1996, BLM has restored 13 acres of oak woodland habitat. Additional sites may be identified and seedlings planted by the Permittees on the Salinas River Habitat Area and the NAE HMAs. **Timing:** In accordance with base-wide management strategies.

Mitigation Measure-16. Maintain the extent of habitat for woodland wildlife species by preserving fallen trees, standing dead trees, and duff, and prohibit collection of wood in scrub oak, oak woodlands, or woodland savannah. This management activity will be balanced with the needs of other HCP species. If through monitoring, HMA managers determine that other HCP species are being adversely affected, they will work with the Wildlife Agencies to identify alternative management methods. The mitigation measure will be implemented by the Permittees in oak woodlands in the HMAs. **Timing:** Annually.

5.5.3.2.4 Grasslands

Preservation and maintenance of grasslands in the Plan Area will primarily occur in the FONR, Marina Airport Habitat Reserve HMAs as well as in FONM. Grasslands will be maintained where they provide habitat for HCP species. Native grasses and forbs will be reestablished, where possible, in areas that were degraded by historical uses or otherwise determined suitable for restoration. Maintenance of grasslands will require that the conservation goals for HCP species be addressed. A secondary consideration is reduction of summer fuel loads using domestic livestock grazing (primarily sheep) and other control methods. Livestock grazing is one of the tools currently used to reduce the thatch produced by non-native annual grasses that can suppress native forbs and increase fuel loads.

The extent of native grassland habitat will be evaluated during baseline surveys. Native perennial grassland will be managed to maintain or increase populations. Grassland plant communities will be managed to reduce fuel hazard, protect habitat for HCP species, and enhance native plant and animal habitat. Where possible, appropriate native species will be reestablished or introduced in areas that were degraded by historical uses or otherwise determined suitable for restoration.

Mitigation measure implementation is designed to achieve the natural community-level and species-level biological goals and objectives (see Section 5.3, *Biological Goals and Objectives*, and Table 5-4). Mitigation measures listed below are required to meet natural community-level biological objectives 6.1, 6.2, 6.3, and 6.4 and species-level biological objectives 11.1, 11.2, and 13.2. They are intended to benefit the grassland natural community, as well as sand gilia, Monterey spineflower, seaside bird's beak, California red-legged frog, and California tiger salamander. Mitigation measures identified in Section 5.5.3.3, *Prescribed Burning and Alternative Vegetative Management*; Section 5.5.3.4, *Non-Native Invasive Species Control*; Section 5.5.3.5, *Erosion Control for Habitat Restoration, Enhancement, and Management*; and Section 5.5.3.6, *Evaluate Alternatives to Burning* will also benefit the grassland natural community and the HCP species it supports.

Mitigation Measure-17. Enhance or restore degraded sites in grasslands. Degraded grasslands sites will be identified and mapped during baseline surveys. Sites close to California tiger salamander aquatic habitat will be prioritized for restoration, to enhance upland habitat. Weed control, vegetation management, and planting will be implemented, as appropriate. Planting and other large scale operations will be considered only if weed control, prescribed grazing, and natural succession fail to meet designated targets. Restoration projects shall include a specific plan, documentation, success criteria based on objectives, and project monitoring to determine the level of success in terms of abundance and coverage based on comparison with neighboring and intact plant communities. This mitigation measure will be implemented by the Permittees and BLM, with the Permittees restoring 15 acres of grasslands on FONM and other HMAs. **Timing:** Within first 25 years or until restoration goals are achieved.

5.5.3.2.5 Aquatic and Riparian/Wetland Habitats

Various types of aquatic, wetland, and riparian communities occur in the Plan Area. Vernal pools, freshwater marshes, streams, riparian habitats, ephemeral drainages, and artificial ponds are located at scattered sites throughout the former base. Wetlands include sites of both permanent and seasonal inundation. Preservation, maintenance, enhancement, and restoration of these natural communities—and, importantly, their watersheds—are critical components of the conservation strategy for this HCP.

Ponds, wetlands, or riparian areas known to support or that could potentially support California tiger salamander or California red-legged frog will be preserved and managed to maintain natural corridors between pools/wetlands and upland habitat. The number and quality of aquatic habitat locations that support or could support HCP species such as California tiger salamander and California red-legged frog will be maintained or enhanced. The aquatic wetland vegetation, wetland hydrology, and associated upland habitats will also be preserved and maintained. Non-native species that could threaten HCP species and/or degrade habitat quality, including non-native pigs, bullfrogs, and fish will be reduced or eliminated.

Implementation of the following mitigation measures is designed to achieve the natural community-level and species-level biological goals and objectives (see Section 5.3, *Biological Goals and Objectives*, and Table 5-4). Mitigation measures listed below are required to meet natural

community-level biological objectives 7.1, 7.2, and 7.3 and species-level biological objectives 13.1, 13.3, 14.1, and 15.1. They are intended to benefit the aquatic, wetland, and riparian natural communities, as well as California red-legged frog and California tiger salamander. Mitigation measures identified in Section 5.5.3.4, *Non-Native Invasive Species Control*, and Section 5.5.3.5, *Erosion Control for Habitat Restoration, Enhancement, and Management*, will also benefit the grassland natural community and the HCP species it supports.

Mitigation Measure-18. Restore at least 5 acres of aquatic and riparian/wetland habitat over the term of the HCP. Over the life of the HCP, BLM is expected to restore up to 5 acres of aquatic and riparian/wetland habitat.¹⁰ This is inclusive of the areas that have been restored since land transfer of 7,200 acres in 1996. Since that time, BLM has restored 1.3 acres of vernal pool habitat and 3.2 acres of mixed riparian forest, leaving 0.5 acres of aquatic, riparian, or wetland habitat to be restored or improved. **Timing:** Within first 25 years or until restoration goals are achieved.

Mitigation Measure-19. Restore East Garrison Pond, and at least one additional aquatic feature totaling at least two acres, to provide suitable aquatic breeding habitat for California tiger salamander and California red-legged frog. Actions may include removal of non-native predators, vegetation management, and modification of hydrological conditions to provide seasonal aquatic conditions favorable for California tiger salamanders and unfavorable for full hybrid California tiger salamander – barred tiger salamanders, as needed. Restoration success criteria will include successful breeding by California tiger salamander, as determined by the observation of California tiger salamander larvae and absence of non-native predators and full hybrids in East Garrison Pond and the other ponds that will be restored. Successful breeding should be documented during at least one breeding season within 10 years after completing restoration. The Cooperative may inoculate the ponds with larvae or adults from nearby ponds to facilitate colonization and successful breeding in the restored ponds. This mitigation measure will be implemented by the Permittees. As part of this mitigation measure, the Permittees may work with BLM to provide for the restoration of ponds in addition to East Garrison Pond on FONM. **Timing:** Within first 15 years or until restoration goals are achieved.

5.5.3.2.6 All Natural Communities

There are some habitat restoration, enhancement, and management mitigation measures that are not natural community-specific. Implementation of the following mitigation measures are designed to achieve the landscape-level, natural community-level, and species-level biological goals and objectives (see Section 5.3, *Biological Goals and Objectives* and Table 5-4). The mitigation measures listed below are required to meet the landscape-level biological objective 1a.2, natural community-level biological objective 10.2, and species-level biological objectives 11.1, 11.2, 11.3, 13.1, 13.2, 14.1, 15.1, 15.2, and 16.2.

Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs. Remove or relocate roads, trails, and fuelbreaks as they are determined unnecessary or redundant for access or fire safety or deemed harmful to habitat of HCP species. These areas will be restored to native habitat. BLM initially estimates that over 100 miles of former

¹⁰ Mitigation measures implemented directly by BLM according to their normal operations will not count as mitigation for the Federal permit. However, the entirety of BLM's preserved and actively managed HCP species habitat within the FONM, as prescribed in the BLM's RMP, is included as mitigation within the Plan Area for the State Permit.

roads and/or associated gullies and unneeded hardstand areas will be restored and stabilized in maritime chaparral habitat over the life of the HCP within FONM. **Timing:** Annually.

Mitigation Measure-21. Maintain characteristics of confirmed occupied upland habitat for California tiger salamander in the HMAs as documented during baseline studies and ongoing monitoring. Upland habitat within 2.2 kilometers (1.4 miles) of known California tiger salamander breeding ponds will be evaluated during baseline studies and ongoing monitoring to determine suitability for California tiger salamander. Habitat management activities will focus on maintaining and/or improving upland habitat for California tiger salamander in these areas. The Permittees will implement this mitigation measure on the non-Federal HMAs. The BLM will coordinate with the Permittees through the TAC when implementing this measure. **Timing:** Annually.

5.5.3.3 Prescribed Burning and Alternative Vegetative Management

Periodic disturbance or removal of vegetation caused by unstable substrate and fire are important factors in maintaining and rejuvenating the maritime chaparral community. Windblown sand in the sand hill and water erosion in the Aromas formation create open substrate where herbaceous species and a high diversity of shrubs make up the vegetative cover. Without disturbance in sand hill maritime chaparral (Section 2.1.2, *Maritime Chaparral*), shaggy-barked manzanita and chamise tend to dominate the shrub cover and form a closed canopy that excludes herbaceous species. Without disturbance in Aromas formation maritime chaparral, chamise and Toro manzanita tend to form nearly monotypic stands and a closed canopy that excludes herbaceous species. After a fire, shaggy-barked manzanita and chamise resprout from their base while other shrubs and herbs recolonize from seed. Early successional sites appear to support the highest diversity of shrubs and herbs. On some sites, coast live oak may form a canopy over maritime chaparral if the site has not burned in a long time.

Healthy maritime chaparral occurs as a patchwork of stands that have burned at different times and that support vegetation of various composition, age, and structure. This habitat mosaic allows for high species and habitat diversity and provides sources of propagules for dispersal between patches.

Prescribed fire and wildfire suppression strategies play an important role in perpetuating desired future conditions for stands of maritime chaparral within the habitat reserves. The abundance and diversity of HCP species associated with maritime chaparral reflect a fire disturbance regime in the Plan Area that was heavily influenced by military use (and clean up) beginning in 1917 and continuing to the present day. Wildfires started from Army training exercises and Army prescribed burning to facilitate the cleanup of munitions and explosives of concern (MEC) has created (and will continue to create) a habitat mosaic that is much different from what may have “naturally” occurred over this geologic substrate without human influence. As such, the initial fire disturbance regime that has been selected within the HCP strives to perpetuate age-classes that will favor the relative abundance and diversity of HCP species in the Plan Area during the base closure process (1992 to present day). This fire disturbance regime may be adjusted in the future in coordination with the USFWS and CDFW and as informed by targeted studies through adaptive management (see Section 5.5.3.6, *Evaluate Alternatives to Burning* for targeted studies).

After 50 years of HCP implementation, the desired future age-class condition of maritime chaparral within the HMAs is for 30% to be younger than 20 years, 30% to be between 20 and 45 years of age, 30% to be between 45 and 70 years of age, and 10% to be older than 70 years of age. This age-class distribution provides a wide range of seral stages. The young age-class (younger than 20 years) will

favor the establishment and maintenance of annual forbs such as sand gilia, Monterey spineflower, and seaside bird's beak. The middle age-classes (20–70 years) will favor the establishment and maintenance of a wide variety of shrubs such as sandmat manzanita and Hooker's manzanita. The old age-class (older than 70 years) will favor the establishment and maintenance of many of these same shrubs, including Toro manzanita.

The HCP prescribes a decadal burn goal as opposed to an annual prescribed burn requirement. This allows habitat managers to consider the impacts that unplanned wildfires cause in modifying the overall age-structure, and adjust management actions (i.e., prescribed fire and wildfire suppression) accordingly. For example, from 1996 to 2006 about 600 acres of the maritime chaparral on the existing BLM FONM lands (of 2,500 acres) was burned by unplanned wildfire; no prescribed fires were ignited by BLM during this timeframe. Should this wildfire pattern continue for the next 4 decades across new chaparral stands, then the age-class distribution would be skewed too much toward younger aged stands. For this reason, decadal burn goals are used to evaluate whether the burn trends are contributing to desired future age-classes. In an area of extremely high wildfire frequency, protecting maritime chaparral from wildfire (i.e., aging the stands) is more important than performing prescribed burns (i.e., replenishing the stands). Similarly, in areas of extremely low wildfire frequency, conducting prescribed burns (i.e., replenishing the stands) is more important than protecting maritime chaparral from wildfire (i.e., aging the stands).

Implementation of the following mitigation measures is designed to achieve goals and objectives of this HCP (see Section 5.3, *Biological Goals and Objectives*, and Table 5-4). These mitigation measures are required to meet the landscape-level biological objectives 1b.1, 2.1, and 3.2 and natural community-level biological objectives 1.1, 1.2, and 5.2. The natural community-biological objectives are intended to benefit the maritime chaparral and oak woodland natural communities as well as sand gilia, Yadon's piperia, Monterey spineflower, and seaside bird's beak.

Mitigation Measure-22. Use prescribed burning on a rotational basis and wildfire suppression strategies, covering about 1,000–1,500 acres in the FONM each decade, to replicate desired future conditions and fulfill vegetation and fuels management objectives.

The specific seasonal timing, patch size, decadal total, and rotational time of prescribed burns will be determined based on the results of studies of maritime chaparral and recovery. Assuming that there are about 9,000 acres of maritime chaparral within the FONM, BLM will evaluate burn events (i.e., prescribed fires and wildfire) to determine whether the desired future age-class distributions and species compositions are being attained. Should decadal burn targets/estimates be exceeded, BLM will adjust suppression and enforcement strategies to reduce the size and/or number of wildfires. Should decadal burn targets/estimates not be met, BLM will increase the number and/or size of prescribed fires.¹⁰ **Timing:** Every 10 years or as informed by targeted studies.

Mitigation Measure-23. Schedule a habitat management burn(s) or alternative vegetation management on East Garrison South Reserve in advance of the second phase of East Garrison development. In the event that the entire area of East Garrison South Reserve is not burned as part of the Army's Munitions Response program, and assuming prescribed burning is determined necessary to maintain the long-term health and vigor of the chaparral and reduce fuel load in the East Garrison South Reserve, and all necessary authorizations can be obtained, reserve lands south of Watkins Gate Road will be burned prior to allowable development in adjacent areas of the East Garrison parcel. Special attention will be given to maintaining or enhancing HCP plant species populations and to maintaining north-south trending linear habitat (e.g., unpaved roads, sandy openings, and firebreaks) to enhance the potential for genetic exchange between sand gilia

populations from the FONM to the south and the FONR to the north. In addition, HCP species gene flow and dispersal must be maintained if the Multi-Modal Transportation Corridor is developed. A secondary goal of the prescribed burns is to help define the fuelbreak size and configuration needed for the adjacent development parcel. This mitigation measure will be implemented by the Permittees. **Timing:** Prior to the second phase of East Garrison Reserve development.

Mitigation Measure-24. Maintain healthy populations of HCP species, maintain a mosaic of age-class stands, and protect against wildfires with prescribed burns or alternative vegetative management methods. Assuming fire management is considered desirable and all appropriate authorizations can be obtained, the specific seasonal timing, patch size, decadal total, and rotational time of prescribed burns will be determined based in large part on the results of BLM experience and studies of maritime chaparral and recovery. Research-oriented vegetation treatments may be used in lieu of in-season prescribed burning to regenerate decadent stands on a case-by-case basis and inform adaptive management. Alternatives to burning will be evaluated as part of a coordinated, management-oriented study (see Section 5.5.3.6, *Evaluate Alternatives to Burning*). The Cooperative will work with the TAC to apply the study results to areas considered too hazardous to burn (e.g., Range 45 Reserve), identify appropriate fire buffers, and evaluate mechanical means of opening habitat and controlling fire risk levels. A fire and alternative vegetative management plan is required by the Cooperative to ensure consistency with the HCP; review by the TAC is recommended but not required (see Section 5.4.9, *Avoidance and Minimization Measures for Prescribed Burns and Alternative Vegetative Management*). Should certain alternative methods produce favorable biological results, their application may be used more frequently when economical. However, if results indicate that certain treatments are not favorable to HCP species, the Cooperative will discontinue their use. Monitoring of project-level effects (see Section 6.3.3, *Effects Monitoring*) will be implemented to evaluate the effectiveness of specific management projects¹¹ on species and habitats, goals, and objectives. Success criteria and monitoring protocols will be developed for and prior to implementation of each specific project, and adaptive management will be used as appropriate to refine the management projects. The Permittees will implement this mitigation measure on the non-Federal HMAs. The BLM will coordinate with the Permittees through the TAC when implementing this measure. **Timing:** Every 10 years or as informed by targeted studies and base-wide management strategies.

Mitigation Measure-25. Use mechanical thinning and understory clearing in lieu of prescribed burning as determined necessary and appropriate to maintain healthy populations of HCP species, create a mixed age-class structure of oak woodland stands, and reduce fuel loads in areas considered too hazardous to burn. The specific areas, methods, equipment used, timing and other aspects of woodland thinning and clearing programs would be based on case-by-case assessments, with emphasis on preserving and protecting habitat for woodland-dependent species. It is unknown how mechanical thinning will affect HCP species; therefore, application of Mitigation Measure-22 and Mitigation Measure-23 will be driven by species management rather than fire hazard threats. Project-level effects monitoring (see Section 6.3.3, *Effects Monitoring*) will be implemented to evaluate the effectiveness of specific management projects on species and habitats, goals, and objectives. Success criteria and monitoring protocols will be developed for and prior to implementation of each specific project, and adaptive management

¹¹ Specific management projects are enhancement and restoration projects implemented to benefit HCP species and their habitats.

will be used as appropriate to refine the management projects. Thinning and clearing proposals will be reviewed by the TAC prior to implementation. The Permittees will implement this mitigation measure on the non-Federal HMAs. The BLM will coordinate with the Permittees through the TAC when implementing this measure. **Timing:** Every 10 years or as informed by targeted studies and base-wide management strategies.

5.5.3.4 Non-Native Invasive Species Control

An integrated pest management program will be developed to prevent the introduction and proliferation of pests and noxious and invasive weeds as part of the base-wide management strategies (Mitigation Measure-4). A policy of early detection and rapid response will be implemented across all natural communities to meet the biological goals and objectives outlined for this HCP (Section 5.3, *Biological Goals and Objectives*).

Weeds targeted for removal will be based on noxious weeds as defined by the California Department of Food and Agriculture and invasive exotic plants listed by the California Invasive Plant Council (California Invasive Plant Council 2007 or latest list). A combination of standard methods and research-oriented treatments will be employed, including manual removal, mowing, use of gas powered weed cutters, propane torches, hand spraying of herbicide or vinegar, livestock grazing, and prescribed burning (both in and out of season) to contain, reduce, or remove infestations of non-native plant species. Protocols for implementing an integrated pest management program that minimize effects on HCP species are presented in Appendix E. Monitoring of project-level effects (see Section 6.3.3, *Effects Monitoring*) will be implemented to evaluate the effectiveness of specific management projects on species and habitats, goals, and objectives. Success criteria and monitoring protocols will be developed for and prior to implementation of each specific project, and adaptive management will be used as appropriate to refine the management projects.

Mitigation measures listed below were developed to meet the landscape-, natural community-, and species-level objectives identified in Section 5.3, *Biological Goals and Objectives* and Table 5-4). They are intended to benefit all natural communities and HCP species.

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, predators, roaming and feral animals, and other pests on HCP species and their habitats. Identify and evaluate issues with introduced wildlife species (e.g., bullfrogs), predators (e.g., ravens), roaming and feral animals (e.g., dogs, cats, pigs), and other pests through the baseline studies and outline steps for addressing those issues in the RMPs. Implement specific programs to remove and/or control introduced wildlife species, predators, roaming and feral animals, and other pests, especially predators that threaten known populations of HCP species. Actions identified should not result in take of or adverse effects on HCP species and should be coordinated with the TAC. Monitoring of project-level effects (see Section 6.3.3, *Effects Monitoring*) will be implemented to evaluate the effectiveness of specific management projects on species and habitats, goals, and objectives. Success criteria and monitoring protocols will be developed for and prior to implementation of each specific project, and adaptive management will be used as appropriate to refine the management projects. Identified actions, project-level monitoring protocols, and adaptive management strategy shall be presented to USFWS and CDFW for review through the Cooperative as part of the annual report. Implemented actions, monitoring results, and adaptive management shall be reported in subsequent annual reports.

Under the BLM's approved Integrated Pest Management Program and subsequent biological opinion from the USFWS in October of 2005, the BLM has already identified a program to remove bullfrogs from ponds where they are known to occur by gigging, seining, or dip-netting, and a program to electroshock ponds to remove non-native fish in certain ponds where they have been documented (see also discussion below). The Cooperative RMP may use this program from the biological opinion for all the HMAs, upon review and modification (if necessary) for consistency with the HCP. The Permittees and BLM will implement this mitigation measure on the HMAs **Timing:** Annually.

Mitigation Measure-27. Control hybrid tiger salamanders. Hybrid California tiger salamander-barred tiger salamanders have been documented to occur in two ponds in the FONM, where they occur as paedomorphs¹². The Permittees will control hybrid tiger salamanders in East Garrison Pond and the additional pond(s) to be restored to fulfil Mitigation Measure-19. The Permittees will work with BLM to develop a strategy by year 5, to manage hybrid tiger salamanders in aquatic features on FONM and the non-Federal HMAs. Ponds that have hybrids that necessitate control will be identified through the monitoring and adaptive management process (Section 6.6.7, *California Tiger Salamander*, and Adaptive Management Measure-9). To ensure protection of native California tiger salamanders, application of suitable control measures, including confirmation of the identity of ponds subject to hybrid control, will be determined in cooperation with the Wildlife Agencies and species experts.

Methods for removal of hybrid individuals are still being developed; however, new management actions, including eradication of hybrids, will be required to ensure that hybrids do not preclude the recovery of California tiger salamanders or adversely affect other native species. These management actions will be evaluated within an adaptive management framework. Control measures may include the following:

- Modification of ponds dominated by paedomorphs to reduce hydroperiod. A shorter hydroperiod favors native over paedomorphs. Ponds with extended hydroperiods are known to have a disproportionately higher level of hybrid genes. Slowly draining ponds that exhibit extended hydroperiods in a manner that mimics ponds that are known to support native salamanders may be an important tool to help reduce hybrid success. This will be the primary method utilized in ponds within non-Federal HMAs.
- Pond dry-down to remove paedomorphs. Predatory fish such as bass may be added to ponds prior to dry-down to ensure eradication of paedomorphs. Predatory fish will be removed as part of the dry-down process. This method will not be implemented within non-Federal HMAs.
- Paedomorph "round ups", where paedomorphs are captured and removed from ponds using nets or other methods. This method will not be implemented within non-Federal HMAs.

Timing: Control will occur in East Garrison Pond and in the additional pond(s) within the first 15 years of implementation, and as informed by monitoring. The Permittees will work with BLM to develop a strategy to control hybrids in aquatic features on BLM within the first 5 years of implementation.

¹² Paedomorphs are sexually mature aquatic larval forms of hybrid California tiger salamander. See Chapter 2, Section 2.2.7, *California Tiger Salamander* (*Ambystoma californiense*) for more details.

Mitigation Measure-28. Use livestock grazing (sheep, goats) in FONM grassland areas to control non-native invasive grasses and forbs and reduce thatch buildup that can inhibit native forbs. Under the BLM's approved Integrated Pest Management Program and subsequent biological opinion from the USFWS in October of 2005, the BLM will continue to lease about 2,500 acres in the grassland region of southeast Fort Ord. BLM will consider extending the grazing program to other grassland areas within the FONM if it could benefit the biological goals and objectives in those areas. Monitoring of project-level effects (Section 6.3.3, *Effects Monitoring*) will be implemented to evaluate the effectiveness of specific management projects on species and habitats, goals, and objectives. Success criteria and monitoring protocols will be developed for and prior to implementation of each specific project, and adaptive management will be used as appropriate to refine the management projects.¹⁰ **Timing:** Annually.

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation, and/or infestations within the HMAs within 1 year of identification and in accordance with base-wide priorities. Non-native invasive weed infestations are expected to be found across all habitat types. Infestations are typically found in openings created by past disturbances. New habitat openings are expected to occur from road, trail, and fuel break development and maintenance; prescribed burning and wildfire; and research-oriented vegetation treatments. Large invasive weed infestations include but may not be limited to iceplant, hemlock (*Conium maculatum*), non-native thistle species, and Pampas grass. In addition, the spread of non-native grasslands to other native plant communities will be controlled, as feasible¹³. Appropriate abatement techniques will be identified, following the integrated pest management approach, for target weed species or categories of infestation with consideration for the habitat type, location relative to sensitive resources, proximity to development, and other factors. Although eradication and control efforts will occur in all habitats, efforts will also target noxious weed species and infestations if they occur in occupied and otherwise suitable habitat for sand gilia, Yadon's piperia, Monterey spineflower, and seaside bird's beak.

An integrated pest management program, prepared as part of the vegetation and fire management program, will identify the best methods for each situation and prioritize non-chemical means where feasible. Pesticides (e.g., Roundup Pro®, Fusilade®) will be used if necessary, feasible, and legally permitted. Use of pesticides will be defined following the related measures to avoid any take of HCP species. See AMM-46 and Appendix E for more information.

Methods will include a combination of prescribed burning, manual removal, mowing, use of gas powered weed cutters, propane torches, and hand spraying of herbicide or vinegar. Noxious weed abatement will focus on containing, reducing, or eradicating existing infestations from spreading and preventing the establishment of new infestations. Large (greater than 1 acre) areas of invasive forbs will be mowed, as needed, within maritime chaparral or oak woodland to remove the potential for seed set. This would occur only where no long-term harm to HCP species would result, and it would need to be continued until reduced coverage indicates depletion of the weed seed bank. Native species may be replanted to provide coverage against further weed establishment. Large patches of iceplant have been and will continue to be controlled by Roundup Pro® and by leaving the dead material in place to avoid additional weed invasions until either natural succession or restoration returns the area to appropriate native vegetation. Within oak woodlands, weed control,

¹³ Non-native grasses will not be considered for eradication in grassland areas, but efforts to encourage the presence of native grasses and forbs will be considered and undertaken if feasible.

vegetation management, and planting will be used. On the restoration sites and reclaimed areas, the potential for non-native annual grasses establishment will be minimized through experimentation with manual removal and cutting, use of torches, grass-specific herbicides, mulching, and other methods.

Every 3–5 years, a report summarizing success in implementing these actions will be provided to the Cooperative and the Wildlife Agencies. Sites will be monitored annually for at least 5 years to identify any recurrence and eradication actions will be continued. Strategies will be updated every 3–5 years based on results of monitoring. Monitoring of project-level effects (see Section 6.3.3, *Effects Monitoring*) will be implemented to evaluate the effectiveness of specific management projects on species and habitats, goals, and objectives. Success criteria and monitoring protocols will be developed for and prior to implementation of each specific project, and adaptive management will be used as appropriate to refine the management projects. This mitigation measure will be implemented by the Permittees on non-Federal HMAs in perpetuity. This mitigation measure is part of BLM reporting to USFWS for FONM (Section 1.9.3, *Role of Bureau of Land Management*). In addition to BLM's normal management activities, Permittees will fund 2 weed crew positions within FONM after year 30 in the Permit Term in support of this mitigation measure. **Timing:** Annually.

5.5.3.5 Erosion Control for Habitat Restoration, Enhancement, and Management

While wind, sheet, rill, and gully erosion are natural processes in the maritime chaparral landscape, accelerated erosion is normally associated with road construction and maintenance (or lack of maintenance) and former military training. Control will focus on reducing the source of erosion such as concentrated runoff, point discharges, gullies, and other drainage problems, especially those associated with impervious surfaces, disturbed landforms, roads, and trails. Restoration of eroded or otherwise disturbed areas should recreate characteristics similar to natural, functioning, undisturbed parts of the nearby landscape. Accelerated erosion caused by human use and intrusion will be reduced and disturbed areas, especially old roads and other areas associated with former military use, will be restored into healthy maritime chaparral where possible.

Substantial erosion control activities have already occurred within the HMAs. Between 1996 and the present, BLM restored over 71 acres of degraded sites into productive natural habitat. BLM also rerouted and/or stabilized roads and trails to reduce linear erosion features.

Mitigation measures listed below were developed to meet the landscape-, natural community-, and species-level objectives identified in Section 5.3, *Biological Goals and Objectives* and Table 5-4). They are intended to benefit all natural communities and HCP species.

Several of these actions could result in impacts on HCP species. However, the net effects of the project will be designed to be beneficial to all HCP species affected, and the projects will incorporate minimization measures to reduce impacts on HCP species (Section 5.4.7, *Avoidance and Minimization Measures for Erosion Control*).

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods. Throughout the HMAs, sites could include heavily used unsurfaced roads and trails, former military roads (paved and unpaved), gullies, and hardstand or other disturbed areas, especially those adjacent to populations of HCP species or to riparian or wetland habitats (see also Section 5.5.3.2.5, *Aquatic and Riparian/Wetland Habitats*). Methods could involve soil and vegetation removal adjacent to degraded areas; the use of fill soils; removal of chip seal,

asphalt, concrete or other hardstand surfaces; ripping of compacted roadbeds and other surfaces; re-contouring of eroded areas; installation of drainage features such as outlet ditches, rolling dips (similar to waterbars), and berms (as needed to facilitate the proper drainage of storm runoff); application of certified weed-free rice or barley straw or other similar functioning product (e.g., chipped vegetation) to cover and protect the soil surface; application of native annual grasses and/or forbs; and the addition of soil amendments (only in designated development areas) such as fertilizers and gypsum. Earthwork will primarily be accomplished using heavy equipment and occasionally hand crews. Site plans will be drawn up for each project site including methods, necessary equipment, supplies, materials, and labor. Surface protection will be maintained to the extent feasible given the need, until native species are effectively protecting the surface of a given site from significant erosion.

In 2002, BLM prepared a watershed and riparian assessment report (WRAR) that inventoried and identified erosion sites. Using this plan, candidate erosion control and restoration sites will be prioritized within FONM. BLM initially estimates that over 100 miles of former roads and/or associated gullies and unneeded hardstand areas will be restored and stabilized in maritime chaparral habitat over the life of the HCP. This mitigation measure will be implemented by the Permittees on the non-Federal HMAs and by BLM on FONM. **Timing:** Annually.

Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat. Site-specific restoration and erosion control sites are difficult to delineate at this time. However, within the multiple range area where most of the maritime chaparral occurs, it is reasonable to expect that BLM will restore and stabilize up to 100 miles of former roads and/or associated gullies and unneeded hardstand areas over the life of the HCP. These mileage goals may be adjusted based on the results of studies of maritime chaparral and recovery, evaluation of an appropriate route network that is necessary for managing the lands, and preparation of the BLM's ACEC and SRMA Management Plan. This estimate is based upon aerial surveys of the route network conducted within the *Road and Trail Resources Inventory (RATRI): Bureau of Land Management Lands, Former Fort Ord, Monterey County, California* (Smith, Detka et al. 2002) and consideration of the *Watershed Riparian Assessment Report* (Smith, Curry et al. 2002). This estimate excludes the Army's restoration requirements associated with the MEC cleanup program and includes restoration that has already been conducted by BLM since the transfer of 7,200 acres of land in 1996. From 1996 to the present, BLM has restored over 71 acres of hardstand and other degraded areas into productive natural habitat as part of its implementation of the HMP and its RMP. If habitat disturbance results from public use, additional restoration would be required beyond the minimum of 100 miles. This mitigation measure will be implemented by the Permittees on the non-Federal HMAs and by BLM on FONM. **Timing:** Annually.

Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established. Installation of weed-free straw plugs, application of weed-free straw mulch, installation of plastic or wood lath and wire snow fences, and/or other techniques will be used to control wind erosion. On small sites or on steep slopes where use of mechanical equipment is not feasible, straw plugs will be installed by hand. Mechanical equipment will be used to install straw mulch on large sites. Hand broadcasting or hydroseeding native seed over the site will be completed before, during, or after the straw is applied. Snow fences will be used to reduce wind erosion in the largest and most severe sites. Individual projects will be approved by the TAC to avoid adverse effects on western snowy plover and Smith's blue butterfly. Temporary erosion control measures will be installed outside of the

western snowy plover nesting season. If work will occur in Smith's blue butterfly habitat, a construction monitor will be present for the duration of the project. This mitigation measure will be implemented by the Permittees on non-Federal HMAs. **Timing:** Annually.

Mitigation Measure-33. Control erosion as necessary to prevent degradation of areas mapped as potential Yadon's piperia habitat. Problem areas will be corrected by minor grading and recontouring, installation of drainage features as necessary, and application of appropriate cover materials (e.g., weed-free straw, chipped vegetation, non-persistent annual grasses). This mitigation measure will be implemented by the Permittees on the Marina Northwest Corner HMA. **Timing:** Annually.

5.5.3.6 Evaluate Alternatives to Burning

A coordinated, management-oriented study is needed to assess the alternatives for managing maritime chaparral to meet biological goals and objectives at the wildland urban interface and where burn conditions are very hazardous. As part of the adaptive management program, targeted studies at the FONM and FONR will inform maritime chaparral, coastal scrub, and HCP species management. Studies will build upon the data already collected at Parker Flats and the Army's data. Annual monitoring results will be submitted to the TAC for review and included in the annual report to the Cooperative. The Cooperative will submit annual monitoring results to the Wildlife Agencies in its annual report.

The Cooperative will work with the TAC to apply the study results to fulfill vegetation and fuel management objectives and maintain healthy populations of HCP species and a mosaic of age-class stands. Study results will inform management at the FONM, FONR, East Garrison Reserve, Parker Flats Reserve, Landfill Parcel, and Range 45 Reserve.

Mitigation measures listed below were developed to meet the landscape-, natural community-, and species-level objectives identified in Section 5.3, *Biological Goals and Objectives* and Table 5-4. They are intended to benefit maritime chaparral, coastal scrub, oak woodlands, and grasslands natural communities, as well as sand gilia, Yadon's piperia, Monterey spineflower, seaside bird's beak, California tiger salamander, and California red-legged frog.

Mitigation Measure-34. Use research-oriented vegetation treatments in lieu of in-season prescribed burning on up to 500 acres of maritime chaparral per decade (*as part of the 1,000–1,500 acres per decade; see Mitigation Measure-22*) to maintain healthy populations of HCP species and a mixed age-class structure for the maritime chaparral habitats on a case-by-case basis to inform adaptive management. BLM will use research-oriented treatments such as cutting, mowing, goat grazing, out-of-season (January through June) prescribed burning, and other measures to gain a better understanding of the effects of alternative vegetation management strategies, or for use in areas and times considered too hazardous to conduct prescribed burns. Should certain methods produce favorable biological results, their application may be used more frequently when economical. However, if results indicate that certain treatments are not favorable to HCP species, BLM will discontinue their use unless they are required to regenerate stands considered too hazardous to burn in season¹⁴. Monitoring of project-level effects (Section 6.3.3,

¹⁴ Areas too hazardous to burn include those areas where fuelbreaks will be widened to support prescribed burns. In these areas, cutting of vegetation will be used in lieu of prescribed burns as a regeneration technique.

Effects Monitoring) will be implemented to evaluate the effectiveness of specific management projects on species and habitats, goals, and objectives. Success criteria and monitoring protocols will be developed for and prior to implementation of each specific project, and adaptive management will be used as appropriate to refine the management projects. This mitigation measure will be implemented by BLM on FONM.¹⁰ **Timing:** Within first 10 years of plan implementation.

Mitigation Measure-35. Initiate a pilot program to test use of manual (hand-) cutting, propane torches, grass-specific herbicides, temporary mulching, and other methods as available where patches of invasive grasses occur within maritime chaparral or oak woodland communities. In interior patches of invasive weeds, an attempt will be made to eradicate non-native grasses and forbs and to restore these areas to native communities with appropriate perennial and herbaceous species including (but not limited to) HCP species, if such action is feasible using currently available methods. Incidental take of Monterey spineflower that has colonized these non-native grassy areas would be a predicted as a result of the eradication of non-native grasses. However, the impact would be mitigated when Monterey spineflower is restored to those grassy areas during native restoration. Monitoring of project-level effects (Section 6.3.3, *Effects Monitoring*) will be implemented to evaluate the effectiveness of specific management projects on species and habitats, goals, and objectives. Success criteria and monitoring protocols will be developed for and prior to implementation of each specific project, and adaptive management will be used as appropriate to refine the management projects. This mitigation measure will be implemented by the Permittees on non-Federal HMAs. **Timing:** Within first 10 years of plan implementation.

Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species. Historically, maritime chaparral is a fire-dependent ecosystem. Due to development encroachment and land-use restrictions, prescribed burning may not be a feasible option on all HMAs. UC/NRS will use a research-based approach to determine the management actions necessary to ensure regeneration of covered plant species and maintain the age-class mosaic of the northern maritime chaparral within its HMA. Results from this research will be used to guide management decisions both on FONR and other HMAs.

Within the first year of the permit term (or prior to permit issuance, if feasible), UC/NRS reserve staff will initiate a workshop, which will be funded by the Cooperative or the FONR Endowment, in which fire ecologists and land managers will gather to determine an appropriate experimental approach to test the efficacy of alternative vegetative management techniques. Plot size, locations, replicates, and treatments will be discussed during the workshop, and the primary objective of the workshop will be to compile information on alternative methods and to develop implementation strategies for northern maritime chaparral within the FONR. This plan will then be used to create an appropriate experimental approach examining both community-level and species-specific research. It is anticipated that monitoring would need to occur for several years (duration will be discussed at the workshop) both during experimental treatments and after their completion to examine how communities and species respond to the various treatments over time. Monitoring of project-level effects (Section 6.3.3, *Effects Monitoring*) will be implemented to evaluate the effectiveness of

Fuelbreaks that are cut could get black-lined prior to unit burn, or burned at the same time as the unit burn, but the primary regeneration technique would be cutting of vegetation.

specific management projects on species and habitats, goals, and objectives. Success criteria and monitoring protocols will be developed for and prior to implementation of each specific project, and adaptive management will be used as appropriate to refine the management projects. These results would help to guide future vegetative management strategies on FONR lands. The following alternative vegetative management techniques are currently under consideration; however, exact methods will be determined after the workshop is conducted.

- **Mechanical thinning (e.g., by bulldozer, hand thinning, chaining, mowing).** This technique will serve as a surrogate for small-scale natural disturbances. The goal of removing shrubs is to create open sandy gaps needed by HCP plant species (e.g., sand gilia, Monterey spineflower). In chaparral-dominated communities, these species are largely restricted to openings in the shrub canopy and removing shrubs may increase the amount of available habitat for these species. However, shrub removal would not entirely mimic the benefits of fire in fire-adapted communities. For instance, it would not stimulate the germination of fire-adapted seeds—many manzanita species in particular require heat or charred wood to successfully germinate (Keeley 1987).
- **Smoke water.** This technique will serve as a surrogate for smoke-stimulated germination. Seed germination and seedling recruitment is often restricted to post-fire sites. As such, many chaparral species demonstrate seed germination stimulated by smoke due to a chemical reaction between smoke and the seed coat (Keeley and Fotheringham 1998).
- **Soil solarization.** This technique will serve as a surrogate for soil mineralization caused by fire. During the summer months, soil is covered by a tarp or mulch to increase soil temperatures. This technique has demonstrated effectiveness in disease and weed control (Katan et al. 1987). The increased temperatures would also serve to prepare soils and the seed bank for germination of target chaparral species, while decreasing the abundance of invasive species.
- **Controlled burning.** Technique will serve to compare the effects of the alternative vegetative treatment. If the alternative vegetative treatments fail to replicate the natural disturbance necessary for seed germination, controlled burning may be used to ensure the persistence of HCP species and maintenance of the age-class mosaic within the FONR.

After this initial pilot phase, preferred management techniques will be identified and incorporated into the alternative management plan. The timing of this would likely occur 5–10 years after the experiment. Permanent research plots will be monitored at appropriate temporal intervals in order to inform future management as part of the adaptive management process. The following principles will guide the adaptive management process.

- Due to the potential for unexpected or conflicting effects, experimental management should be used to evaluate the effects of management on HCP species and natural communities, and to determine what levels of disturbance may be required to create or restore HCP species' habitats. Management techniques should be applied first in relatively small patches (to be determined at the workshop) within a management unit or units and should be used on progressively larger scales only if monitoring determines that small-scale applications are effective and do not harm management plan species or natural communities.
- Priority for experimental management should be given to techniques that 1) have the potential to benefit several species, 2) may be applicable in more than one natural community, and 3) are expected to be feasible given annual funding constraints.

- To the extent feasible, selection of techniques to be used should prioritize those that benefit more than one management plan species; as necessary, techniques specific to individual species will also be used.
- Management techniques should be applied cautiously, with the knowledge that techniques may have unanticipated effects on management plan species and habitats. As discussed in Chapter 6, *Monitoring and Adaptive Management*, pre- and post-treatment monitoring will be needed to ensure that both the intended and unintended outcomes of management intervention are identified and evaluated.
- Little is known about the frequency, intensity, and distribution of natural disturbances within the northern maritime chaparral community, and individual species may respond very differently to different types or levels of disturbance. HCP species' habitats commonly overlap within the conservation areas, and management that benefits one species may degrade habitat quality for another. To the extent feasible, areas will be separated with conflicting needs, allowing highly focused application of management prescriptions.
- Management techniques should be used only as required to achieve the biological goals and objectives and should be carried out within the adaptive management framework. In other words, the results of management actions should be monitored, and the results of monitoring should feed back into the decision-making process. Management techniques should be modified or discontinued if monitoring shows that success criteria for management plan species or natural communities are not being met.
- The TAC should evaluate the use of new management techniques (see Chapter 7, *HCP Implementation*). The committee should also review the results of experimental management activities and provide guidance on new or modified management techniques.

Because the efficacy of alternative vegetative management methods is largely unknown and may not meet the desired habitat management goals of the HCP, UC/NRS staff should continue to explore the feasibility of conducting large scale prescribed burns on FONR lands as this may be the only appropriate management method. This mitigation measure will be implemented by UC/NRS on its HMA. **Timing:** Within first 10 years of plan implementation.

5.5.4 Yadon's Piperia Mitigation Measures

This section includes two mitigation measures designed specifically to benefit Yadon's piperia.

Mitigation Measure-37. Mitigate impacts to Yadon's piperia by creating new occurrences at a ratio of 2:1 (restored : impacted), as measured by area of occupied habitat and numbers of plants. Proponents of projects within designated development areas that impact Yadon's piperia will provide for the creation of Yadon's piperia occurrences, based on the number of Yadon's piperia individuals and the area of the occupied habitat that will be impacted, as described in AMM-11. For example, if 5 acres of occupied habitat patches containing a total of 30 Yadon's piperia are impacted, the project proponent will create new occurrences of Yadon's piperia occurrences (i.e., occupied habitat patches) spanning 10 acres and including at least 60 Yadon's piperia individuals within an HMA with suitable Yadon's piperia habitat. The new occurrences can consist of one or more occupied habitat areas. Success criteria will be developed to ensure that the amount (number of individuals and area) of restored Yadon's piperia are maintained for a period of at least 10 years after restoration. Salvaged and propagated plant material (see Mitigation Measure-38, below) will

be used to restore Yadon's piperia occurrences. Restoration and creation methods will be developed as part of Mitigation Measure-38.

The Cooperative will transplant new occurrences such that they constitute separate populations and do not become part of an existing population of species, as measured by the potential for genetic exchange among individuals through pollen or propagule (e.g., seed, fruit) dispersal. This mitigation measure will be implemented by the Cooperative (as funded by the project proponents through fees). **Timing:** Prior to covered activity implementation.

Mitigation Measure-38. Develop a Yadon's piperia management plan. Little is known about the appropriate methods for salvaging, translocating, and propagating Yadon's piperia. The Cooperative, in collaboration with species experts and the Wildlife Agencies, will develop a Yadon's piperia management plan to provide for the successful salvage, translocation, restoration and enhancement of Yadon's piperia and its habitat. The management plan will include, at a minimum, the following components.

- A plan for salvaging Yadon's piperia from sites that will be impacted in the designated development areas.
- A plan for propagating Yadon's piperia individuals for habitat restoration and creation of occurrences in the HMAs.
- A plan for translocating salvaged and propagated individuals to suitable habitat in the HMAs for creating new occurrences using salvaged and propagated individuals. The plan will include pilot projects to test the efficacy of alternative restoration methods. Translocation sites will be carefully selected on the basis of physical, biological, and logistical considerations, including the soil type, moisture, topographic position (e.g., slope and aspect), site hydrology, mycorrhizal associates, presence or absence of typical associated plant species, presence or absence of herbivores or competitors, and accessibility of establishment, and monitoring.
- A plan for enhancing habitat for Yadon's piperia.

The Yadon's piperia management plan will be developed within the first two years of implementation, to ensure the successful restoration of Yadon's piperia occurrences. The Yadon's piperia propagation plan will be necessary to ensure that there are suitable propagules (e.g., seeds, vegetative rosettes, corms) available to create occurrences at a ratio of 2:1 (Mitigation Measure-37).

Pilot research studies of Yadon's piperia propagation are underway in an unprecedented collaboration among University of California (UC) Santa Cruz Arboretum and Greenhouse staff, the Smithsonian Environmental Research Center in Maryland, staff and students at the UC FONR.

Because little is known about the factors influencing this species' distribution, abundance, and persistence, the habitat restoration and enhancement component of the management plan will inform enhancement and management of habitat for Yadon's piperia. Monitoring will focus on assessing the efficacy of salvage, restoration, and enhancement efforts on distribution, abundance, survivorship, and recruitment of this species (Monitoring Measure-28; Section 6.6.2.3.2, *Evaluate the Effectiveness of Mitigation Measures*). Results from monitoring will be used to regularly evaluate and refine the restoration and enhancement plan. This mitigation will be implemented by the Permittees. **Timing:** Within the first two years of Plan implementation.

5.5.5 Covered Activity-Specific Mitigation Measures

There are two covered activities for which additional mitigation is required—Fort Ord Recreational Trail and Greenway (FORTAG) and the Marina Airport runway extension and new road. For these two covered activities, specific mitigation measures were developed. The required mitigation area (at the specified ratios) will be reviewed and approved by the Wildlife Agencies prior to covered activity implementation.

Mitigation Measure-39. Mitigate Impacts related to FORTAG at a 1:1 ratio. Impacts related to small intrusions by trail components that are within HMAs (including all FORTAG trail in all Borderlands) will be mitigated at a 1:1 ratio. A mitigation area will be selected that benefits affected HCP species. Affected species are assumed to include sand gilia, Monterey spineflower, seaside bird's beak, California tiger salamander (upland), and California red-legged frog (potential upland). This mitigation measure will be implemented by FORTAG. The additional mitigation area will be subject to HCP conservation measures. **Timing:** Prior to covered activity implementation.

Mitigation Measure-40. Mitigate impacts related to the Marina Airport runway extension at a 1:1.25 ratio and the new road at 1:1. Impacts related to the runway extension and new road within the Marina Airport HMA will be mitigated at a 1.25 ratio and 1:1 ratio, respectively. A mitigation area will be selected that benefits affected HCP species. Affected species are assumed to include sand gilia, Monterey spineflower, California tiger salamander (upland), and California red-legged frog (potential upland). This mitigation measure will be implemented by the project proponent. The additional mitigation area will be subject to HCP conservation measures. **Timing:** Prior to covered activity implementation.

5.6 Mitigation Outcomes

This section summarizes the mitigation outcomes of the Fort Ord Multi-Species HCP's conservation strategy for HCP species and describes how outcomes are consistent with ESA standards. The range-wide and Plan Area status, as well as the effects of Covered Activities, are summarized for each species to provide context for the mitigation and conservation outcomes.

5.6.1 Sand Gilia

5.6.1.1 Status and Distribution

Sand gilia is endemic to the Monterey Bay area of Monterey County, California. Sand gilia is generally found in the fog belt area, but extends to inland areas in the Plan Area as well. Sand gilia is distributed in discontinuous populations and its range extends from Spanish Bay on the Monterey Peninsula north to Sunset Beach State Park in Santa Cruz County (California Department of Fish and Game, 2003). Most of these populations are on private land and are unprotected. At least half of the species' range occurs in the Plan Area, where extensive suitable habitat is found.

The 1992 baseline studies reported that sand gilia occurred on 3,757 acres of land in the Plan Area. Based on data collected up to 2011, the revised total of sand gilia habitat in the Plan Area is 9,089 acres (Table 2-3; Appendix A, Figure A-1). At the request of CDFW, the occurrence of sand gilia was evaluated for three geographic areas in the Plan Area as illustrated on Figure A-1. Area 1 consists of the lands west of Highway 1, which are within the FODSP. Area 2 is comprised of lands in and

around the City of Marina, including the FONR property. Area 3 encompasses the remainder of the Plan Area, including the FONM. Area 1 supports about 3% of the sand gilia population in the Plan Area, Area 2 has 27% and Area 3 has 70% of the mapped occurrences. Sand gilia found within development parcels are considered a total loss.

The most extensive stands of high density sand gilia appear to occur on the FONR property within Area 2, but high density areas have also been observed following burns in the inland range areas of the base in Area 3. Area 3 contains the most extensive stands of low density sand gilia, occurring primarily within the undeveloped southern portion of the Plan Area. Within Area 1, only one small population of sand gilia was found in sand dune habitat prior to 1998, but between 1998 and 2003 State Parks has planted a total of 2,751 sand gilia individuals within the FODSP and have expanded the species extent in that area. In the developed portions of the Plan Area, some small patches of sand gilia are known to occur in sandy open areas, despite development and the introduction of African iceplant (*Carpobrotus edulis*).

5.6.1.2 Effects Summary

There are 9,089 acres of potential/known occupied sand gilia habitat in the Plan Area. A maximum of 1,511 acres of sand gilia habitat would be affected by covered activities in the non-Federal HMAs, with another 311 acres impacted by BLM on FONM (Table 4-8a). Sand gilia will be affected by development activities, road corridors and infrastructure, and road, trail, and fuelbreak maintenance. Impacts by each impact mechanism are summarized in Tables 4-6a and 4-6b. Impacts to sand gilia on non-Federal lands will occur primarily within the designated development areas (86% of the total impacts on non-Federal lands).

While the designated development areas support viable habitat for sand gilia, these habitat areas were not considered essential to meet the HCP biological goals and objectives in the development of the conservation framework of this HCP, which was based on the habitat conservation area and corridor system developed in the HMP (U.S. Army Corps of Engineers 1997). Impacts were also analyzed to occurrences, by density of occurrence, as shown in Appendix A, Figure A-1. The majority of impacts to sand gilia in the designated development areas will be to low density occurrences (1,198 acres out of 1,319 acres; 91%).

Effects by the three geographic areas described in the section above are as follows: Two acres will be affected by development in Area 1 by development, roads, infrastructure, or O&M and HCP required actions. In Area 2, Development, roads and infrastructure construction, and O&M activities will result in the loss of up to 762 acres. In Area 3, up to 1,057 acres be lost to development, roads and infrastructure construction, and O&M activities. (See Table 4-9.)

5.6.1.3 Mitigation Summary

The biological goal for all plant species is to preserve and maintain or enhance the HCP plant species populations within the HMAs. Approximately 1,511 acres of habitat would be impacted, and 1525 acres would be conserved within non-Federal HMAs (Tables 4-6a and 4-8a). Seeding to augment the species within 69 existing restored acres on FONM (objective 2.5), restoration of 210 acres on FODSP (objective 5.2), and restoration of at least 10 acres of habitat on FONM (Section 5.6.1.3) are all proposed. For the Federal permit, the impacted to conserved acreage numbers for the Federal permit (1511 to 1525) are not commensurate, but the proposed habitat conservation plus additional seeding and restoration on 220 acres would mitigate effects to the species to the

maximum extent practicable. The majority of medium (224 acres out of 337 acres; 66%) and high (326 acres out of 334 acres; 98%) density occurrences will be preserved on the non-Federal HMAs. (For the State permit, another 5,742 acres of sand gilia habitat will be protected, maintained, and enhanced by BLM in FONM for a total of 7,267 acres in preservation).

5.6.1.4 Conclusion

The protection, restoration, maintenance, and enhancement of sand gilia habitat and occurrences in the Plan Area will mitigate the direct and indirect effects resulting from covered activities, as described above and will further provide for the conservation of the species in the Plan Area.

5.6.2 Yadon's Piperia

5.6.2.1 Status and Distribution

Yadon's piperia is endemic to Monterey County. The recorded range of Yadon's piperia extends from the hills around Prunedale and in the Elkhorn Slough watershed, south to the Palo Colorado Canyon area of the Big Sur coast, in northern Monterey County, California. Its center of distribution appears to be the Monterey Peninsula, south of the Plan Area, where plants are found throughout the larger undeveloped tracts of the Del Monte Forest in Monterey pine forest. Additional data obtained since the listing of the species indicates that the piperia population, at least within the Del Monte Forest area, is much larger and more widespread than previously assumed. The Del Monte Forest has 184 acres of Yadon's piperia habitat (Beacham and Beetz 2000). Yearly fluctuations in flowering individuals make occupancy determination and population trends difficult to determine. At the time piperia was proposed for listing, the best available data indicated that the population of piperia within the Del Monte Forest was approximately 2,000 plants limited to selected areas. A piperia census that took place in 2004 documented 129,652 individual piperia plants (13.41 acres) occurring in the Del Monte Forest Preservation and Development Plan Area (Zander Associates and WWD Corporation 2004). A piperia census that took place in 2004 and 2005 documented 160,047 piperia plants occurring throughout the Del Monte Forest (Zander Associates and WWD Corporation 2004, 2005).

In the Plan Area there are about 1,511 known individual plant occurrences across 2,420 acres (Table 2-3; Appendix A, Figure A-2a through Figure A-2n). Known occurrences are located on two HMAs, where they will be preserved: Marina Northwest Corner, and FONM. A small proportion of the known occurrences in the Plan Area are found on the designated development areas (approximately 8% of the occurrence acreage), where they will be affected by covered activities.

5.6.2.2 Effects Summary

There are 2,420 acres of potential Yadon's piperia habitat in the Plan Area. A maximum of 204 acres of potential Yadon's piperia habitat would be affected by covered activities in the non-Federal HMAs (Table 4-8a), with another 71 acres impacted by BLM on FONM. Impacts by each impact mechanism are summarized in Table 4-6a and 4-6b. Covered activities would remove both occurrences within the designated development area. These occurrences occur within an area that represents less than 1% of the species range.

The Plan Area is at the edge of the species' population distribution. While Fort Ord lies within the range of Yadon's piperia, the primary population center is in the Del Monte Forest to the south

where recent surveys documented over 160,000 Yadon's piperia (see Section 2.2.2, *Yadon's Piperia*, *Piperia yadonii*).

5.6.2.3 Mitigation Summary

Approximately 204 acres of habitat would be impacted and 5 acres would be conserved within non-Federal HMAs (Table 4-8a). Habitat creation/restoration to replace destroyed habitat at a 2 : 1 ratio (Mitigation Measure 37), development of a management plan to guide efforts to salvage and propagate the species and restore and enhance its habitat (Mitigation Measure 38), and restoration of at least 10 acres of habitat on FONM (Section 5.6.2.3) are all proposed. The impacted to conserved acreage numbers (204 to 5) are not commensurate, but the proposed habitat conservation, including documenting appropriate methods to propagate the species, plus additional restoration would mitigate effects to the species to the maximum extent practicable.

5.6.2.4 Conclusion

The protection, restoration, management, and enhancement of Yadon's piperia habitat, and restoration and/or creation of Yadon's piperia occurrences in the Plan Area, will mitigate direct and indirect effects resulting from Covered Activities and further provide for the conservation of the species in the Plan Area. If the Yadon piperia-specific mitigation measures do not demonstrate a capacity for effective mitigation at a 2 : 1 replacement, Cooperative staff will work with the USFWS through the Adaptive Management Process to pursue species protection in the Del Monte Forest (see also Chapter 6, Adaptive Management Measure 14).

5.6.3 Monterey Spineflower

5.6.3.1 Status and Distribution

Monterey spineflower occurs along the coast of southern Santa Cruz and northern Monterey Counties and inland to the coastal plain of the Salinas Valley (U.S. Fish and Wildlife Service 2009a). The Plan Area supports the largest known population of Monterey spineflower with occurrences that are not fragmented by developed, agricultural, or other unsuitable lands (U.S. Fish and Wildlife Service 2005b). In the Plan Area, the species has been identified on 12,978 acres, located primarily within undeveloped areas of the western half of the former base (Table 2-3; Appendix A, Figure A-3a). The highest densities are in the central portion of the firing range, where disturbance has historically been the most frequent.

5.6.3.2 Effects Summary

There are 12,978 acres of Monterey spineflower habitat in the Plan Area. A maximum of 3,528 acres of Monterey spineflower habitat would be affected by covered activities in the non-Federal HMAs (Table 4-8a), with another 373 acres impacted by BLM on FONM. Monterey spineflower will be affected by development activities, road corridors and infrastructure, as well as road, trail, and fuelbreak maintenance. Impacts by each impact mechanism are summarized in Table 4-6a and 4-6b.

Impacts were also analyzed to occurrences, by density of occurrence, as shown in Appendix A, Figure A-3a. The majority of impacts to Monterey spineflower in the designated development areas will be to low density occurrences (1920 acres out of a total of 3125 acres; 61%).

5.6.3.3 Mitigation Summary

Approximately 3,528 acres of habitat would be impacted and 2,184 acres would be conserved within non-Federal HMAs (Tables 4-6a and 4-8a). Seeding to augment the species within 69 existing restored acres on FONM (objective 2.5), restoration of 210 acres on FODSP (objective 5.2), and restoration of at least 10 acres of habitat on FONM (Section 5.6.3.3) are all proposed. The impacted to conserved acreage numbers (3,528 to 2,184) are not commensurate, but the proposed habitat conservation plus additional seeding and restoration would mitigate effects to the species to the maximum extent practicable.

5.6.3.4 Conclusion

The protection, restoration, maintenance, and enhancement of Monterey spineflower habitat and occurrences in the Plan Area will mitigate the direct and indirect effects resulting from covered activities, as described above and will further provide for the conservation of the species in the Plan Area.

5.6.4 Seaside Bird's Beak

5.6.4.1 Status and Distribution

Seaside bird's beak is restricted to northern Monterey County and Santa Barbara County. In Monterey County the species is found between Carmel and Elkhorn Slough, in the Plan Area and at the Monterey Airport. In the Plan Area there are an estimated 6,850 acres of occupied seaside bird's beak habitat, based on data collected up to 2011 (Table 2-3; Table 4-8a; Appendix A, Figure A-4). The California Natural Diversity Database (CNDDB) (California Department of Fish and Game 2016) reports that seaside bird's beak is known from 40 occurrences.

At the request of CDFW, the occurrence of seaside bird's beak was evaluated for two geographic areas in the Plan Area as illustrated on Figure A-4. Area 1 consists of the seaside bird's beak occurrences north of Reservation Road, including the FONR, and contains 130 acres. Area 2 is the remainder of the Plan Area and contains 6,719 acres of seaside bird's beak habitat.

Occurrences of the species have declined as a result of coastal development and the destruction and fragmentation of its habitat. Additional losses of populations can be expected to occur as these development pressures continue to result in loss and fragmentation of habitat. High fire frequency and out-of-season burning may also be adversely affecting the species. Fires, ground-disturbing activities and recreational use contribute to the spread of invasive species like pampas grass, iceplant, and veldt grass, which are capable of overtaking bird's beak habitat.

5.6.4.2 Effects Summary

There are 6,850 acres of mapped seaside bird's beak habitat in the Plan Area. A maximum of 499 acres of seaside bird's beak habitat would be affected by covered activities in the non-Federal HMAs (Table 4-8a), with another 306 acres impacted by BLM on FONM. Seaside bird's beak will be affected by development activities, road corridors and infrastructure, as well as road, trail, and fuelbreak maintenance. Impacts by each impact mechanism are summarized in Table 4-6a and 4-6b.

Impacts were also analyzed to occurrences, by density of occurrence, as shown in Appendix A, Figure A-4. The majority of impacts to seaside bird's beak in the designated development areas will be to low density occurrences (353 acres out of 455 acres; 78%).

Effects by the two geographic areas described in the section above are as follows: Covered activities would remove 44 acres of habitat in Area 1 and 761 acres in Area 2. The remaining 6,045 acres of habitat would be preserved and maintained or enhanced within the HMAs.

5.6.4.3 Mitigation Summary

Approximately 499 acres of habitat would be impacted and 403 acres would be conserved within non-Federal HMAs (Table 4-6a and 4-8a). Seeding to augment the species within 69 existing restored acres on FONM (objective 2.5), fencing to reduce deer predation on FONR (AMM-30), and restoration of at least 10 acres of habitat on FONM (Section 5.6.4.3) are all proposed. The impacted to conserved acreage numbers for the Federal permit (499 to 403) are not commensurate, but the proposed habitat conservation plus additional habitat seeding, management, and restoration would mitigate effects to the species to the maximum extent practicable. For the State permit, another 5,642 acres of seaside bird's beak habitat will be protected, maintained, and enhanced by BLM in FONM. An additional 306 acres of impacts are expected in FONM, as well.

5.6.4.4 Conclusion

The protection, restoration, maintenance, and enhancement of seaside bird's beak habitat and occurrences in the Plan Area will mitigate the direct and indirect effects resulting from covered activities, as described above and will further provide for the conservation of the species in the Plan Area.

5.6.5 Smith's Blue Butterfly

5.6.5.1 Status and Distribution

Smith's blue butterfly is known to occur from the mouth of the Salinas River in Monterey County south to San Carpoforo Creek in northern San Luis Obispo County. Populations north of the Salinas River are considered to be a hybrid between Smith's blue butterfly and Tilden's blue butterfly. It is completely dependent upon its host plants, coast and seacliff buckwheat, during all life stages.

When it was listed in 1976, Smith's blue butterfly was known primarily from remnant, partially stabilized sand dunes around Monterey Bay. Additional colonies have since been discovered in other locations and habitat types. The species recovery plan approved by USFWS in 1984 indicates that the discovery of these additional colonies may warrant reclassification of the species. In the 5-year review document for Smith's blue butterfly, published in September 2006, USFWS recommends that the species be downlisted from endangered to threatened because of an expansion of the subspecies' known range from the time of listing, largely within the southern part of its range. However, USFWS remains concerned about extirpation of the species from parts of its northern range, including the Plan Area, because of habitat fragmentation from residential and industrial development, isolation from the species' larger southern populations, and habitat degradation from invasive non-native plants and industrial and recreational use. The recovery plan identifies the Plan Area as an important Smith's blue butterfly population site.

In the Plan Area, Smith's blue butterfly occurs primarily within coastal strands and dunes (Table 2-2). There are 110 acres of potential habitat for the species (i.e., areas that support coast or seacliff buckwheat plants), all at FODSP (Appendix A, Figure A-5a). Within the Plan Area, the species is only known to occur within the FODSP west of Highway 1; however, potential habitat for this species is present within FODSP, FONR, County of Monterey, City of Seaside, and City of Marina lands. The small habitat patches found east of Highway 1 are found on HMA parcels and designated development areas.

Presence-absence surveys for Smith's Blue butterfly adults were conducted throughout the FODSP dunes in June and July of 2008 (Arnold 2008). A total of 654 adult Smith's Blue butterflies were observed, with 214 females and 440 males.

5.6.5.2 Effects Summary

Impacts to Smith's blue butterfly and its habitat are expected to be minimal. A maximum of 7 acres of potential Smith's blue butterfly habitat will be affected by covered activities in the non-Federal HMAs (Table 4-8b). Smith's blue butterfly will be affected by State Parks development activities. Impacts for each impact mechanism are summarized in Table 4-7a and 4-7b.

5.6.5.3 Mitigation Summary

The proposed mitigation fully offsets impacts to habitat on an acre impacted to conserved basis. All known occurrences within the former base and most of the potential habitat are conserved within FODSP and additional dune habitat currently with iceplant will be restored. Approximately 7 acres of habitat would be impacted and 103 acres would be conserved within non-Federal HMAs (Table 4-7a and 4-8b).

5.6.5.4 Conclusion

The protection, restoration, maintenance, and enhancement of Smith's blue butterfly habitat, host plants, and occurrences in the Plan Area will mitigate the direct and indirect effects resulting from covered activities, as described above, and will further provide for the conservation of the species in the Plan Area.

5.6.6 Western Snowy Plover

5.6.6.1 Status and Distribution

Western snowy plovers are found along beaches and adjacent bare dunes of the Pacific Coast from Washington to Baja California. The species also occurs along the shores of salt ponds and alkali or brackish inland lakes. Monterey Bay as a whole is considered one of eight primary coastal nesting areas.

The beach in the Plan Area of former Fort Ord provides 71 acres of potential habitat for western snowy plover (Table 2-4; Appendix A, Figure A-6a). This is the total dry sand area available along the length of the Natural Resource Zone within the FODSP. This strip of dry sand is approximately 4 miles long and varies greatly in width. Within this area of habitat, there were 272 known nest locations from 2005 through 2016. The species has been known to nest along the entire length of the beach in the Plan Area.

Since monitoring began in the late 1970s and early 1980s, population levels along this stretch of beach have been variable. The number of nesting attempts ranged between 16 and 30 during the late 1980s and into the early 1990s. The number of nesting attempts then declined through the 1990s and reached a low of very few to zero nesting attempts in the late 1990s through 2004 (Page et al. 2002; Page et al. 2003; Page et al. 2005). More recently the number of nesting attempts in Fort Ord has rebounded with the number of nesting attempts of 23, 18, 21, 13, 18, 33, and 58 in 2009, 2010, 2011, 2012, 2013, 2014, and 2015 respectively (Page et al. 2009; Page et al. 2010; Page et al. 2011; Page et al. 2012, Page et al. 2014, Page et al. 2015, Page et al. 2016).

The decline in breeding numbers from the early 1990s through 2004 appears to be related to above normal winter mortality and low survivorship during brood rearing. Disturbances from recreational use and predation can contribute to low survivorship during brood rearing for the Pacific Coast population of western snowy plovers (A. Palkovic pers. comm. 2009).

5.6.6.2 Effects Summary

Western snowy plover only occurs within the FODSP and impacts on this species and its habitat may be locally significant. There are 71 acres of the species' habitat within FODSP. Direct impacts on the species and its habitat would result from proposed new park development. A maximum of 11.1 acres of the species' habitat will be directly affected by allowable development in FODSP (Table 4-7a). In addition, all western snowy plover habitat in the Plan Area would be indirectly affected. Indirect impacts include those that take place at the time of the proposed action but occur beyond the project footprint.

The FODSP General Plan proposes that the beach be managed to provide low-intensity public use. Foot traffic and other human impacts associated with increased use could degrade western snowy plover habitat or result in direct incidental take of nests or chicks. In addition, increased human presence on the beaches facilitated by new park facilities could indirectly affect western snowy plover through disturbance that results in nest abandonment or the separation of broods (through unintentional harassment during activities such as sunbathing or picnicking).

5.6.6.3 Mitigation Summary

The proposed mitigation fully offsets impacts to habitat on an acre impacted to conserved basis. All known occurrences within the former base and most of the potential habitat is conserved within FODSP and additional dune habitat currently with iceplant will be restored. Approximately 11 acres of habitat would be impacted, and 60 acres would be conserved within non-Federal HMAs (Tables 4-7a and 4-8b). Increased human use due to State Parks' proposed campground will require careful monitoring and management, for which this plan provides.

5.6.6.4 Conclusion

The protection, restoration, maintenance, and enhancement of western snowy plover habitat and individuals in the Plan Area will mitigate the direct and indirect effects resulting from covered activities, as described above and will further provide for the conservation of the species in the Plan Area.

5.6.7 California Tiger Salamander

5.6.7.1 Status and Distribution

California tiger salamander occurs only in California from the coastline to the Sierra Nevada crest and from Sonoma to Santa Barbara Counties. California tiger salamander favors open woodlands and grasslands but requires water for breeding, and ground squirrel or other rodent burrows for summer dormancy. The adult salamanders may migrate up to 1.4 miles (2.2 km) from their estivation sites to the breeding ponds (Orloff 2009) which may be vernal pools, stockponds, or other seasonal water bodies. After breeding, adults leave the pool and return to the small mammal burrows (Loredo et al. 1996). While individuals may survive for more than 10 years, many breed only once, and in some populations, less than 5% of marked juveniles survive to become breeding adults (69 FR 47211). With such low recruitment, isolated populations can decline greatly from unusual, randomly occurring natural events as well as from human caused factors that reduce breeding success and individual survival.

Potential and known breeding habitat includes wetland and open water habitats. Overall, the Plan Area contains 72 acres of occupied breeding habitat and 17 acres of potential breeding habitat. Potential upland habitat includes all non-developed, non-aquatic area within 1.4 miles (2.2 km) of occupied and potential breeding habitat. Overall, the Plan Area contains 19,598 acres of potential upland habitat (DENR/POM 2004; Denise Duffy & Associates 2011) (Table 2-4; Appendix A, Figure A-7).

Of the locations known to support California tiger salamander populations in the Plan Area, 10 of these areas may represent a “metapopulation” in the Henneken’s Ranch Road area (Pools 5, 42, 56, 57, 58, 59, 60, Machine Gun Flats, 101 East, and 101 West) (68 FR 28647). A metapopulation is a set of local populations or breeding sites within an area where migration from one local population or breeding site to other areas containing suitable habitat is possible, but not routine (68 FR 28647). While the Plan Area contains less than 1% of the known range for California tiger salamander, it is an important site for the conservation of this species on the central coast, because it is one of the few known locations in Monterey County where a complex of breeding pools is connected by contiguous habitat.

In 2017, the USFWS published the Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*) (U.S. Fish and Wildlife Service 2017). The Recovery Plan classified the range of the Central California Distinct Population Segment into four recovery units. The recovery units also include management units, which were created to ensure that the full genetic, geographic, and ecological range of each recovery unit is represented. The Plan Area occurs within the Central Coast Range Recovery Unit and the Fort Ord management unit. The primary threat to populations within this recovery unit is hybridization with non-native tiger salamanders. Maintaining the genetic integrity of California tiger salamanders within this recovery unit is a priority (U.S. Fish and Wildlife Service 2015).

5.6.7.2 Effects Summary

Impacts on California tiger salamander are divided into two main categories: breeding habitat and upland habitat. There are two breeding habitat categories: potential breeding habitat and breeding habitat. Potential breeding habitat is ponds that have been determined to provide appropriate habitat but are not currently known to support the species. Breeding habitat is those ponds that are

known to have supported breeding in the past. Within the Plan Area, 89 acres of California tiger salamander potential and known breeding habitat have been identified (4.2 acres in the non-Federal HMAs, and 84.8 acres in FONM). Of the 89 acres, 72 acres are breeding habitat and 17 acres are considered potential breeding habitat.

The impacts to California tiger salamander upland habitat were analyzed by dividing upland habitat into four impact zones, in coordination with CDFW, based on the probability of upland use and dispersal distance from known pools. These zones were determined based on research that identified frequency and abundance of California tiger salamander upland habitat use within specific distances of breeding ponds. This research resulted in the designation of the following four California tiger salamander impact zones (380 m [0.24 mile]; 630 m [0.39 mile]; 1 km [0.62 mile]; and 2.2 km [1.3 mile]).

Covered activities and BLM's activities will not impact breeding or potential breeding habitat (Table 4-8b). Across all zones, covered activities will impact 3,607 acres of upland habitat in the non-Federal HMAs, with another 713 acres of upland habitat impacted by BLM on FONM (Table 4-8b). California tiger salamander upland habitat will be affected by development activities, road corridors and infrastructure construction and O&M, as well as road, trail, and fuelbreak maintenance. Impacts by each impact mechanism are summarized in Tables 4-7a and 4-7b. Most of the upland impacts on non-Federal land (3,120 acres; 85%) occurs within the distant, lower-use zones (zones 3 and 4). Covered activities will impact 478 acres of zone 1 and 2 upland habitat on non-Federal HMAs; whereas 745 acres of zone 1 and 2 upland habitat will be preserved, maintained or enhanced on non-Federal HMAs.

5.6.7.3 Mitigation Summary

The biological goal for California tiger salamander is to preserve, maintain, and restore occupied and suitable aquatic and upland habitat for California tiger salamander (*Ambystoma californiense*) in the HMAs. For the Federal permit, approximately 3,614 acres of habitat would be impacted, and 2,104 acres would be conserved within non-Federal HMAs (Table 4-8b; upland habitat only). Restoration of at least two ponds providing at least 2 acres of breeding habitat (objective 14.5) is proposed. Control of hybrid CTS within the former base (objective 14.4) is proposed. The impacted to conserved acreage numbers for the Federal permit (3,614 to 2,104) are not commensurate, but the proposed habitat conservation plus restoration of two breeding ponds and management of hybrids fully offsets the loss of potential upland habitat.

For the State permit, the Plan will protect 15,271 acres in total (including 2,104 acres on the non-Federal HMAs) of suitable upland habitat within the large, interconnected HMA preserves. BLM will protect and manage 85 acres of potential breeding habitat and the Cooperative will protect and manage 4 acres of potential breeding habitat, for a total of 89 acres.

5.6.7.4 Conclusion

The Plan will provide for the recovery of California tiger salamander by protecting, restoring, maintaining, and enhancing aquatic breeding and upland aestivation and movement habitat in the Plan Area. These efforts will help to address threats to populations within this recovery unit, as identified by the Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*) (2017).

5.6.8 California Red-legged Frog

5.6.8.1 Status and Distribution

California red-legged frogs are found along the coast and coastal mountain ranges from Humboldt to San Diego Counties, and in the Sierra Nevada from Butte to Fresno Counties. Suitable potential breeding habitat in the Plan Area includes cold-water ponds with emergent and submergent vegetation, and riparian vegetation along the edges. There are 89 acres of potential breeding habitat and 0.4 acre of occupied breeding habitat in the Plan Area. Potential upland habitat includes all non-developed, non-aquatic area (i.e., non-wetland habitats) within 1 mile (1.6 km) of known and potential breeding habitat. There are 16,362 acres of potential upland habitat for California red-legged frog in the Plan Area, the extent of which constitutes less than 1% of the known range for the species (Table 2-4; Appendix A, Figure A-8).

Recovery units were identified by USFWS in the final rule listing California red-legged frog as Federally threatened (U.S. Fish and Wildlife Service 1996) and revised in the Recovery Plan for the California Red-legged Frog (U.S. Fish and Wildlife Service 2002). The Plan Area occurs within the Central Coast recovery unit, which extends from San Francisco to Santa Barbara County and supports the greatest number of occupied drainages. California red-legged frog occurs in most drainages along the coast north of the Plan Area in Santa Cruz County from the City of Santa Cruz north to San Mateo County. The species is widespread in Monterey County, with nearly all coastal drainages from Garrapata Creek south to Salmon Creek, including the Little and Big Sur drainages and the vicinity of Pfeiffer Beach, supporting California red-legged frogs. Just south of the Plan Area, the Carmel River watershed and most of its tributaries supports the frog (U.S. Fish and Wildlife Service 2002b). Within the Plan Area, California red-legged frog is known to occur at a single location — larvae were found in Pond 998 South within the FONM (see Figure A-7 in Appendix A of this HCP) (E. Harwayne pers. comm.). The primary threats to California red-legged frog in the Central Coast recovery unit include those from agriculture, cattle grazing, mining, non-native species, recreation, urbanization, and water management-related activities.

The Recovery Plan for the California Red-legged Frog also identified core areas, distributed throughout portions of the historic and current range, that when protected and managed for California red-legged frog, will allow for the long-term viability of existing populations and reestablishment of populations within the historic range. The Plan Area does not overlap with a core area but is located between the Watsonville Slough – Elkhorn Slough core area to the north, and the Carmel River – Santa Lucia Core area to the south (U.S. Fish and Wildlife Service 2002b).

5.6.8.2 Effects Summary

California red-legged frogs have a limited distribution in the Plan Area; however, there is the potential for the number of individuals inhabiting the Plan Area to increase during the permit term due to the presence of suitable habitat and enhancement actions. Known California red-legged frog occurrences are limited to one pond within FONM. Potential habitat for the species has been identified within the FONM, the Habitat Corridor/Travel Camp and in the Salinas River, which abuts the Salinas River Habitat Area.

Covered activities and BLM's activities will not impact breeding or potential breeding habitat (Table 4-8b). Covered activities will impact 2,120 acres of upland habitat in the non-Federal HMAs, with another 661 acres of upland habitat impacted by BLM on FONM. Most of the impacts to upland

habitat will occur greater than 100 meters (328 feet) from aquatic habitat (2,083 acres; 98%). California red-legged frog upland habitat will be affected by development activities, road corridors and infrastructure construction and O&M, as well as road, trail, and fuelbreak maintenance. Impacts by each impact mechanism are summarized in Tables 4-7a and 4-7b.

5.6.8.3 Mitigation Summary

Approximately 2,120 acres of habitat would be impacted, and 1,374 acres would be conserved within non-Federal HMAs (Table 4-8b; upland habitat only). Restoration of at least two ponds providing at least 2 acres of breeding habitat (objective 14.5) is proposed. The impacted to conserved acreage numbers (2,120 to 1,374) are not commensurate, but the proposed habitat conservation plus restoration of two breeding ponds fully offsets the loss of potential upland habitat.

5.6.8.4 Conclusion

The protection, restoration, maintenance, and enhancement of California red-legged frog habitat in the Plan Area will mitigate the direct and indirect effects resulting from covered activities, as described above, and will further provide for the conservation of the species in the Plan Area. Although California red-legged frog has a very limited distribution in the Plan Area, the Plan's conservation strategy will improve aquatic and upland habitat, increasing the potential that this species could expand its distribution and abundance in the Plan Area.

5.7 Monitoring and Adaptive Management

Based on the evaluation of information from monitoring and in consideration of the best scientific information available, habitat managers will adapt their management activities as required to ensure compliance with the requirements of the HCP. Adaptive management allows for a flexible approach when monitoring results indicate that previously employed management measures do not produce desired results, that circumstances have changed, or that biological conditions are different from those originally estimated for the HCP. Annual monitoring results will be reviewed by the TAC and recommendations made to the Cooperative. The Cooperative, with approval from the Wildlife Agencies, will make the decision whether to initiate adaptive management measures considering HMA-specific results, base-wide trends, evaluation of species monitoring data against thresholds and other factors (Chapter 6). See Chapter 6, *Monitoring and Adaptive Management*, for a description of the adaptive management strategy for the Plan Area.

Table 5-1. Relationship between Biological Goals and Objectives and AMMs

Biological Goals and Objectives	Avoidance and Minimization Measures
<i>Landscape-level Biological Goal and Objective</i>	
Goal 1: Protect and maintain landscapes comprised of representative natural communities and covered species in the habitat reserve system	
<i>Objective:</i>	
<p><u>1.1:</u> Create a habitat reserve system within the Plan Area, at the same pace of or ahead of impacts, that adheres to the principles of conservation biology and reserve design described in AMM-1.</p>	<p>AMM-1. Implement site plan as identified in the HMP, Fort Ord Reuse Plan (1997), and subsequent updates.</p> <p>AMM-2. Maintain compliance with the stay-ahead provision.</p>
<i>Natural Community-level Biological Goals and Objectives</i>	
<i>Maritime Chaparral</i>	
Goal 2: Preserve, enhance, and maintain the quality and extent of maritime chaparral habitat within HMAs.	
<i>Objective:</i>	
<p><u>2.1:</u> Use prescribed burning, commencing in year 20 of Plan implementation, on 1,000 to 1,500 acres each decade to provide a range of successional stages, maintain native species diversity, and maintain habitat for herbaceous HCP plant species within the Fort Ord National Monument (FONM).</p>	<p>AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>
<p><u>2.2:</u> Within all maritime chaparral preserved in the HMAs, test alternative vegetation treatments to provide a range of successional stages, maintain native species diversity, and maintain habitat for herbaceous HCP plant species for those areas where chaparral canopy is closed or increasing and where prescribed burning is particularly difficult to conduct due to existing residential development. This includes target maritime chaparral areas in the FONM, East Garrison Reserve, Parker Flats Reserve, FONR, and Range 45 Reserve.</p>	<p>AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>
<p><u>2.3:</u> Provide an adequate disturbance regime to sustain chaparral species that require openings often associated with early seral-stage chaparral following fire within the 337 acres of maritime chaparral in the FONR.</p>	<p>AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>
<p><u>2.4:</u> Protect against noxious weed infestations on approximately 1,000–1,500 acres of managed lands each decade in maritime chaparral in the FONM.</p>	<p>AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas.</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p><u>2.5:</u> Augment 69 acres of prior maritime chaparral restoration by seeding restored sites with HCP plant species and other native species. The Permittees will augment prior active and passive restoration efforts on 69 acres of maritime chaparral at FONM by seeding sand gilia, seaside bird's beak, and Monterey spineflower, and seeding and planting later successional stage species (e.g., manzanitas and ceanothus).</p>	<p>AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.</p> <p>AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>
Goal 3: Restore maritime chaparral habitat in targeted areas.	
<i>Objective:</i>	
<p><u>3.1:</u> Restore up to 15 acres of maritime chaparral annually in the FONM for a total of 100–150 acres over the term of this HCP.</p>	<p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>
<p><u>3.2:</u> Restore maritime chaparral within the FONR Corridor Reserve by year 25 of HCP implementation.</p>	<p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>
<i>Coastal Strand and Dunes</i>	
Goal 4: Preserve and maintain coastal strand habitat in the Fort Ord coastal area.	
<i>Objective:</i>	
<p><u>4.1:</u> Protect and actively manage approximately 150 acres of existing beaches, bluffs, and blowouts along the Fort Ord shoreline within FODSP.</p>	<p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
	AMM-32. Develop and implement a public outreach and education plan.
Goal 5: Restore, enhance, and maintain coastal dune scrub habitat within the Fort Ord coastal area.	
<i>Objective:</i>	
<u>5.1:</u> Restore at least 420 acres of disturbed or degraded land to coastal dune scrub habitat.	AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.
<u>5.2:</u> Encourage and/or facilitate the establishment of sand gilia (<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>) and Monterey spineflower (<i>Chorizanthe pungens</i> var. <i>pungens</i>) through targeted restoration and management actions within 125 acres of FODSP.	AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.
<u>5.3:</u> Limit coverage of iceplant or other noxious weeds (not including annual grasses) in restored coastal dune scrub to less than 10% the total area of restored habitat within FODSP.	AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.
<u>5.4:</u> Protect coastal strand and dune habitat quality on approximately 550 acres within the FODSP by limiting public access.	AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.
	AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.
	AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.
	AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.
	AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.

Biological Goals and Objectives	Avoidance and Minimization Measures
	<p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-37. Seed and straw disturbed areas outside of the road or trail corridor to facilitate revegetation.</p> <p>AMM-38. Limit herbicide and pesticide use and apply in accordance with AMMs identified for non-native species control.</p> <p>AMM-39. Apply seasonal restrictions to maintenance activities to avoid or minimize adverse effects on western snowy plover and Smith's blue butterfly.</p> <p>AMM-40. Clean mowing equipment before use in habitat areas to prevent the spread of non-native noxious weeds.</p> <p>AMM-41. Maintain travel lanes and shoulders of roads in sandy soils as open sandy habitat for annual HCP plant species, to the extent possible, consistent with the purpose of the road.</p>
<i>Oak Woodlands</i>	
Goal 6: Preserve and maintain the quality, canopy cover, and extent of oak woodlands in HMAs	
<i>Objective:</i>	
<p><u>6.1:</u> Combat disease outbreaks to minimize loss of oak trees and maintain the extent of oak woodland habitat documented during adjusted baseline surveys.</p>	<p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>
<p><u>6.2:</u> Within all oak woodland habitat preserved in the HMAs, maintain healthy populations of HCP species and mixed age-class structure stands.</p>	<p>AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>
<p><u>6.3:</u> Promote the reestablishment of natural biotic systems, including interacting microbial, invertebrate, and vertebrate communities within all oak woodland habitat preserved in the HMAs by allowing for the accumulation of fallen trees, standing dead trees, and duff.</p>	<p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>
<p><u>6.4:</u> Reestablish appropriate oak species, canopy cover, and associated understory species in areas that had been degraded by historical uses within all oak woodland habitat preserved in the HMAs.</p>	<p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<i>Grasslands</i>	
Goal 7: Preserve, enhance, and maintain grassland plant communities within HMAs.	
<p><i>Objective:</i></p> <p><u>7.1:</u> Preserve and maintain or enhance the quality of native grassland species, including native forbs and grass species, where they occur, using methods such as reducing fuels, controlling non-native invasive grasses and forbs, and reducing thatch buildup, within all the grassland plant communities preserved in the HMAs.</p> <p><u>7.2:</u> Where possible, reestablish or introduce appropriate native species in areas that were degraded by historical uses or that are otherwise determined suitable for restoration within all the grassland plant communities preserved in the HMAs.</p>	<p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.</p> <p>AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.</p> <p>AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.</p>
<i>Aquatic and Riparian/Wetland Habitats</i>	
Goal 8: Preserve and maintain the quality and extent of aquatic and riparian/wetland habitats within HMAs.	
<p><i>Objective:</i></p> <p><u>8.1:</u> Maintain the value of aquatic and riparian/wetland habitats for HCP species by preserving and actively managing all aquatic and riparian/wetland habitat areas documented during adjusted baseline surveys and preserved in the HMAs.</p>	<p>AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs.</p> <p>AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
	<p>sedimentation.</p> <p>AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.</p> <p>AMM-21. Limit infrastructure projects in HMAs.</p> <p>AMM-23. Limit construction of new roads in HMAs.</p> <p>AMM-22. Equip all new and existing buildings and utility poles within or adjacent to western snowy plover habitat with anti-perch devices to prevent avian predators from depredating western snowy plover.</p> <p>AMM-26. Implement construction management best management practices.</p> <p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.</p> <p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.</p> <p>AMM-36. Install silt fences, fiber rolls, sand bags, straw bale barrier, or other sediment control devices where there is potential for sediment to move offsite and degrade natural communities, particularly vernal pools, ponds, creeks, or seasonal wetlands.</p> <p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p><u>8.2:</u> Maintain upland habitat quality in proximity to all wetlands, ponds, and riparian corridors preserved in the HMAs to support the life-history requirements of wetland-dependent HCP species.</p>	<p>AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.</p> <p>AMM-48. Limit livestock water use to no more than 3 ponds annually to prevent negative affects to aquatic habitat.</p> <p>AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.</p> <p>AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.</p> <p>AMM-21. Limit corridor and infrastructure projects in HMAs.</p> <p>AMM-23. Limit construction of new roads in HMAs.</p> <p>AMM-24. Relocate roads and trails away from aquatic and riparian/wetland habitats where it is evidenced that erosion, access, or other potential disturbances are resulting in significant damaging effects (as determined through the implementation of the monitoring measures in Chapter 6), and remove unneeded hardstand areas consistent with priorities established through watershed inventories.</p> <p>AMM-25. Site and design necessary roads or structures so they do not prevent California tiger salamander from traversing known or possible movement routes.</p> <p>AMM-26. Implement construction management best management practices.</p> <p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.</p> <p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.</p> <p>AMM-36. Install silt fences, fiber rolls, sand bags, straw bale barrier, or</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p><u>8.3:</u> Restore at least 5 acres of aquatic and riparian/wetland habitat in the FONM over the life of the HCP.</p>	<p>other sediment control devices where there is potential for sediment to move offsite and degrade natural communities, particularly vernal pools, ponds, creeks, or seasonal wetlands.</p> <p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.</p> <p>AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.</p> <p>AMM-42. Develop and implement habitat restoration and enhancement plans to identify best management practices and avoidance and minimization measures.</p>
Goal 9: Control activities in watershed of aquatic and riparian/wetland habitats within HMAs.	
<p><i>Objective:</i></p> <p><u>9.1:</u> Restore selected degraded or destroyed areas within the watershed of aquatic and associated riparian/wetland habitat preserved in the HMAs.</p> <p><u>9.2:</u> Control public and educational visitation to locations of aquatic and riparian/wetland habitats preserved in the HMAs to preclude loss of habitat or degradation of habitat quality.</p>	<p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-16. Conduct an access assessment during the planning process to identify necessary access controls for all Borderland parcels.</p> <p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.</p> <p>AMM-31. Develop and implement a public outreach and education plan.</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p><u>9.3:</u> Eliminate illegal vehicle/motorcycle trespass into all aquatic and riparian/wetland habitats in the HMAs.</p>	<p>AMM-16. Conduct an access assessment during the planning process to identify necessary access controls for all Borderland parcels.</p> <p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-31. Develop and implement a public outreach and education plan.</p>
<i>All Natural Communities</i>	
Goal 10: Control non-native plant species, non-native fish and wildlife, and diseases that could threaten HCP species and/or degrade habitat quality.	
<i>Objective:</i>	
<p><u>10.1:</u> Control the spread and reduce the abundance and distribution of noxious weed infestations using integrated vegetation management methods, with a goal of limiting the overall area of individual infestations of target species to no more than 5% of the total area of habitat. Categories of target species will be generated by the CRMP program members in collaboration with the Monterey Country Weed Management Area (WMA) based on a local assessment of distribution, impact and invasiveness of each species. The categories will be site-specific to Fort Ord and will be derived from noxious weeds (as defined by the California Department of Food and Agriculture) and invasive exotic plants listed by the California Invasive Plant Council (California Invasive Plant Council 2007 or latest list). If an area has a current weed cover of target species less than 5%, a more aggressive target shall be set based on the results of the adjusted baseline and incorporated into its RMP to ensure that habitat for HCP species is enhanced. In addition, noxious weed control may also include the removal of non-native annual grasses and seeding with native grasses to encourage their propagation.</p> <p><u>10.2:</u> Minimize use of chemical herbicides for controlling non-native invasive plant species within all HMAs over the term of the HCP.</p> <p><u>10.3:</u> Eliminate or reduce non-native wildlife that could threaten HCP species and/or degrade habitat quality within all HMAs.</p> <p><u>10.4:</u> Eliminate or reduce plant and animal diseases that have or may</p>	<p>AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs.</p> <p>AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.</p> <p>AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.</p> <p>AMM-42. Control invasive species, as defined by the CRMP working group recommendations, to prevent their spread into the adjacent HMA.</p> <p>AMM-50. Develop and implement a strategy to ensure that water features do not become a source for non-native species, such as bullfrogs, which could move into nearby habitat areas.</p> <p>AMM-51. Disinfect equipment according to the Declining Amphibian</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
spread into the Monterey area and that could affect HCP species and their habitats within all HMAs.	Population Task Force's Code of Practice to avoid transferring disease or pathogens between aquatic habitats. AMM-52. Use existing roads and trails when using vehicles to access monitoring locations.
Goal 11: Control and reduce erosion and restore disturbed sites.	
<p><i>Objective:</i></p> <p><u>11.1:</u> Reduce accelerated erosion caused by roads, paved areas and other impervious surfaces adjacent to and through the HMAs.</p> <p><u>11.2:</u> Restore disturbed areas to recreate characteristics similar to natural, functioning, undisturbed parts of the nearby landscape where possible.</p> <p><i>Species-Level Biological Goals and Objectives</i></p>	
Goal 12: Preserve and maintain or enhance the HCP plant species' populations within the HMAs.	
<p><i>Objective:</i></p> <p><u>12.1:</u> Maintain or increase the distribution of HCP plant species within each HMA wherever surveys indicate occurrence.</p>	
	<p>AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and sedimentation.</p> <p>AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.</p> <p>AMM-21. Limit corridor and infrastructure projects in HMAs.</p> <p>AMM-23. Limit construction of new roads in HMAs.</p> <p>AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.</p> <p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-1. Implement site plan as identified in the HMP, Fort Ord Reuse Plan (1997) and subsequent updates.</p> <p>AMM-11. Quantify impacts to Yadon's piperia and implement Yadon's piperia salvage and relocation protocol.</p> <p>AMM-13. Minimize ground-disturbance activities in the area mapped as potential Yadon's piperia habitat within HMAs.</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
	AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs.
	AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and sedimentation.
	AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.
	AMM-21. Limit road corridor and infrastructure projects in HMAs.
	AMM-23. Limit construction of new roads in HMAs.
	AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.
	AMM-30. Fence a portion of the FONR seaside bird's beak population to prevent over browsing by deer.
	AMM-31. Maintain cages around current known occurrences and cage new occurrences of Yadon's piperia found during baseline surveys and subsequent monitoring to protect plants from herbivory.
	AMM-32. Develop and implement a public outreach and education plan.
	AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.
	AMM-34. Selectively clip and trim perennial vegetation along minor roads and trails to reduce canopy closures.
	AMM-35. Implement maintenance rotations for roads and trails to keep trails from excess wear and to provide additional open habitat for annual plant establishment and contribution to the seed bank.
	AMM-37. Seed and straw disturbed areas outside of the road or trail corridor to facilitate revegetation.
	AMM-38. Limit herbicide and pesticide use and apply in accordance with AMMs identified for non-native species control.
	AMM-39. Apply seasonal restrictions to maintenance activities to avoid

Biological Goals and Objectives	Avoidance and Minimization Measures
<u>12.2:</u> Maintain or increase the abundance of HCP plant species within each HMA surveys indicate occurrence.	<p>or minimize adverse effects on western snowy plover and Smith's blue butterfly.</p> <p>AMM-40. Clean mowing equipment before use in habitat areas to prevent the spread of non-native noxious weeds.</p> <p>AMM-41. Maintain travel lanes and shoulders of roads in sandy soils as open sandy habitat for annual HCP plant species, to the extent possible, consistent with the purpose of the road.</p> <p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.</p> <p>AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.</p> <p>AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.</p> <p>AMM-52. Use existing roads and trails when using vehicles to access monitoring locations.</p> <p>AMM-1. Implement site plan as identified in the HMP, Fort Ord Reuse Plan (1997) and subsequent updates.</p> <p>AMM-11. Quantify impacts to Yadon's piperia and implement Yadon's piperia salvage and relocation protocol.</p> <p>AMM-13. Minimize ground-disturbance activities in the area mapped as potential Yadon's piperia habitat within HMAs.</p> <p>AMM-17. Incorporate non-native species control features into site</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
	<p>design for all Borderlands and HMAs.</p> <p>AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and sedimentation.</p> <p>AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.</p> <p>AMM-21. Limit road corridor and infrastructure projects in HMAs.</p> <p>AMM-23. Limit construction of new roads in HMAs.</p> <p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-30. Fence a portion of the FONR seaside bird's beak population to prevent over browsing by deer.</p> <p>AMM-31. Maintain cages around current known occurrences and cage new occurrences of Yadon's piperia found during baseline surveys and subsequent monitoring to protect plants from herbivory.</p> <p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.</p> <p>AMM-34. Selectively clip and trim perennial vegetation along minor roads and trails to reduce canopy closures.</p> <p>AMM-35. Implement maintenance rotations for roads and trails to keep trails from excess wear and to provide additional open habitat for annual plant establishment and contribution to the seed bank.</p> <p>AMM-37. Seed and straw disturbed areas outside of the road or trail corridor to facilitate revegetation.</p> <p>AMM-38. Limit herbicide and pesticide use and apply in accordance with AMMs identified for non-native species control.</p> <p>AMM-39. Apply seasonal restrictions to maintenance activities to avoid or minimize adverse effects on western snowy plover and Smith's blue</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p><u>12.3:</u> Reduce anthropogenic factors which negatively impact HCP plant species, including exotic plants and unnatural disturbances and erosion.</p>	<p>butterfly.</p> <p>AMM-40. Clean mowing equipment before use in habitat areas to prevent the spread of non-native noxious weeds.</p> <p>AMM-41. Maintain travel lanes and shoulders of roads in sandy soils as open sandy habitat for annual HCP plant species, to the extent possible, consistent with the purpose of the road.</p> <p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.</p> <p>AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.</p> <p>AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.</p> <p>AMM-52. Use existing roads and trails when using vehicles to access monitoring locations.</p> <p>AMM-13. Minimize ground-disturbance activities in the area mapped as potential Yadon's piperia habitat within HMAs.</p> <p>AMM-14. Establish and maintain fuelbreaks.</p> <p>AMM-15. Implement fire-wise planning.</p> <p>AMM-16. Conduct an access assessment during the planning process to identify necessary access controls for all Borderland parcels.</p> <p>AMM-17. Incorporate non-native species control features into site</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
	<p>design for all Borderlands and HMAs.</p> <p>AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and sedimentation.</p> <p>AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.</p> <p>AMM-21. Limit road corridor infrastructure projects in HMAs.</p> <p>AMM-23. Limit construction of new roads in HMAs.</p> <p>AMM-26. Implement construction management best management practices.</p> <p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.</p> <p>AMM-30. Fence a portion of the FONR seaside bird's beak population to prevent over browsing by deer.</p> <p>AMM-31. Maintain cages around current known occurrences and cage new occurrences of Yadon's piperia found during baseline surveys and subsequent monitoring to protect plants from herbivory.</p> <p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.</p> <p>AMM-34. Selectively clip and trim perennial vegetation along minor roads and trails to reduce canopy closures.</p> <p>AMM-35. Implement maintenance rotations for roads and trails to keep trails from excess wear and to provide additional open habitat for annual plant establishment and contribution to the seed bank.</p> <p>AMM-37. Seed and straw disturbed areas outside of the road or trail</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p><u>12.4:</u> Increase understanding of the ecological factors influencing the distribution, abundance, and population persistence of the HCP plant species within the HMAs in order to inform management and monitoring.</p>	<p>corridor to facilitate revegetation.</p> <p>AMM-38. Limit herbicide and pesticide use and apply in accordance with AMMs identified for non-native species control.</p> <p>AMM-39. Apply seasonal restrictions to maintenance activities to avoid or minimize adverse effects on western snowy plover and Smith's blue butterfly.</p> <p>AMM-40. Clean mowing equipment before use in habitat areas to prevent the spread of non-native noxious weeds.</p> <p>AMM-41. Maintain travel lanes and shoulders of roads in sandy soils as open sandy habitat for annual HCP plant species, to the extent possible, consistent with the purpose of the road.</p> <p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-45. Minimize use of chemical herbicides for controlling non-native invasive plant species for the term of the HCP.</p> <p>AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.</p> <p>AMM-52. Use existing roads and trails when using vehicles to access monitoring locations.</p> <p>AMM-52. Use existing roads and trails when using vehicles to access monitoring locations.</p>
<p>Goal 13: Preserve and manage coastal strand and coastal dune areas as suitable habitat for Smith's blue butterfly (<i>Euphilotes enoptes smithi</i>) and western snowy plover (<i>Charadrius nivosus ssp. nivosus</i>).</p> <p><i>Objective:</i></p> <p><u>13.1:</u> Control public access of all the coastal strand areas preserved within</p>	<p>AMM-27. Maintain regular security patrols and determine the need to</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p>FODSP to protect western snowy plover during its nesting period, typically March–September.</p> <p><u>13.2a:</u> Improve habitat quality for western snowy plover within all the coastal strand areas preserved within FODSP.</p> <p><u>13.2b:</u> Maintain an average rate of 1.3 young fledged per male, 11 males, and 15 chicks during 3 consecutive years within FODSP. Take remedial measures, such as increase predator management, public access restrictions, and habitat restoration, if the running averages drop more than 10% below the values above.</p>	<p>install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.</p> <p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-22. Equip all new and existing buildings and utility poles within or adjacent to western snowy plover habitat with anti-perch devices to prevent avian predators from depredating western snowy plover.</p> <p>AMM-39. Apply seasonal restrictions to maintenance activities to avoid or minimize adverse effects on western snowy plover and Smith’s blue butterfly.</p> <p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.</p> <p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-39. Apply seasonal restrictions to maintenance activities to avoid</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p><u>13.3:</u> Preserve 113 acres or as established by adjusted baseline, whichever is larger, of existing habitat for Smith's blue butterfly in coastal dune scrub within FODSP.</p> <p><u>13.4:</u> Include Smith's blue butterfly's buckwheat host plants as 10% of all plants propagated and introduced as part of the 250-acre dune scrub restoration program. One or both buckwheat species may be appropriate, depending on the location (see Mitigation Measure 9). <i>Eriogonum latifolium</i> tends to occur in dune habitat north of Stillwell hall, and <i>Eriogonum parvifolium</i> tends to occur in dune habitat south of 8th Street (Arnold 2008).</p> <p><u>13.5:</u> Create a continuous migration corridor through the Fort Ord coastal area for Smith's blue butterfly within FODSP by increasing Smith's blue butterfly's buckwheat host plant to at least 10% of vegetative cover.</p>	<p>or minimize adverse effects on western snowy plover and Smith's blue butterfly.</p> <p>AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.</p> <p>AMM-29. Fence Smith's blue butterfly habitat to minimize disturbance and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.</p>
<p>Goal 14: Preserve and maintain suitable aquatic and upland habitat for California tiger salamander (<i>Ambystoma californiense</i>) and California red-legged frog (<i>Rana draytonii</i>) in the HMAs.</p>	
<p><i>Objective:</i></p>	
<p><u>14.1:</u> Maintain the value of all aquatic habitats in the HMAs known to support or with potential to support California tiger salamander and California red-legged frog.</p>	<p>AMM-8. Exclusion fencing and work area impact minimization.</p> <p>AMM-16. Conduct an access assessment during the planning process to identify necessary access controls for all Borderland parcels.</p> <p>AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs.</p> <p>AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and sedimentation.</p> <p>AMM-20. Site allowable development in HMAs to avoid or reduce</p>

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	<p>impacts on HCP species and natural communities.</p> <p>AMM-21. Limit road corridor infrastructure projects in HMAs.</p> <p>AMM-23. Limit construction of new roads in HMAs.</p> <p>AMM-24. Relocate roads and trails away from aquatic and riparian/wetland habitats where it is evidenced that erosion, access, or other potential disturbances are resulting in significant damaging effects (as determined through the implementation of the monitoring measures in Chapter 6) , and remove unneeded hardstand areas consistent with priorities established through watershed inventories.</p> <p>AMM-25. Site and design necessary roads or structures so they do not prevent California tiger salamander from traversing known or possible movement routes.</p> <p>AMM-26. Implement construction management best management practices.</p> <p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.</p> <p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.</p> <p>AMM-36. Install silt fences, fiber rolls, sand bags, straw bale barrier, or other sediment control devices where there is potential for sediment to move offsite and degrade natural communities, particularly vernal pools, ponds, creeks, or seasonal wetlands.</p> <p>AMM-38. Limit herbicide and pesticide use and apply in accordance with AMMs identified for non-native species control.</p> <p>AMM-39. Apply seasonal restrictions to maintenance activities to avoid or minimize adverse effects on western snowy plover and Smith's blue butterfly.</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p><u>14.2:</u> Maintain suitable and accessible upland habitat adjacent to all known or potential breeding ponds in the HMAs for California tiger salamander and California red-legged frog.</p>	<p>AMM-33. Clean mowing equipment before use in habitat areas to prevent the spread of non-native noxious weeds.</p> <p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-48. Limit livestock water use to no more than three ponds annually to prevent negative affects to aquatic habitat.</p> <p>AMM-51. Disinfect equipment according to the Declining Amphibian Population Task Force's Code of Practice to avoid transferring disease or pathogens between aquatic habitats.</p> <p>AMM-14. Establish and maintain fuelbreaks.</p> <p>AMM-15. Implement fire-wise planning.</p> <p>AMM-16. Conduct an access assessment during the planning process to identify necessary access controls for all Borderland parcels.</p> <p>AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs.</p> <p>AMM-18. Limit artificial lighting at the urban/wildland interface.</p> <p>AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and sedimentation.</p> <p>AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.</p> <p>AMM-21. Limit road corridor and infrastructure projects in HMAs.</p> <p>AMM-23. Limit construction of new roads in HMAs.</p> <p>AMM-24. Relocate roads and trails away from aquatic and riparian/wetland habitats where it is evidenced that erosion, access, or other potential disturbances are resulting in significant damaging effects (as determined through the implementation of the monitoring measures in Chapter 6) , and remove unneeded hardstand areas consistent with priorities established through watershed inventories.</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
	<p>AMM-25. Site and design necessary roads or structures so they do not prevent California tiger salamander from traversing known or possible movement routes.</p> <p>AMM-26. Implement construction management best management practices.</p> <p>AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.</p> <p>AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.</p> <p>AMM-32. Develop and implement a public outreach and education plan.</p> <p>AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.</p> <p>AMM-37. Seed and straw disturbed areas outside of the road or trail corridor to facilitate revegetation.</p> <p>AMM-38. Limit herbicide and pesticide use and apply in accordance with AMMs identified for non-native species control.</p> <p>AMM-39. Apply seasonal restrictions to maintenance activities to avoid or minimize adverse effects on western snowy plover and Smith's blue butterfly.</p> <p>AMM-40. Clean mowing equipment before use in habitat areas to prevent the spread of non-native noxious weeds.</p> <p>AMM-41. Maintain travel lanes and shoulders of roads in sandy soils as open sandy habitat for annual HCP plant species, to the extent possible, consistent with the purpose of the road.</p> <p>AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.</p> <p>AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p>

Biological Goals and Objectives	Avoidance and Minimization Measures
<p>14.3: Eliminate or reduce non-native wildlife that predate on California tiger salamander and California red-legged frog in known and potential upland and aquatic habitat within HMAs.</p> <p>14.4: Control hybrid California tiger salamanders in aquatic habitat.</p> <p>14.5: In addition to Objective 8.3, restore and manage East Garrison Pond, and at least one additional aquatic feature totaling at least two acres, to provide suitable aquatic breeding habitat for California tiger salamander and California red-legged frog.</p>	<p>AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.</p> <p>AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.</p> <p>AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.</p> <p>AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.</p> <p>AMM-52. Use existing roads and trails when using vehicles to access monitoring locations.</p> <p>AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs.</p> <p>AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.</p> <p>AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs.</p> <p>AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.</p> <p>AMM-42. Develop and implement habitat restoration and enhancement plans to identify best management practices and avoidance and minimization measures.</p>

Table 5-2. HCP Required Actions – AMMs and Species Benefited

	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-legged Frog
Avoidance and Minimization Measures								
AMM-1. Implement site plan as identified in the HMP, Fort Ord Reuse Plan (1997), and subsequent updates.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-2. Maintain compliance with stay-ahead provision.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-3. Perform construction restriction review.							✓	
AMM-4. Employ weather and timing restrictions.							✓	
AMM-5. Perform California tiger salamander construction monitoring.							✓	
AMM-6. Provide education program for construction personnel.							✓	
AMM-7. Implement California tiger salamander relocation and mortality reduction measures.							✓	
AMM-8. Exclusion fencing and work area impact minimization.							✓	
AMM-9. Construct permanent barriers between the East Garrison South Reserve and development areas.							✓	
AMM-10. Implement Smith's blue butterfly removal and relocation protocol.					✓			
AMM-11. Quantify impacts to Yadon's piperia and implement Yadon's piperia salvage and relocation protocol.		✓						
AMM-12. Implement planning, protocol-level surveys, and seed collection for state-listed plant species.	✓			✓				
AMM-13. Minimize ground-disturbance activities in the area mapped as potential Yadon's piperia habitat within HMAs.		✓						
AMM-14. Establish and maintain fuelbreaks.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-15. Implement fire-wise planning.	✓	✓	✓	✓	✓	✓	✓	✓

	Sand Gilia	Yadon' s Piperia	Monterey Spineflower	Seaside Bird' s Beak	Smith' s Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-legged Frog
Avoidance and Minimization Measures								
AMM-16. Conduct an access assessment during the planning process to identify necessary access controls for all Borderland parcels.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-18. Limit artificial lighting at the urban/wildland interface.							✓	✓
AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and sedimentation.							✓	✓
AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-21. Limit road corridor and infrastructure projects in HMAs.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-22. Equip all new and existing buildings and utility poles within or adjacent to western snowy plover habitat with anti-perch devices to prevent avian predators from depredating western snowy plover.						✓		
AMM-23. Limit construction of new roads in HMAs.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-24. Relocate roads and trails away from aquatic and riparian/wetland habitats where it is evidenced that erosion, access, or other potential disturbances are resulting in significant damaging effects (as determined through the implementation of the monitoring measures in Chapter 6) and remove unneeded hardstand areas consistent with priorities established through watershed inventories.							✓	✓
AMM-25. Site and design necessary roads or structures so they do not prevent California tiger salamander from traversing known or possible movement routes.							✓	

	Sand Gilia	Yadon' s Piperia	Monterey Spineflower	Seaside Bird' s Beak	Smith' s Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-legged Frog
Avoidance and Minimization Measures								
AMM-26. Implement construction management best management practices.			✓	✓	✓	✓	✓	✓
AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.			✓	✓	✓	✓	✓	✓
AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.			✓	✓	✓	✓	✓	✓
AMM-29. Fence Smith's blue butterfly habitat to minimize disturbance and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass.					✓			
AMM-30. Fence a portion of the FONR seaside bird's beak population to prevent over browsing by deer.				✓				
AMM-31. Maintain cages around current known occurrences and cage new occurrences of Yadon's piperia found during baseline surveys and subsequent monitoring to protect plants from herbivory.		✓						
AMM-32. Develop and implement a public outreach and education plan.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-34. Selectively clip and trim perennial vegetation along minor roads and trails to reduce canopy closures.	✓	✓	✓	✓				

	Sand Gilia	Yadon' s Piperia	Monterey Spineflower	Seaside Bird' s Beak	Smith' s Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-legged Frog
Avoidance and Minimization Measures								
AMM-35. Implement maintenance rotations for roads and trails to keep trails from excess wear and to provide additional open habitat for annual plant establishment and contribution to the seed bank.	✓		✓	✓				
AMM-36. Install silt fences, fiber rolls, sand bags, straw bale barrier, or other sediment control devices where there is potential for sediment to move offsite and degrade natural communities, particularly vernal pools, ponds, creeks, or seasonal wetlands.							✓	✓
AMM-37. Seed and straw disturbed areas outside of the road or trail corridor to facilitate revegetation.	✓	✓	✓	✓	✓			
AMM-38. Limit herbicide and pesticide use and apply in accordance with AMMs identified for non-native species control.	✓	✓	✓	✓	✓			
AMM-39. Apply seasonal restrictions to maintenance activities to avoid or minimize adverse effects on western snowy plover and Smith's blue butterfly.					✓	✓		
AMM-40. Clean mowing equipment before use in habitat areas to prevent the spread of non-native noxious weeds.	✓	✓	✓	✓	✓			
AMM-41. Maintain travel lanes and shoulders of roads in sandy soils as open sandy habitat for annual HCP plant species, to the extent possible, consistent with the purpose of the road.	✓		✓	✓				
AMMs for Erosion Control								
AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.	✓	✓	✓	✓	✓	✓	✓	✓

	Sand Gilia	Yadon' s Piperia	Monterey Spineflower	Seaside Bird' s Beak	Smith' s Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-legged Frog
Avoidance and Minimization Measures								
AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-45. Minimize use of chemical herbicides for controlling non-native invasive plant species for the term of the HCP.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas for all projects that require non-native invasive species control.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-48. Limit livestock water use to no more than three ponds annually to prevent negative affects to aquatic habitat.							✓	✓
AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-50. Develop and implement a strategy to ensure that water features do not become a source for non-native species, such as bullfrogs, which could move into nearby habitat areas.							✓	✓

	Sand Gilia	Yadon' s Piperia	Monterey Spineflower	Seaside Bird' s Beak	Smith' s Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-legged Frog
Avoidance and Minimization Measures								
AMMs for Monitoring								
AMM-51. Disinfect equipment according to the Declining Amphibian Population Task Force's Code of Practice to avoid transferring disease or pathogens between aquatic habitats.							✓	✓
AMM-52. Use existing roads and trails when using vehicles to access monitoring locations.	✓	✓	✓	✓	✓	✓	✓	✓
AMM-53. Clean boots and equipment to prevent the spread of non-native plant species and pathogens.	✓	✓	✓	✓	✓	✓	✓	✓

Table 5-3. HCP Required Actions – Covered Activity Locations that Require AMM Implementation

Avoidance and Minimization Measures	Development Areas	Borderlands				HMAs														
		1	2	3	4	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE	
AMMs for all Covered Activities																				
AMM-1. Implement site plan as identified in the HMP, <i>Fort Ord Reuse Plan</i> (1997), and subsequent updates.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
AMM-2. Maintain compliance with stay-ahead provision.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
AMM-3. Perform construction restriction review.						✓		✓	✓	✓	✓	✓	✓	✓	✓				✓	
AMM-4. Employ weather and timing restrictions.						✓		✓	✓	✓	✓	✓	✓	✓	✓				✓	
AMM-5. Perform California tiger salamander construction monitoring.						✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
AMM-6. Provide education program for construction personnel.						✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
AMM-7. Implement California tiger salamander relocation and mortality reduction measures.						✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
AMM-8. Exclusion fencing and work area impact minimization.						✓		✓	✓	✓	✓	✓	✓	✓	✓				✓	
AMM-9. Construct permanent barriers between the East Garrison South Reserve and development areas.	✓								✓											
AMM-10. Implement Smith’s blue butterfly removal and relocation protocol.	✓	✓	✓	✓	✓		✓	✓								✓		✓		

Avoidance and Minimization Measures	Development Areas	Borderlands				HMAs													
		1	2	3	4	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
AMM-11. Quantify impacts to Yadon's piperia and implement Yadon's piperia salvage and relocation protocol.	✓	✓	✓	✓	✓														
AMM-12. Implement planning, protocol-level surveys, and seed collection for state-listed plant species.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓
AMMs for Siting and Design of New Development in and adjacent to HMAs																			
AMM-13. Minimize ground-disturbance activities in the area mapped as potential Yadon's piperia habitat within HMAs.						✓												✓	
AMM-14. Establish and maintain fuelbreaks.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓		✓	✓	✓	✓			✓	✓	✓		✓	
AMM-15. Implement fire-wise planning.		✓	✓	✓	✓	✓		✓	✓	✓	✓			✓	✓	✓		✓	
AMM-16. Conduct an access assessment during the planning process to identify necessary access controls for all Borderland parcels.		✓ ^a	✓ ^a	✓ ^a	✓ ^a														
AMM-17. Incorporate non-native species control features into site design for all Borderlands and HMAs.		✓	✓	✓	✓														
AMM-18. Limit artificial lighting at the urban/wildland interface.		✓	✓	✓	✓														

Avoidance and Minimization Measures	Development Areas	Borderlands				HMAs													
		1	2	3	4	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
AMM-19. Design and implement site design measures to avoid or minimize direct and indirect impacts of new development on local hydrological conditions and reduce potential for increased erosion and sedimentation.		✓	✓	✓	✓														
AMM-20. Site allowable development in HMAs to avoid or reduce impacts on HCP species and natural communities.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-21. Limit road corridor and infrastructure projects in HMAs.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-22. Equip all new and existing buildings and utility poles within or adjacent to western snowy plover habitat with anti-perch devices to prevent avian predators from depredating western snowy plover.							✓												
AMM-23. Limit construction of new roads in HMAs.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Avoidance and Minimization Measures	Development Areas	Borderlands				HMAs													
		1	2	3	4	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
AMM-24. Relocate roads and trails away from aquatic and riparian/wetland habitats where it is evidenced that erosion, access, or other potential disturbances are resulting in significant damaging effects (as determined through the implementation of the monitoring measures in Chapter 6) and remove unneeded hardstand areas consistent with priorities established through watershed inventories.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-25. Site and design necessary roads or structures so they do not prevent California tiger salamander from traversing known or possible movement routes.						✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
AMMs for Construction in and adjacent to HMAs																			
AMM-26. Implement construction management best management practices.		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Avoidance and Minimization Measures	Development Areas	Borderlands				HMAs													
		1	2	3	4	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
AMMs for Recreational, Educational, and Research Use in HMAs and Property Ownership of Borderlands																			
AMM-27. Maintain regular security patrols and determine the need to install and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass. Timing for patrols will be determined by the HMA Manager in response to natural changes in the local landscape (e.g. dune movement) and changes in levels of visitor use.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-28. Implement an annual trail maintenance program to reduce the potential effects of hiker and equestrian use of the area on HCP species.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-29. Fence Smith’s blue butterfly habitat to minimize disturbance and maintain access controls to regulate use and control pedestrian, pet, bicycle, and motorized vehicle trespass.							✓												
AMM-30. Fence a portion of the FONR seaside bird’s beak population to prevent over browsing by deer.								✓											
AMM-31. Maintain cages around current known occurrences and cage new occurrences of Yadon’s piperia found during baseline surveys and subsequent monitoring to protect plants from herbivory.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Avoidance and Minimization Measures	Development Areas	Borderlands				HMAs													
		1	2	3	4	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
AMM-32. Develop and implement a public outreach and education plan.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMMs for Road Corridors and Infrastructure Construction, Operations and Maintenance in and adjacent to HMAs																			
AMM-33. Design and implement best management practices for maintenance of roads and facilities in HMAs.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMMs for Road and Trail Maintenance in HMAs																			
AMM-34. Selectively clip and trim perennial vegetation along minor roads and trails to reduce canopy closures.						✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-35. Implement road and trail rotations to keep trails from excess wear and to provide additional open habitat for annual plant establishment and contribution to the seed bank.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-36. Install silt fences, fiber rolls, sand bags, straw bale barrier, or other sediment control devices where there is potential for sediment to move offsite and degrade natural communities, particularly vernal pools, ponds, creeks, or seasonal wetlands.		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-37. Seed and straw disturbed areas outside of the road or trail corridor to facilitate revegetation.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-38. Limit herbicide and pesticide use and apply in accordance with AMMs identified for non-native species control.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Avoidance and Minimization Measures	Development Areas	Borderlands				HMAs													
		1	2	3	4	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
AMM-39. Apply seasonal restrictions to maintenance activities to avoid or minimize adverse effects on western snowy plover and Smith's blue butterfly. ¹⁵	✓	✓	✓	✓	✓		✓	✓								✓		✓	
AMM-40. Clean mowing equipment before use in habitat areas to prevent the spread of non-native noxious weeds.		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-41. Maintain travel lanes and shoulders of roads in sandy soils as open sandy habitat for annual HCP plant species, to the extent possible, consistent with the purpose of the road.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMMs for Erosion Control																			
AMM-42. Develop and implement erosion control measures to prevent sediment transport into and within habitat areas.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMMs for Habitat Restoration and Enhancement																			
AMM-43. Develop and implement a habitat restoration, enhancement, and management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

¹⁵ If additional Smith's blue butterfly habitat is identified in unchecked HMAs during baseline surveys, AMM-32 will be implemented in those HMAs.

Avoidance and Minimization Measures	Development Areas	Borderlands				HMAs													
		1	2	3	4	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
AMMs for Prescribed Burns and Alternative Vegetative Management																			
AMM-44. Develop and implement fire and alternative vegetative management plan which includes AMMs and additional best management practices (if applicable) and is consistent with HMA-Specific RMP.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMMs for Non-Native Invasive Species Control																			
AMM-45. Minimize use of chemical herbicides for controlling non-native invasive plant species for the term of the HCP.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-46. Provide an overview of sensitive species and non-native invasive species control protocols to all individuals involved in weed removal activities to ensure their awareness of sensitive areas.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-47. Cover areas susceptible to erosion following manual or mechanical removal of non-native species with certified weed-free straw or other non-impacting erosion control material.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-48. Limit livestock water use to no more than three ponds annually to prevent negative affects to aquatic habitat.						✓													

Avoidance and Minimization Measures	Development Areas	Borderlands				HMAs													
		1	2	3	4	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
AMM-49. Control invasive species, as defined by the Cooperative and HMA managers in consultation with the TAC, to prevent their spread.		✓ ^a	✓ ^a	✓ ^a	✓ ^a	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-50. Develop and implement a strategy to ensure that water features do not become a source for non-native species, such as bullfrogs, which could move into nearby habitat areas.		✓ ^a	✓ ^a	✓ ^a	✓ ^a														
AMMs for Monitoring																			
AMM-51. Disinfect equipment according to the Declining Amphibian Population Task Force's Code of Practice to avoid transferring disease or pathogens between aquatic habitats.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-52. Use existing roads and trails when using vehicles to access monitoring locations.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMM-53. Clean boots and equipment to prevent the spread of non-native plant species and pathogens.						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

^a The Cooperative will be responsible for AMM implementation on the behalf of Monterey County, City of Marina, Monterey Peninsula College, CSUMB, UC, City of Seaside, City of Del Rey Oaks, City of Monterey, and Monterey Regional Park District within Borderland parcels.

Table 5-4. Relationship between Biological Goals and Objectives and Mitigation Measures

Biological Goals and Objectives	Mitigation Measures
<i>Landscape Level</i>	
Goal 1: Protect and maintain landscapes comprised of representative natural communities and covered species in the habitat reserve system	
<i>Objective:</i>	
<u>1.1:</u> Create a habitat reserve system within the Plan Area, at the same pace of or ahead of impacts, that adheres to the principles of conservation biology and reserve design described in AMM-1.	Mitigation Measure-2. Establish a base-wide, connected habitat reserve system in the Plan Area.
<i>Maritime Chaparral</i>	
Goal 2: Preserve, enhance, and maintain the quality and extent of maritime chaparral habitat within HMAs.	
<i>Objective:</i>	
<u>2.1:</u> Use prescribed burning, commencing in year 20 of Plan implementation, on 1,000 to 1,500 acres each decade to provide a range of successional stages, maintain native species diversity, and maintain habitat for herbaceous HCP plant species within the Fort Ord National Monument (FONM).	Mitigation Measure-22. Use prescribed burning on a rotational basis and wildfire suppression strategies, covering about 1,000–1,500 acres in the FONM each decade, to replicate desired future conditions and fulfill vegetation and fuels management objectives.
<u>2.2:</u> Within all maritime chaparral preserved in the HMAs, test alternative vegetation treatments to provide a range of successional stages, maintain native species diversity, and maintain habitat for herbaceous HCP plant species for those areas where chaparral canopy is closed or increasing and where prescribed burning is particularly difficult to conduct due to existing residential development. This includes target maritime chaparral areas in the FONM, East Garrison Reserve, Parker Flats Reserve, FONR, and Range 45 Reserve.	Mitigation Measure-23. Schedule a habitat management burn(s) on East Garrison South Reserve in advance of the second phase of East Garrison development. Mitigation Measure-24. Maintain healthy populations of HCP species, maintain a mosaic of age-class stands, and protect against wildfires with prescribed burns or alternative vegetative management methods. Mitigation Measure-25. Use mechanical thinning and understory clearing in lieu of prescribed burning as determined necessary and appropriate to maintain healthy populations of HCP species, create a mixed age-class structure of oak woodland stands, and reduce fuel loads in areas considered too hazardous to burn. Mitigation Measure-34. Use research-oriented vegetation treatments in lieu of in-season prescribed burning on up to 500 acres of maritime chaparral to maintain healthy populations of HCP species and a mixed age-class structure for the maritime chaparral habitats on a case-by-case basis to inform adaptive management.

Biological Goals and Objectives

2.3: Provide an adequate disturbance regime to sustain chaparral species that require openings often associated with early seral-stage chaparral following fire within the 337 acres of maritime chaparral in the FONR.

2.4: Protect against noxious weed infestations on approximately 1,000–1,500 acres of managed lands each decade in maritime chaparral in the FONM.

2.5: Augment 69 acres of prior maritime chaparral restoration by seeding restored sites with HCP plant species and other native species. The Permittees will augment prior active and passive restoration efforts on 69 acres of maritime chaparral at FONM by seeding sand gilia, seaside bird's beak, and Monterey spineflower, and seeding and planting later successional stage species (e.g., manzanitas and ceanothus).

Goal 3: Restore maritime chaparral habitat in targeted areas.

Objective:

3.1: Restore up to 15 acres of maritime chaparral annually in the FONM for a total of 100–150 acres over the term of this HCP.

3.2: Restore maritime chaparral within the FONR Corridor Reserve by year 25 of HCP implementation.

Coastal Strand and Dunes

Goal 4: Preserve and maintain coastal strand habitat in the Fort Ord coastal area.

Objective:

Mitigation Measures

Mitigation Measure-35. Initiate a pilot program to test use of manual (hand-cutting, propane torches, grass-specific herbicides, temporary mulching, and other methods) as available where patches of invasive grasses occur within maritime chaparral or oak woodland communities.

Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.

Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.

Mitigation Measure-6. Augment prior maritime chaparral restoration by seeding with restored sites with HCP plant species and other native species.

Mitigation Measure-5. Restore up to 15 acres of maritime chaparral annually for a total of 100 to 150 acres within the HMAs.

Mitigation Measure-6. Augment prior maritime chaparral restoration by seeding with restored sites with HCP plant species and other native species.

Mitigation Measure-7. Phase restoration of the Corridor Reserve by identifying sites during adjusted baseline beginning with vegetation mapping and implementing weed control techniques at target sites.

Biological Goals and Objectives

4.1: Protect and actively manage approximately 150 acres of existing beaches, bluffs, and blowouts along the Fort Ord shoreline within FODSP.

Mitigation Measures

Mitigation Measure-12. Manage approximately 50% of restored lands within FODSP to support annual species including sand gilia and Monterey spineflower.

Goal 5: Restore, enhance and maintain coastal dune scrub habitat within the Fort Ord coastal area.

Objective:

5.1: Restore at least 420 acres of disturbed or degraded land to coastal dune scrub habitat.

Mitigation Measure-10. Treat and/or hand remove iceplant mats and other dominant non-native plants at restoration sites.

Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.

5.2: Encourage and/or facilitate the establishment of sand gilia (*Gilia tenuiflora* ssp. *arenaria*) and Monterey spineflower (*Chorizanthe pungens* var. *pungens*) through targeted restoration and management actions within 125 acres of FODSP.

Mitigation Measure-12. Manage approximately 50% of restored lands within FODSP to support annual species including sand gilia and Monterey spineflower.

5.3: Limit coverage of iceplant or other noxious weeds (not including annual grasses) in restored coastal dune scrub to less than 5% the total area of restored habitat within FODSP.

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.

5.4: Protect coastal strand and dune habitat quality on approximately 550 acres within the FODSP by limiting public access.

None Applicable. See Table 5-1 for AMMs.

Oak Woodlands

Goal 6: Preserve and maintain the quality, canopy cover, and extent of oak woodlands in HMAs.

Objective:

6.1: Combat pathogen and disease outbreaks to minimize loss of oak trees and maintain the extent of oak woodland habitat documented during adjusted baseline surveys.

None Applicable. See Table 5-1 for AMMs and Chapter 8 for Changed Circumstances (Section 8.1.1.2).

6.2: Within all oak woodland habitat preserved in the HMAs, maintain healthy populations of HCP species and mixed age-class structure stands.

Mitigation Measure-25. Use mechanical thinning and understory clearing in lieu of prescribed burning as determined necessary and appropriate to maintain healthy populations of HCP species, create a mixed age-class structure of oak woodland stands, and reduce fuel loads in areas considered too hazardous to burn.

Biological Goals and Objectives

6.3: Promote the reestablishment of natural biotic systems, including interacting microbial, invertebrate, and vertebrate communities within all oak woodland habitat preserved in the HMAs by allowing for the accumulation of fallen trees, standing dead trees, and duff.

6.4: Reestablish appropriate oak species, canopy cover, and associated understory species in areas that had been degraded by historical uses within all oak woodland habitat preserved in the HMAs.

Grasslands

Goal 7: Preserve, enhance, and maintain grassland plant communities within HMAs.

Objective:

7.1: Preserve and maintain or enhance the quality of native grassland species, including native forbs and grass species, where they occur, using methods such as reducing fuels, controlling non-native invasive grasses and forbs, and reducing thatch buildup, within all the grassland plant communities preserved in the HMAs

7.2: Where possible, reestablish or introduce appropriate native species in areas that were degraded by historical uses or that are otherwise determined suitable for restoration within all the grassland plant communities preserved within the HMAs.

Aquatic and Riparian/Wetland Habitats

Goal 8: Preserve and maintain the quality and extent of aquatic and riparian/wetland habitats within HMAs.

Objective:

8.1: Maintain the value of aquatic and riparian/wetland habitats for HCP species by preserving and actively managing all aquatic and riparian/wetland habitat areas documented during adjusted baseline surveys and preserved in the HMAs.

8.2: Maintain upland habitat quality in proximity to all wetlands, ponds, and riparian corridors preserved in the HMAs to support the life-history requirements of wetland-dependent HCP species.

8.3: Restore at least 5 acres of aquatic and riparian/wetland habitat in the FONM over the life of the HCP.

Mitigation Measures

Mitigation Measure-67. Maintain the extent of habitat woodland wildlife species by preserving fallen trees, standing dead trees, and duff and prohibit collection of wood in scrub oak, oak woodlands, or woodland savannah.

Mitigation Measure-15. Identify potential restoration sites, evaluate oak woodland regeneration within existing stands, and plant native oak seedlings where appropriate to improve habitat quality.

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.

Mitigation Measure-17. Enhance or restore degraded sites in grasslands.

Mitigation Measure-18. Restore at least 5 acres of aquatic and riparian/wetland habitat over the term of the HCP.

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.

Mitigation Measure-18. Restore at least 5 acres of aquatic and riparian/wetland habitat over the term of the HCP.

Biological Goals and Objectives	Mitigation Measures
Goal 9: Control activities in the watershed of aquatic and riparian/wetland habitats within HMAs.	
<i>Objective:</i>	
<u>9.1:</u> Restore selected degraded or destroyed areas within the watershed of aquatic and associated riparian/wetland habitat preserved in the HMAs.	Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.
<u>9.2:</u> Control public and educational visitation to locations of aquatic and riparian/wetland habitats preserved in the HMAs into preclude loss of habitat or degradation of habitat quality.	None Applicable. See Table 5-1 for AMMs.
<u>9.3:</u> Eliminate illegal vehicle/motorcycle trespass into all aquatic and riparian/wetland habitats in the HMAs.	None Applicable. See Table 5-1 for AMMs.
<i>All Natural Communities</i>	
Goal 10: Control non-native plant species, non-native fish and wildlife, and diseases that could threaten HCP species and/or degrade habitat quality.	
<i>Objective:</i>	
<u>10.1:</u> Control the spread and reduce the abundance and distribution of noxious weed infestations using integrated vegetation management methods, with a goal of limiting the overall area of individual infestations of target species to no more than 5% of the total area of habitat. Categories of target species will be generated by the HMA Manager and Wildlife Agencies (hereafter referred to as the Technical Advisory Committee [TAC]) in collaboration with the Monterey Country Weed Management Area (WMA) based on a local assessment of distribution, impact and invasiveness of each species. The categories will be site-specific to Fort Ord and will be derived from noxious weeds (as defined by the California Department of Food and Agriculture) and invasive exotic plants listed by the California Invasive Plant Council (California Invasive Plant Council 2007 or latest list). If an area has a current weed cover of target species less than 5%, a more aggressive target shall be set based on the results of the adjusted baseline and incorporated into its RMP to ensure that habitat for HCP species is enhanced. In addition, noxious weed control may also include the removal of non-native annual grasses and seeding with native grasses to encourage their propagation.	Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.
<u>10.2:</u> Minimize use of chemical herbicides for controlling non-native invasive plant species within all HMAs over the term of the HCP.	None Applicable. See Table 5-1 for AMMs.

Biological Goals and Objectives

10.3: Eliminate or reduce non-native wildlife that could threaten HCP species and/or degrade habitat quality within all HMAs.

10.4: Eliminate or reduce plant and animal diseases that have or may spread into the Monterey area and that could affect HCP species and their habitats within all HMAs.

Mitigation Measures

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.

None Applicable. See Table 6-1 for Monitoring and Chapter 8 for Changed Circumstances (Section 8.1.1.2).

Goal 11: Control and reduce erosion and restore disturbed sites.

Objective:

11.1: Reduce accelerated erosion caused by roads, paved areas and other impervious surfaces adjacent to and through the HMAs.

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.

Mitigation Measure-33. Control erosion as necessary to prevent degradation of areas mapped as potential Yadon's piperia habitat.

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

11.2: Restore disturbed areas to recreate characteristics similar to natural, functioning, undisturbed parts of the nearby landscape where possible.

Mitigation Measure-32. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.

Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs.

Species-Level Biological Goals and Objectives

Goal 12: Preserve and maintain or enhance the HCP plant species' populations within the HMAs.

Objective:

12.1: Maintain or increase the distribution of HCP plant species within each HMA wherever surveys indicate occurrence.

Mitigation Measure-5. Restore up to 15 acres of maritime chaparral annually for a total of 100 to 150 acres within the HMAs.

Mitigation Measure-7. Augment prior maritime chaparral restoration by seeding with restored sites with HCP plant species and other native species.

Biological Goals and Objectives**Mitigation Measures**

Mitigation Measure-7. Phase restoration of the Corridor Reserve by identifying sites during adjusted baseline beginning with vegetation mapping and implementing weed control techniques at target sites.

Mitigation Measure-8. Relocation of host plant material.

Mitigation Measure-10. Treat and/or hand remove iceplant mats and other dominant non-native plants at restoration sites.

Mitigation Measure-12. Manage approximately 50% of restored lands within FODSP to support annual species including sand gilia and Monterey spineflower.

Mitigation Measure-15. Identify potential restoration sites, evaluate oak woodland regeneration within existing stands, and plant native oak seedlings where appropriate to improve habitat quality.

Mitigation Measure-17. Enhance or restore degraded sites in grasslands.

Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs.

Mitigation Measure-23. Schedule a habitat management burn(s) on East Garrison South Reserve in advance of the second phase of East Garrison development.

Mitigation Measure-35. Initiate a pilot program to test use of manual (hand-) cutting, propane torches, grass-specific herbicides, temporary mulching, and other methods as available where patches of invasive grasses occur within maritime chaparral or oak woodland communities.

Mitigation Measure-22. Use prescribed burning on a rotational basis and wildfire suppression strategies, covering about 1,000–1,500 acres in the FONM each decade, to replicate desired future conditions and fulfill vegetation and fuels management objectives.

Mitigation Measure-24. Maintain healthy populations of HCP species, maintain a mosaic of age-class stands, and protect against wildfires with prescribed burns or alternative vegetative management methods.

Mitigation Measure-25. Use mechanical thinning and understory clearing in lieu of prescribed burning as determined necessary and appropriate to maintain healthy populations of HCP species, create a mixed age-class structure of oak woodland stands, and reduce fuel loads in areas considered too hazardous to burn.

Biological Goals and Objectives

12.2: Maintain or increase the abundance of HCP plant species within each HMA wherever surveys indicate occurrence.

Mitigation Measures

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.

Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.

Mitigation Measure-33. Control erosion as necessary to prevent degradation of areas mapped as potential Yadon's piperia habitat.

Mitigation Measure-34. Use research-oriented vegetation treatments in lieu of in-season prescribed burning on up to 500 acres of maritime chaparral to maintain healthy populations of HCP species and a mixed age-class structure for the maritime chaparral habitats on a case-by-case basis to inform adaptive management.

Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.

Mitigation Measure-37. Mitigate impacts to Yadon's piperia by creating new occurrences at a ratio of 2 : 1 (restored : impacted), as measured by area of occupied habitat and numbers of plants.

Mitigation Measure-39. Mitigate impacts related to FORTAG at a 1:1 ratio.

Mitigation Measure-40. Mitigate impacts related to the Marina Airport runway extension at a 1:1.25 ratio and the new road at 1:1.

Mitigation Measure-5. Restore up to 15 acres of maritime chaparral annually for a total of 100 to 150 acres within the HMAs.

Mitigation Measure-7. Phase restoration of the Corridor Reserve by identifying sites during adjusted baseline beginning with vegetation mapping and implementing weed control techniques at target sites.

Biological Goals and Objectives**Mitigation Measures**

Mitigation Measure-10. Treat and/or hand remove iceplant mats and other dominant non-native plants at restoration sites.

Mitigation Measure-8. Relocation of host plant material.

Mitigation Measure-12. Manage approximately 50% of restored lands within FODSP to support annual species including sand gilia and Monterey spineflower.

Mitigation Measure-15. Identify potential restoration sites, evaluate oak woodland regeneration within existing stands, and plant native oak seedlings where appropriate to improve habitat quality.

Mitigation Measure-17. Enhance or restore degraded sites in grasslands.

Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs.

Mitigation Measure-23. Schedule a habitat management burn(s) on East Garrison South Reserve in advance of the second phase of East Garrison development.

Mitigation Measure-35. Initiate a pilot program to test use of manual (hand-) cutting, propane torches, grass-specific herbicides, temporary mulching, and other methods as available where patches of invasive grasses occur within maritime chaparral or oak woodland communities.

Mitigation Measure-22. Use prescribed burning on a rotational basis and wildfire suppression strategies, covering about 1,000–1,500 acres in the FONM each decade, to replicate desired future conditions and fulfill vegetation and fuels management objectives.

Mitigation Measure-24. Maintain healthy populations of HCP species, maintain a mosaic of age-class stands, and protect against wildfires with prescribed burns or alternative vegetative management methods.

Mitigation Measure-25. Use mechanical thinning and understory clearing in lieu of prescribed burning as determined necessary and appropriate to maintain healthy populations of HCP species, create a mixed age-class structure of oak woodland stands, and reduce fuel loads in areas considered too hazardous to burn.

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.

Biological Goals and Objectives

12.3: Reduce anthropogenic factors which negatively impact HCP plant species, including exotic plants and unnatural disturbances and erosion.

Mitigation Measures

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.

Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.

Mitigation Measure-33. Control erosion as necessary to prevent degradation of areas mapped as potential Yadon's piperia habitat.

Mitigation Measure-34. Use research-oriented vegetation treatments in lieu of in-season prescribed burning on up to 500 acres of maritime chaparral to maintain healthy populations of HCP species and a mixed age-class structure for the maritime chaparral habitats on a case-by-case basis to inform adaptive management.

Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.

Mitigation Measure-37. Mitigate impacts to Yadon's piperia by creating new occurrences at a ratio of 2 : 1 (restored : impacted), as measured by area of occupied habitat and numbers of plants.

Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs.

Mitigation Measure-28. Use livestock grazing (sheep, goats) in FONM grassland areas between January and August each year to reduce fuels, control non-native invasive grasses and forbs, and reduce thatch buildup that can inhibit native forbs.

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

Biological Goals and Objectives

12.4: Increase understanding of the ecological factors influencing the distribution, abundance, and population persistence of the HCP plant species within the HMAs in order to inform management and monitoring.

Mitigation Measures

Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.

Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.

Mitigation Measure-33. Control erosion as necessary to prevent degradation of areas mapped as potential Yadon's piperia habitat.

Mitigation Measure-34. Use research-oriented vegetation treatments in lieu of in-season prescribed burning on up to 500 acres of maritime chaparral to maintain healthy populations of HCP species and a mixed age-class structure for the maritime chaparral habitats on a case-by-case basis to inform adaptive management.

Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.

Mitigation Measure-38. Develop a Yadon's piperia management plan.

Goal 13: Preserve and manage coastal strand and coastal dune areas as suitable habitat for western snowy plover (*Charadrius nivosus* ssp. *nivosus*) and Smith's blue butterfly (*Euphilotes enoptes smithi*).

Objective:

13.1: Control public access of all the coastal strand areas preserved within FODSP to protect western snowy plover during its nesting period, typically March–September.

13.2a: Improve habitat quality for western snowy plover within all the coastal strand areas preserved within FODSP.

None Applicable. See Table 5-1 for AMMs.

Mitigation Measure-14. Manage the 4-mile stretch of ocean beach and associated bluffs and sandy blowouts as undeveloped beach frontage to benefit western snowy plover.

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.

Mitigation Measure- 29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation, and/or infestations within the HMAs within 1 year of identification and in accordance with base-wide priorities.

Biological Goals and Objectives

13.2b: Maintain a 3-year running average rate of 1.3 young fledged per male, 11 breeding males per year, and 15 chicks fledged per year within FODSP. Take remedial measures, such as increased predator management, public access restrictions, and habitat restoration, if the running averages drop more than 10% below the values above.

13.3: Preserve 113 acres or as established by adjusted baseline, whichever is larger, of existing habitat for Smith's blue butterfly in coastal dune scrub within FODSP.

Mitigation Measures

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.

Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.

Mitigation Measure-14. Manage the 4-mile stretch of ocean beach and associated bluffs and sandy blowouts as undeveloped beach frontage to benefit western snowy plover.

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.

Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.

Biological Goals and Objectives

13.4: Include Smith's blue butterfly's buckwheat host plants as 10% of all plants propagated and introduced as part of the 250-acre dune scrub restoration program. One or both buckwheat species may be appropriate, depending on the location (see Mitigation Measure 9). *Eriogonum latifolium* tends to occur in dune habitat north of Stillwell hall, and *Eriogonum parvifolium* tends to occur in dune habitat south of 8th Street (Arnold 2008).

13.5: Create a continuous migration corridor through the Fort Ord coastal area for Smith's blue butterfly within FODSP by increasing Smith's blue butterfly's buckwheat host plant to at least 10% of vegetative cover.

Goal 14: Preserve, maintain, and restore occupied and suitable aquatic and upland habitat for California tiger salamander (*Ambystoma californiense*) and California red-legged frog (*Rana draytonii*) in the HMAs.

Objective:

14.1: Maintain the value of all aquatic habitats in the HMAs known to support or with potential to support California tiger salamander and California red-legged frog.

Mitigation Measures

Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.

Mitigation Measure-9. Include one of the two species of buckwheat that are host plants for Smith's blue butterfly in all habitat restoration projects within FODSP.

Mitigation Measure-11. Give high priority to habitat restoration projects in areas where Smith's blue butterfly populations have been documented.

Mitigation Measure-13. Identify and restore sites along FODSP's north-south axis that could provide a continuous migration corridor for Smith's blue butterfly.

Mitigation Measure-18. Restore at least 5 acres of aquatic and riparian/wetland habitat over the term of the HCP.

Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs.

Mitigation Measure-27. Control hybrid tiger salamanders.

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

Biological Goals and Objectives

14.2: Maintain suitable and accessible upland habitat adjacent to all known or potential breeding ponds in the HMAs for California tiger salamander and California red-legged frog.

Mitigation Measures

Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.

Mitigation Measure-15. Identify potential restoration sites, evaluate oak woodland regeneration within existing stands, and plant native oak seedlings where appropriate to improve habitat quality.

Mitigation Measure-17. Enhance or restore degraded sites in grasslands.

Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs.

Mitigation Measure-21. Maintain characteristics of confirmed occupied upland habitat for CTS in the HMAs as documented during baseline studies and ongoing monitoring.

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.

Mitigation Measure-28. Use livestock grazing (sheep, goats) in FONM grassland areas between January and August each year to reduce fuels, control non-native invasive grasses and forbs, and reduce thatch buildup that can inhibit native forbs.

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.

Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.

Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.

Mitigation Measure-39. Mitigate impacts related to FORTAG at a 1:1 ratio.

Mitigation Measure-40. Mitigate impacts related to the Marina Airport runway extension at a 1:1.25 ratio and the new road at 1:1.

Biological Goals and Objectives

14.3: Eliminate or reduce non-native wildlife that depredates California tiger salamander and California red-legged frog in known and potential upland and aquatic habitat within HMAs.

14.4: Control hybrid California tiger salamanders in aquatic habitat.

14.5: In addition to Objective 8.3, restore and manage East Garrison Pond, and at least one additional aquatic feature totaling at least two acres, to provide suitable aquatic breeding habitat for California tiger salamander and California red-legged frog.

Mitigation Measures

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.

Mitigation Measure-27. Control hybrid tiger salamanders.

Mitigation Measure-19. Restore East Garrison Pond to provide suitable aquatic breeding habitat for California tiger salamander and California red-legged frog. Actions may include removal of non-native predators, vegetation management, and modification of hydrological conditions to provide seasonal aquatic conditions favorable for California tiger salamander and unfavorable for full hybrid California tiger salamander – barred tiger salamanders, as needed.

Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.

Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.

Table 5-5. HCP Required Actions – Mitigation Measures and Species Benefited

	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-Legged Frog
Mitigation Measures								
Local Implementing Ordinances and Policies								
Mitigation Measure-1. Adopt implementing ordinance or policy.	✓	✓	✓	✓	✓	✓	✓	✓
Habitat Preservation								
Mitigation Measure-2. Establish a basewide, connected habitat reserve system in the Plan Area.	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Measure-3. Develop HMA-specific resource management plans.	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Measure-4. Develop base-wide management strategies.	✓	✓	✓	✓	✓	✓	✓	✓
Revegetation, Restoration, Management, and Enhancement								
<i>Maritime Chaparral</i>								
Mitigation Measure-5. Restore up to 15 acres of maritime chaparral annually for a total of 100 to 150 acres within the HMAs.	✓	✓	✓	✓			✓	✓
Mitigation Measure-6. Augment prior maritime chaparral restoration by seeding restored sites with HCP plant species and other native species.	✓	✓	✓	✓				
Mitigation Measure-7. Phase restoration of the Corridor Reserve by identifying sites during adjusted baseline beginning with vegetation mapping and implementing weed control techniques at target sites.	✓	✓	✓	✓				
<i>Coastal Strand and Dunes</i>								
Mitigation Measure-8. Relocation of host plant material.					✓			
Mitigation Measure-9. Include one of the two species of buckwheat that are host plants for Smith's blue butterfly in all habitat restoration projects within FODSP.					✓			
Mitigation Measure-10. Treat and/or hand remove iceplant mats and other dominant non-native plants at restoration sites.	✓		✓	✓	✓			
Mitigation Measure-11. Give high priority to habitat restoration projects in areas where Smith's blue butterfly populations have been documented.					✓			

Mitigation Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-Legged Frog
Mitigation Measure-12. Manage approximately 50% of restored lands within FODSP to support annual species including sand gilia and Monterey spineflower.	✓		✓					
Mitigation Measure-13. Identify and restore sites along FODSP's north-south axis that could provide a continuous migration corridor for Smith's blue butterfly.					✓			
Mitigation Measure-14. Manage the approximately 4-mile stretch of ocean beach and associated bluffs and sandy blowouts as undeveloped beach frontage to benefit western snowy plover.						✓		
<i>Oak Woodlands</i>								
Mitigation Measure-15. Identify potential restoration sites, evaluate oak woodland regeneration within existing stands, and plant native oak seedlings and other oak woodland species where appropriate to improve habitat quality.	✓		✓				✓	✓
Mitigation Measure-16. Maintain the extent of habitat for woodland wildlife species by preserving fallen trees, standing dead trees, and duff and prohibit collection of wood in scrub oak, oak woodlands, or woodland savannah.								
<i>Grasslands</i>								
Mitigation Measure-17. Enhance or restore degraded sites in grasslands.	✓		✓	✓			✓	✓
<i>Aquatic and Riparian/Wetland Habitats</i>								
Mitigation Measure-18. Restore at least 5 acres of aquatic and riparian/wetland habitat over the term of the HCP.							✓	✓
Mitigation Measure-19. Restore East Garrison Pond, and at least one additional aquatic feature totaling at least two acres, to provide suitable aquatic breeding habitat for California tiger salamander and California red-legged frog.							✓	✓

Mitigation Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-Legged Frog
<i>All Natural Communities</i>								
Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs.	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Measure-21. Maintain characteristics of confirmed occupied upland habitat for California tiger salamander in the HMAs as documented during baseline studies and ongoing monitoring.							✓	
Mitigation Measure-22. Use prescribed burning on a rotational basis and wildfire suppression strategies, covering about 1,000–1,500 acres in the FONM each decade, to replicate desired future conditions and fulfill vegetation and fuels management objectives.	✓	✓	✓	✓				
Mitigation Measure-23. Schedule a habitat management burn(s) or alternative vegetation management on East Garrison South Reserve in advance of the second phase of East Garrison development.	✓		✓	✓				
Mitigation Measure-24. Maintain healthy populations of HCP species, maintain a mosaic of age-class stands, and protect against wildfires with prescribed burns or alternative vegetative management methods.	✓	✓	✓	✓				
Mitigation Measure-25. Use mechanical thinning and understory clearing in lieu of prescribed burning as determined necessary and appropriate to maintain healthy populations of HCP species, create a mixed age-class structure of oak woodland stands, and reduce fuel loads in areas considered too hazardous to burn.	✓	✓	✓	✓				

Mitigation Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-Legged Frog
Non-Native Invasive Species Control								
Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.						✓	✓	✓
Mitigation Measure-27. Control hybrid tiger salamanders.							✓	✓
Mitigation Measure-28. Use livestock grazing (sheep, goats) in FONM grassland areas to control non-native invasive grasses and forbs, and reduce thatch buildup that can inhibit native forbs.							✓	✓
Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.	✓	✓	✓	✓	✓			
Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.	✓		✓	✓	✓			
Mitigation Measure-33. Control erosion as necessary to prevent degradation of areas mapped as potential Yadon's piperia habitat.		✓						

Mitigation Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-Legged Frog
Evaluate Alternatives to Burning								
Mitigation Measure-34. Use research-oriented vegetation treatments in lieu of in-season prescribed burning on up to 500 acres of maritime chaparral per decade to maintain healthy populations of HCP species and a mixed age-class structure for the maritime chaparral habitats on a case-by-case basis to inform adaptive management.	✓	✓	✓	✓				
Mitigation Measure-35. Initiate a pilot program to test use of manual (hand-) cutting, propane torches, grass-specific herbicides, temporary mulching, and other methods as available where patches of invasive grasses occur within maritime chaparral or oak woodland communities.	✓	✓	✓	✓				
Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.	✓	✓	✓	✓			✓	✓
Mitigation Measure-37. Mitigate impacts to Yadon's piperia by creating new occurrences at a ratio of 2:1 (restored : impacted), as measured by area of occupied habitat and numbers of plants.		✓						
Mitigation Measure-38. Develop a Yadon's piperia management plan.		✓						
Covered Activity-Specific Mitigation Measures								
Mitigation Measure-39. Mitigate Impacts related to FORTAG at a 1:1 ratio.	✓		✓	✓			✓	✓
Mitigation Measure-40. Mitigate impacts related to the Marina Airport runway extension at a 1:1.25 ratio and the new road at 1:1.	✓		✓				✓	✓

Table 5-6. HCP Required Actions – Mitigation Measures by Location

Mitigation Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
Local Implementing Ordinances and Policies														
Mitigation Measure-1. Adopt implementing ordinance or policy.		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Habitat Preservation														
Mitigation Measure-2. Establish a base-wide, connected habitat reserve system in the Plan Area.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Development of Resource Management Plans for Specific HMAs														
Mitigation Measure-3. Develop HMA-specific resource management plans.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Measure-4. Develop base-wide management strategies.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Revegetation, Restoration, and Enhancement														
<i>Maritime Chaparral</i>														
Mitigation Measure-5. Restore up to 15 acres of maritime chaparral annually for a total of 100 to 150 acres within the HMAs.	✓		✓	✓	✓			✓	✓	✓			✓	✓
Mitigation Measure-6. Augment prior maritime chaparral restoration by seeding restored sites with HCP plant species and other native species.	✓		✓	✓	✓			✓	✓	✓			✓	✓
Mitigation Measure-7. Phase restoration of the Corridor Reserve by identifying sites during adjusted baseline beginning with vegetation mapping and implementing weed control techniques at target sites.			✓											
<i>Coastal Strand and Dunes</i>														
Mitigation Measure-8. Relocation of host plant material.	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓

Mitigation Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
Mitigation Measure-9. Include one of the two species of buckwheat that are host plants for Smith's blue butterfly in all habitat restoration projects within FODSP.		✓												
Mitigation Measure-10. Treat and/or hand remove iceplant mats and other dominant non-native plants at restoration sites.		✓												
Mitigation Measure-11. Give high priority to habitat restoration projects in areas where Smith's blue butterfly populations have been documented.		✓												
Mitigation Measure-12. Manage approximately 50% of restored lands within FODSP to support annual species including sand gilia and Monterey spineflower.		✓												
Mitigation Measure-13. Identify and restore sites along FODSP's north-south axis that could provide a continuous migration corridor for Smith's blue butterfly.		✓												
Mitigation Measure-14. Manage the approximately 4-mile stretch of ocean beach and associated bluffs and sandy blowouts as undeveloped beach frontage to benefit western snowy plover.		✓												
<i>Oak Woodlands</i>														
Mitigation Measure-15. Identify potential restoration sites, evaluate oak woodland regeneration within existing stands, and plant native oak seedlings where appropriate to improve habitat quality.			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	

Mitigation Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
Mitigation Measure-16. Maintain the extent of potential habitat for woodland wildlife species by preserving fallen trees, standing dead trees, and duff and prohibit collection of wood in scrub oak, oak woodlands, or woodland savannah.			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
<i>Grasslands</i>														
Mitigation Measure-17. Enhance or restore degraded sites in grasslands.	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
<i>Aquatic and Riparian/Wetland Habitats</i>														
Mitigation Measure-18. Restore at least 5 acres of aquatic and riparian/wetland habitat over the term of the HCP.	✓			✓			✓	✓						✓
Mitigation Measure-19. Restore East Garrison Pond, and at least one additional aquatic feature totaling at least two acres, to provide suitable aquatic breeding habitat for California tiger salamander and California red-legged frog.	✓			✓			✓	✓						✓
<i>All Natural Communities</i>														
Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Measure-21. Maintain characteristics of confirmed occupied upland habitat for California tiger salamander in the HMAs as documented during baseline studies and ongoing monitoring.	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
Prescribed Burning and Alternative Vegetative Management														
Mitigation Measure-22. Use prescribed burning on a rotational basis and wildfire suppression strategies, covering about 1,000–1,500 acres in the FONM each decade, to replicate desired future conditions and fulfill vegetation and fuels management objectives.	✓													

Mitigation Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
Mitigation Measure-23. Schedule a habitat management burn(s) on East Garrison South Reserve in advance of the second phase of East Garrison development.				✓										
Mitigation Measure-24. Maintain healthy populations of HCP species, maintain a mosaic of age-class stands, and protect against wildfires with prescribed burns or alternative vegetative management methods.	✓		✓	✓	✓			✓	✓	✓			✓	✓
Mitigation Measure-25. Use mechanical thinning and understory clearing in lieu of prescribed burning as determined necessary and appropriate to maintain healthy populations of HCP species, create a mixed age-class structure of oak woodland stands, and reduce fuel loads in areas considered too hazardous to burn.	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Non-Native Invasive Species Control														
Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Measure-27. Control hybrid tiger salamanders.	✓			✓	✓	✓	✓	✓	✓	✓	✓			✓
Mitigation Measure-28. Use livestock grazing (sheep, goats) in FONM grassland areas between January and August each year to reduce fuels, control non-native invasive grasses and forbs, and reduce thatch buildup that can inhibit native forbs.	✓													

	HMAs													
Mitigation Measures	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Erosion Control for Habitat Restoration and Enhancement														
Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.	✓	✓	✓	✓	✓			✓	✓	✓			✓	✓
Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.		✓												
Mitigation Measure-33. Control erosion as necessary to prevent degradation of areas mapped as potential Yadon’s piperia habitat.	✓												✓	
Evaluate Alternatives to Burning														
Mitigation Measure-34. Use research-oriented vegetation treatments in lieu of in-season prescribed burning on up to 500 acres of maritime chaparral to maintain healthy populations of HCP species and a mixed age-class structure for the maritime chaparral habitats on a case-by-case basis to inform adaptive management.	✓													

	HMAs													
Mitigation Measures	FONM	FODSP	FONR	EG	PF	OO	HC/YC	LS	LF	R45	AR	SR	NWC	NAE
Mitigation Measure-35. Initiate a pilot program to test use of manual (hand-) cutting, propane torches, grass-specific herbicides, temporary mulching, and other methods as available where patches of invasive grasses occur within maritime chaparral or oak woodland communities.			✓											
Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.			✓											
Yadon's Piperia Mitigation Measures														
Mitigation Measure-37. Mitigate impacts to Yadon's piperia by creating new occurrences at a ratio of 2;1 (restored : impacted), as measured by area of occupied habitat and numbers of plants.														
Mitigation Measure-38. Develop a Yadon's piperia management plan.	✓												✓	
Covered Activity-Specific Mitigation Measures														
Mitigation Measure-39. Mitigate Impacts related to FORTAG at a 1:1 ratio. (Location will be determined in coordination with the Wildlife Agencies.)														
Mitigation Measure-40. Mitigate impacts related to the Marina Airport runway extension at a 1:1.25 ratio and the new road at 1:1.												✓		

Table 5-7. Parties Responsible for Implementing Mitigation Measures

Mitigation Measures	Implemented by Permittees?¹⁶	Implemented by BLM?¹⁷
Local Implementing Ordinances and Policies		
Mitigation Measure-1. Adopt implementing ordinance or policy.	Yes	N/A
Habitat Preservation		
Mitigation Measure-2. Establish a basewide, connected habitat reserve system in the Plan Area.	Yes	Yes
Mitigation Measure-3. Develop HMA-specific resource management plans.	Yes	Yes
Mitigation Measure-4. Develop base-wide management strategies.	Yes	BLM participation as cooperating entity
Revegetation, Restoration, Management, and Enhancement		
<i>Maritime Chaparral</i>		
Mitigation Measure-5. Restore up to 15 acres of maritime chaparral annually for a total of 100 to 150 acres within the HMAs.	Yes, Permittees will restore 30.9 acres (10 acres on FONM) during Permit Term	BLM restored 69.1 acres by 2016 on FONM
Mitigation Measure-6. Augment prior maritime chaparral restoration by seeding restored sites with HCP plant species and other native species.	Yes	N/A
Mitigation Measure-7. Phase restoration of the Corridor Reserve by identifying sites during adjusted baseline beginning with vegetation mapping and implementing weed control techniques at target sites.	Yes	N/A
<i>Coastal Strand and Dunes</i>		
Mitigation Measure-8. Relocation of host plant material.	Yes	N/A
Mitigation Measure-9. Include one of the two species of buckwheat that are host plants for Smith's blue butterfly in all habitat restoration projects within FODSP.	Yes	N/A

¹⁶ The Cooperative will be responsible for the implementation of all HCP required mitigation measures identified herein on the behalf of Monterey County, the City of Marina, Monterey Peninsula College, and Monterey Peninsula Regional Park District. The Cooperative may conduct the HCP required mitigation measures itself as the habitat manager, partner with other habitat managers within the HCP (e.g., State Parks, UC), or contract implementation to a third party, as needed.

¹⁷ Mitigation measures implemented directly by BLM according to their normal operations will not count as mitigation for the Federal permit. However, the entirety of BLM's preserved and actively managed HCP species habitat within the FONM, as prescribed in the BLM's RMP, is included as mitigation within the Plan Area for the State Permit.

Mitigation Measures	Implemented by Permittees?¹⁶	Implemented by BLM?¹⁷
Mitigation Measure-10. Treat and/or hand remove iceplant mats and other dominant non-native plants at restoration sites.	Yes	N/A
Mitigation Measure-11. Give high priority to habitat restoration projects in areas where Smith's blue butterfly populations have been documented.	Yes	N/A
Mitigation Measure-12. Manage approximately 50% of restored lands within FODSP to support annual species including sand gilia and Monterey spineflower.	Yes	N/A
Mitigation Measure-13. Identify and restore sites along FODSP's north-south axis that could provide a continuous migration corridor for Smith's blue butterfly.	Yes	N/A
Mitigation Measure-14. Manage the approximately 4-mile stretch of ocean beach and associated bluffs and sandy blowouts as undeveloped beach frontage to benefit western snowy plover.	Yes	N/A
<i>Oak Woodlands</i>		
Mitigation Measure-15. Identify potential restoration sites, evaluate oak woodland regeneration within existing stands, and plant native oak seedlings and other oak woodland species where appropriate to improve habitat quality.	Yes, at Salinas River and Frog Pond reserves	N/A
Mitigation Measure-16. Maintain the extent of habitat for woodland wildlife species by preserving fallen trees, standing dead trees, and duff and prohibit collection of wood in scrub oak, oak woodlands, or woodland savannah.	Yes	N/A
<i>Grasslands</i>		
Mitigation Measure-17. Enhance or restore degraded sites in grasslands.	Yes, Permittees will restore 15 acres of grasslands, prioritizing restoration near California tiger salamander aquatic habitat	Yes
<i>Aquatic and Riparian/Wetland Habitats</i>		
Mitigation Measure-18. Restore at least 5 acres of aquatic and riparian/wetland habitat over the term of the HCP.	N/A	Yes
Mitigation Measure-19. Restore East Garrison Pond, and at least one additional aquatic feature totaling at least two acres, to provide suitable aquatic breeding habitat for California tiger salamander and California red-legged frog.	Yes	N/A

Mitigation Measures	Implemented by Permittees?¹⁶	Implemented by BLM?¹⁷
<i>All Natural Communities</i>		
Mitigation Measure-20. Close and rehabilitate (retire) redundant or unneeded road and trail systems within the HMAs.	N/A	Yes
Mitigation Measure-21. Maintain characteristics of confirmed occupied upland habitat for California tiger salamander in the HMAs as documented during baseline studies and ongoing monitoring.	Yes. Permittees fund this mitigation measure on non-federal HMAs and FONM	BLM coordinates with Permittees
Mitigation Measure-22. Use prescribed burning on a rotational basis and wildfire suppression strategies, covering about 1,000–1,500 acres in the FONM each decade, to replicate desired future conditions and fulfill vegetation and fuels management objectives.	N/A	Yes. Per their RMP, BLM implements prescribed burning.
Mitigation Measure-23. Schedule a habitat management burn(s) or alternative vegetation management on East Garrison South Reserve in advance of the second phase of East Garrison development.	Yes	N/A
Mitigation Measure-24. Maintain healthy populations of HCP species, maintain a mosaic of age-class stands, and protect against wildfires with prescribed burns or alternative vegetative management methods.	Yes. Permittees fund this mitigation measure on non-federal HMAs	BLM coordinates with Permittees through TAC
Mitigation Measure-25. Use mechanical thinning and understory clearing in lieu of prescribed burning as determined necessary and appropriate to maintain healthy populations of HCP species, create a mixed age-class structure of oak woodland stands, and reduce fuel loads in areas considered too hazardous to burn.	Yes. Permittees fund this mitigation measure on non-federal HMAs	BLM coordinates with Permittees through TAC
Non-Native Invasive Species Control		
Mitigation Measure-26. Address actual and potential adverse effects from introduced wildlife species, roaming and feral animals, and other pests on HCP species and their habitats.	Yes	Yes
Mitigation Measure-27. Control hybrid tiger salamanders.	Permittees fund California tiger salamander hybrid control at East Garrison pond and two aquatic feature restoration sites. Permittees will work with BLM to develop a	BLM work with Permittees to control California tiger salamander hybrids in ponds on FONM

Mitigation Measures	Implemented by Permittees? ¹⁶	Implemented by BLM? ¹⁷
Mitigation Measure-28. Use livestock grazing (sheep, goats) in FONM grassland areas to control non-native invasive grasses and forbs and reduce thatch buildup that can inhibit native forbs.	hybrid control strategy for all HMAs N/A	Yes
Mitigation Measure-29. Develop and implement annual strategies for eradication of noxious weed species, categories of weed infestation and/or infestations within certain habitat types within 1 year of identification and in accordance with base-wide priorities.	Permittees on non-federal HMAs in perpetuity and a portion of FONM after 30 year into Permit Term	Yes. BLM normal operations and partial Permittee funded invasive weed abatement.
Mitigation Measure-30. Identify priority sites and implement appropriate erosion control and site restoration methods.	Yes, on non-federal HMAs in perpetuity	Yes
Mitigation Measure-31. Control erosion, remove hardstand, reshape, stabilize, and restore existing degraded or destroyed sites associated with roads, gullies, or rills into naturally recurring maritime chaparral/coastal scrub habitat.	Yes, on non-federal HMAs in perpetuity	Yes
Mitigation Measure-32. Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established.	Yes	N/A
Mitigation Measure-33. Control erosion as necessary to prevent degradation of areas mapped as potential Yadon's piperia habitat.	Yes, on Marina NWC	N/A
Evaluate Alternatives to Burning		
Mitigation Measure-34. Use research-oriented vegetation treatments in lieu of in-season prescribed burning on up to 500 acres of maritime chaparral per decade to maintain healthy populations of HCP species and a mixed age-class structure for the maritime chaparral habitats on a case-by-case basis to inform adaptive management.	N/A	Yes
Mitigation Measure-35. Initiate a pilot program to test use of manual (hand-) cutting, propane torches, grass-specific herbicides, temporary mulching, and other methods as available where patches of invasive grasses occur within maritime chaparral or oak woodland communities.	Yes, on non-federal HMAs	N/A
Mitigation Measure-36. Evaluate a range of actions including, but not limited to, prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, oak woodlands, grasslands, and HCP species.	Yes	N/A
Mitigation Measure-37. Mitigate impacts to Yadon's piperia by creating new occurrences at a ratio of 2:1 (restored : impacted), as measured by area of occupied habitat and numbers of plants.	Project proponents	N/A

Mitigation Measures	Implemented by Permittees?¹⁶	Implemented by BLM?¹⁷
Mitigation Measure-38. Develop a Yadon's piperia translocation, propagation, and management plan.	Yes	N/A
Covered Activity-Specific Mitigation Measures		
Mitigation Measure-39. Mitigate Impacts related to FORTAG at a 1:1 ratio.	FORTAG	N/A
Mitigation Measure-40. Mitigate impacts related to the Marina Airport runway extension at a 1:1.25 ratio and the new road at 1:1.	Project proponent	N/A

Chapter 6

Monitoring and Adaptive Management

6.1 Overview

Monitoring and adaptive management are essential components of an HCP. They provide information on implementation of required avoidance, minimization, and mitigation measures, the effectiveness of these actions, as well as provide a foundation to make adjustments to these measures as needed. As such, the purpose of the monitoring and adaptive management program for this HCP is to ensure that the conservation strategy is achieving the biological goals and objectives for HCP species and their habitats. Monitoring implementation of this HCP will include two components: *compliance monitoring* and *effectiveness monitoring*. Information obtained from these monitoring actions can be used to adjust avoidance, minimization, and mitigation measure implementation, as appropriate, based on specific HCP management decisions that will need to be made to ensure the success of this HCP adaptive management.

Compliance monitoring tracks the status of HCP implementation, ensuring that HCP required actions are executed and permit compliance is maintained (Atkinson et al. 2004). A cornerstone of this HCP's compliance monitoring program is the evaluation of land use status to ensure compliance with the stay-ahead provision and to track the cumulative take of covered species (Section 7.6, *Stay-Ahead Provision*). This monitoring effort provides a systematic means of measuring progress on base reuse against the assumptions and requirements of the HCP's impact assessment, permitted take, and conservation strategy. Covered activities in development lands, especially in Borderlands, will be tracked through this type of monitoring. The Cooperative, in coordination with the Permittees and BLM, will perform compliance monitoring. Compliance monitoring will allow the Cooperative to assure USFWS and CDFW that impacts from development activities on HCP species and habitats are sufficiently offset by the amount of land reserved for preserving and managing those species and habitats.

Effectiveness monitoring measures the biological response to implementation of the HCP required AMMs and mitigation measures. Information obtained from this type of monitoring uses metrics that can be directly compared and contrasted to the biological goals and objectives of the HCP. This type of monitoring includes *status and trends monitoring* and *effects monitoring*. It is focused on natural communities and HCP species. It will quantify resources and threats in the permit area through time. Additionally, it will be used to evaluate the success of specific projects initiated as part of HCP required AMMs and mitigation measures, such as controlled burns, exotic plant control treatments, and trail closures. These efforts will commence with *baseline studies* that identify, characterize, and map HCP natural communities and species within HMAs.

Information obtained from compliance and effectiveness monitoring will be used, as appropriate, to adjust AMMs and mitigation measure implementation using adaptive management. Critical decisions affecting management of the HCP are expected to occur when monitoring results indicate that previously employed management measures do not produce desired results, that circumstances have changed, or that biological conditions are different from those originally estimated for the HCP. As such, evaluation of monitoring results against compliance and biological thresholds for the HCP species will be reviewed annually by the TAC. Adjustments to implementation of the HCP required

actions will be made as appropriate. In anticipation of potential modifications to the HCP, adaptive management contingency funding was factored into the HCP required action costs. The Cooperative will allocate funds to implement adaptive management as deemed necessary by the TAC.

This chapter is organized as follows.

- Section 6.2, *HCP Compliance Monitoring*, identifies the roles and requirements for the Cooperative, Permittees, and BLM for HCP compliance monitoring. It also summarizes potential compliance problems and procedures for remedying compliance problems.
- Section 6.3, *HCP Effectiveness Monitoring*, defines the components of effectiveness monitoring, including the roles of the Cooperative and HMA managers. This includes the establishment of the adjusted baseline for natural communities, HCP plant and wildlife species, threats, and specific HMAs, status and trends monitoring, and effects monitoring.
- Section 6.4, *Maritime Chaparral Monitoring*, provides the background on development of monitoring methods and goals for maritime chaparral and provides an overview of required monitoring.
- Section 6.5, *Research-Orientated Actions to Inform Adaptive Management*, provides a monitoring measure to test vegetative treatments and inform adaptive management for the natural communities.
- Section 6.6, *Species Monitoring*, provides species background, monitoring goals, and an overview of required monitoring.
- Section 6.7, *Additional Monitoring*, identifies the thresholds and duration for which species monitoring is required in response to catastrophic events or restoration.
- Section 6.8, *Adaptive Management*, summarizes the adaptive management program and HCP required adaptive management measures.
- Section 6.9, *Reporting*, summarizes the monitoring reporting requirements. (The annual report requirements are discussed in Section 7.9.3, *Reporting*.)

Additionally, two appendices detail the monitoring protocols for specific natural communities and plant and wildlife species.

- Appendix G, *Plant Monitoring Program for the Fort Ord Multispecies Habitat Conservation Plan*, details monitoring protocols for maritime chaparral and HCP plant species, with the exception of Yadon's piperia (*Piperia yadonii*).
- Appendix H, *Monitoring Protocols for Yadon's Piperia and HCP Wildlife Species*, details monitoring protocol for Yadon's piperia and the HCP wildlife species.

HCP required monitoring and adaptive management measures are summarized by species benefited (Table 6-1) and location (Table 6-2). Due to these tables' large size, they appear at the end of the chapter. Status and trends monitoring frequency is summarized in Table 6-3.

Table 6-3. Frequency of Status and Trends Monitoring by Species

Species	Status and Trends	
	Areal Mapping	Abundance Sampling ^a
Sand gilia		Annually
Yadon's piperia		Once in 5-year period ^b
Monterey spineflower		Annually
Seaside bird's beak		Annually
Smith's blue butterfly	Host plant Species	Once in 5-year period
Western snowy plover	Every 10 years (applies to all species)	Once in 5-year period
California tiger Salamander	Breeding	Annually
	Upland	Once in 3-year period
California red-legged frog	Breeding	Every 10 years
	Upland	Once in 5-year period
		Every 10 years

^a Abundance sampling intervals are varied.

^b Abundance Sampling would be conducted one time within a 5-year period. (See Appendix G for complete details.)

6.2 HCP Compliance Monitoring

HCP compliance monitoring is a base-wide, multi-tiered monitoring program that evaluates HCP implementation and documents that all requirements of the HCP are being met (i.e., permit compliance). Land use status, covered activity implementation, and HCP permit required activities are tracked and evaluated to ensure compliance with the stay-ahead provision.

The Cooperative will work with the Permittees and BLM to implement HCP compliance monitoring. The Cooperative holds this responsibility. In all cases, the Cooperative is responsible for assembling compliance monitoring results, completing the annual report, and submitting the final annual report to the Wildlife Agencies (Section 6.9, *Reporting*, and Section 7.9.3, *Reporting*). The Cooperative will coordinate with the Permittees and BLM to complete the following HCP required activities.

Monitoring Measure-1. Track transfer of lands from the Army. The amount of land for HCP species' habitats that has been dedicated as reserve lands (i.e., transferred from the Army to the land recipient) will be tracked (in acres) against the total amount of protected acreage for each species' habitat required under full buildout by this HCP. All land transfers will be tracked and reported annually to the Cooperative for inclusion in the annual report.

Monitoring Measure-2. Track impacts on HCP species habitat from covered activity implementation. Land cover and species' habitat maps were developed for the Plan Area. These maps were essential in estimating impacts of the covered activities (Chapter 4, *Impact Assessment and Levels of Take*) and developing the conservation strategy (Chapter 5, *Conservation Strategy*). All covered activity impacts will be tracked by land cover and species' habitat and reported to the Cooperative annually for inclusion in the annual report.

Monitoring Measure-3. Track implementation of all HCP permit required activities. All HCP permit required activities will be tracked and reported to the Cooperative annually for inclusion in the annual report. Each numbered and coded action in the Plan is considered an HCP permit required activity.

The level of compliance associated with the HCP requirements will be determined annually by the Cooperative and reported to the Wildlife Agencies. If the Permittees are determined to be out of compliance, or nearly out of compliance (i.e., nearing the amount of allowable take per the stay-ahead provision), the compliance problem would be reported to the Wildlife Agencies as soon as possible. Any recommendations on remedial actions will be described in the annual report.

Following submission of each annual report, an annual HCP compliance meeting will be held to provide an HCP implementation summary. The Wildlife Agencies will be invited to attend the meeting; however, their attendance is not required. At this time, the Permittees who are out of compliance or nearly out of compliance (collectively referred to as a *compliance problem*) will be notified as soon as the compliance problem is identified, and remedial actions required to achieve or maintain compliance will be determined and implemented as soon as possible. Potential compliance problems may include, but are not limited to, the following.

- Failure to adhere to stay-ahead provision (Section 7.6, *Stay-Ahead Provision*).
- Failure to implement avoidance and minimization measures (see Chapter 5, *Conservation Strategy*).
- Failure to implement mitigation measures or to implement measures properly (Chapter 5).
- Failure to implement monitoring measures properly (see Chapter 6, *Monitoring and Adaptive Management*).

Required remedial actions will be approved by the Cooperative Governing Board and the Wildlife Agencies. Remedial actions will be submitted to Wildlife Agencies for review and approval prior to their implementation. The length of time necessary to implement remedial actions will vary depending on the level of effort necessary. It is assumed that most remedial actions will be completed within six months of compliance problem notification. A written remedial action progress report will be submitted to the Cooperative by July 1 to report on the remedial action implementation. This report will be forwarded to the Wildlife Agencies to inform them of the status of remedial action implementation. On or before October 1, an in-person meeting shall be held with the Cooperative Governing board and the out-of-compliance Permittee. The out-of-compliance Permittee will report on remedial action completion and results. A final remedial action completion report will be submitted by the Permittee as part of the annual HCP compliance monitoring due by December 1. If, at that time, the Permittee remains out of compliance, the Wildlife Agencies will be notified and a determination of permit suspension or revocation will be made.

6.3 HCP Effectiveness Monitoring

Effectiveness monitoring assesses HCP species status and trends and evaluates the success of avoidance, minimization, and mitigation activities in the HCP Plan Area. It will allow confirmation that the goal of no net loss of populations or important habitat is met for all HCP species.

As stated at the outset of this chapter, effectiveness monitoring consists of status and trends monitoring (which quantifies resources and threats through time) and effects monitoring (which

evaluates the success of specific management projects¹). The framework for status and trends monitoring will be natural community- and species-oriented. Sections 6.4, *Maritime Chaparral Monitoring*, and 6.5, *Species Monitoring*, summarize the backgrounds, goals, and requirements for monitoring HCP natural communities and species, and Appendices G and H provide detailed descriptions of these monitoring protocols. Effects monitoring protocols will be designed on a case-by-case basis, but they will draw from the species-specific protocols (Appendices G and H). Both status and trends and effects monitoring are further discussed in Sections 6.3.2, *Status and Trends Monitoring*, and 6.3.3, *Effects Monitoring*.

Effectiveness monitoring results will be used to inform adaptive management (see Section 6.8, *Adaptive Management*). For all effectiveness monitoring, the following requirements shall be followed.

- Implement AMMs identified in Section 5.4.1, *Avoidance and Minimization Measures for all Covered Activities* that pertain to monitoring actions.
- Use qualified biologists to conduct HCP species surveys.
- Follow approved CDFW/USFWS protocols for trapping of any HCP animal species.

Effectiveness monitoring begins with identifying, characterizing, and mapping natural communities and HCP species within the HMAs—that is, establishing baselines. The Cooperative is responsible for all effectiveness monitoring but may contract out the work (e.g., to HMA managers or consultants). Requirements associated with this effort are described below.

6.3.1 Baseline Studies

The first step in effectiveness monitoring will be to verify and update the Army's baseline studies to establish the *adjusted baseline* for HCP species and habitats within the HMAs. While the Army's baseline studies established a general standard for base-wide evaluation, many of the metrics used (e.g., size of polygons, scale of mapping, abundance data)—although appropriate for large-scale environmental assessment—are not suitable for more site-specific, long-term habitat management and monitoring. As such, adjusted baselines will be established through studies that use more intensive survey methods and provide more detailed species distribution and abundance information for all HMAs.

The adjusted baseline will serve two functions: it will be the benchmark against which the effectiveness of the conservation actions is evaluated, and it will be the starting point from which statuses and trends will be measured. As such, the adjusted baseline will provide a great level of detail about existing resources to inform subsequent habitat management planning and mitigation measure implementation. The results of the adjusted baseline surveys will inform the timing and extent of HCP permit required actions.

The baseline will be adjusted according to two timeframes associated with transfer of the property from the Army and/or issuance of permits pursuant to this HCP. Within 5 years, the adjusted baseline for natural communities and species (except for one species) will be completed and submitted to the Cooperative (Chapter 7, *HCP Implementation*). Within 10 years, adjusted baselines

¹ Specific management projects are enhancement and restoration projects implemented to benefit covered species and their habitats.

for the Yadon's piperia will be submitted to the Cooperative. Results of the adjusted baseline surveys will subsequently be included in annual reports submitted to the Wildlife Agencies.

Due to annual variations in population size in any given year, the adjusted baseline for many of the herbaceous plant species require that areal mapping be conducted over a single season, if possible, when above ground expression is high and that the abundance sampling for the adjusted baseline be conducted over the subsequent 3 years. USFWS and CDFW may require that the adjusted baselines be established during a different period if weather or other factors have caused extremely low population numbers during the years that the adjusted baselines were determined. The herbaceous plant species monitoring requires that 2 years of pilot studies be conducted prior to abundance sampling for the adjusted baselines. Initiation of pilot studies prior to permit issuance or land transfer could expedite the establishment of the adjusted baseline for HCP species.

The Cooperative is responsible for conducting adjusted baseline studies for all the HMAs, including Borderlands within HMAs.² Baseline surveys will occur within the first 5 years of permit issuance for 10,907 acres of HMA lands already transferred from the Army to the Permittees and BLM. Parcels allocated to BLM, UC/NRS, and Monterey County totaling 7,639 acres have yet to be transferred. It is anticipated that all lands will be transferred in 2019 and 2023. Baseline surveys for these properties will occur within 5 years of their transfer from the Army.

The following sections identify the HCP permit required actions to produce the adjusted baseline.

6.3.1.1 Natural Communities

The following monitoring measure is required to establish the adjusted baseline for natural communities within the HMAs, which will be used to inform subsequent searches for species.

Monitoring Measure-4. Identify, characterize, and map the areal extent of natural communities within the HMAs. The baseline maps will be updated for all natural communities within the HMAs using CDFW's Vegetation Classification and Mapping Program (VegCAMP) and will be consistent with the methodologies described in the Survey of California Vegetation Classification and Mapping Standards (CDFW 2015). **Timing:** No later than 3 years from transfer of the property from the Army or from issuance of the permits under this HCP, whichever is later.

Monitoring Measure-5. Calculate the adjusted baseline for maritime chaparral. For maritime chaparral, the adjusted baseline will be calculated based on results of the areal extent mapping of maritime chaparral using the field sampling protocol (Appendix G) and applying the following formulas:

adjusted baseline (cover) = areal extent of maritime chaparral (acres) x mean cover (%)

adjusted baseline (abundance) = areal extent of maritime chaparral (acres) x density (number of individuals of covered plant species/acre)

The adjusted baseline will be based on the sample sites constituting the permanent panel, and it will be calculated for HMA lands.

² The species-specific and maritime chaparral adjusted baseline studies will be considered part of the JPA's base-wide monitoring responsibility. State Parks' adjusted baseline for natural community mapping purposes was completed as of 1995.

An acreage estimate and mapped distribution of current age classes of all maritime chaparral will be developed for each HMA on which the natural community occurs. Results will be used to inform the prescribed burning and alternative vegetative management plan. For all natural communities, thresholds that will trigger adaptive management will be identified. **Timing:** No later than 3 years from transfer of the property from the Army or from issuance of the permits under this HCP, whichever is later.

6.3.1.2 HCP Plant Species

The following monitoring measure is required to establish the adjusted baseline for HCP plant species within the HMAs.

Monitoring Measure-6. Identify and map the extent and abundance of HCP plant species within the HMAs. Following the completion of pilot surveys (if needed), two methods will be used to establish the adjusted baseline for HCP plants.

- Areal mapping to establish the extent of species distribution and/or habitat cover.
- Protocol-level abundance surveys to establish species density.

An overview of monitoring protocols for HCP plant species is provided in Section 6.4, *Maritime Chaparral Monitoring*, and Section 6.6, *Species Monitoring*, with detailed protocols provided in Appendix G and Appendix H. USFWS and CDFW may require a subsequent adjusted baseline if weather or other factors have caused extremely low population numbers during the years that the adjusted baseline was determined.

Areal mapping will be completed during the first high rainfall year following permit issuance. Provided that the sampling protocol meets the monitoring objectives, the total patch area will be used as the adjusted baseline for distribution of each plant species.

Due to the extensive nature of the field survey effort in areal extent mapping, it would be cost-prohibitive to use multiple years of data to establish the distribution baseline; however, there are exceptions. For Yadon's piperia, the total patch area recorded over a 10-year reconnaissance survey period will be used as the adjusted baseline for distribution (see Appendix G).

Ideally, areal mapping will be conducted for the Plan Area within a given year. However, because the HMAs compose a large area (18,540 acres)—much of which contains maritime chaparral gaps and will therefore need to be surveyed for herbaceous species—the adjusted baseline may require more than 1 year for completion. Though natural fluctuations in plant demographic performance during this time will cause variability in aboveground population expression among years, the large threshold for distinguishing unoccupied habitat (i.e., at least 5–10 meters of unoccupied area between known populations, depending on plant species) will reduce the variability observed among sites due to the temporal shift in surveys.

If plant distribution cannot be feasibly mapped in 1 year, then the distribution of identified plants could be monitored in a subset of the HMAs or macroplots, as described in Appendix G.

New plant populations of Yadon's piperia identified during the 10 years of reconnaissance surveys will be included in the adjusted baseline, which will be based on areal mapping and abundance sampling. This extended survey period is required because Yadon's piperia exhibit dormancy, wherein individuals persist below ground through corms (storage organs) that may or may not produce above ground structures in any given year.

The adjusted baseline for plant abundance will be established through implementation of density or cover sampling protocols, dependent on species biology (Appendix G), during 3 consecutive years after areal extent mapping. The adjusted baseline for abundance will be calculated as the average of the 3-year, base-wide mean abundance for each species. Thresholds that will trigger adaptive management will be identified.

Timing: No later than 5 years from transfer of the property from the Army or from issuance of the permits under this HCP for areal mapping, or 8 years for abundance, whichever is later.

6.3.1.3 HCP Wildlife Species

The following monitoring measure is required to establish the adjusted baseline for HCP wildlife species within the HMAs.

Monitoring Measure-7. Identify, characterize, and map the areal extent of suitable habitat and determine presence or absence of HCP animal species within the HMAs following species-specific protocols for each. For wildlife, the adjusted baseline will be based on mapped suitable habitat. For all species, this will be established through implementation of areal mapping (e.g., species or vegetation mapping) following permit issuance. Mapping will be conducted concurrently with Monitoring Measures-4 and -5 described above. Provided that the sampling protocol meets the monitoring objectives, the total patch area will be used as the adjusted baseline for habitat distribution. Due to the extensive nature of the field survey effort in areal extent mapping, it would be cost-prohibitive to use multiple years of data to establish the distribution baseline.

The baseline will also include a separate acreage identifying presence/absence (established through 3 years of consecutive surveys) in specific locations for the following species: California tiger salamander, California red-legged frog, and western snowy plover. An overview of monitoring protocols for HCP animal species is provided in Section 6.6, *Species Monitoring*, with detailed protocols provided in Appendix H. Thresholds that will trigger adaptive management will be identified. Therefore, the baseline for these species will identify both potentially suitable habitat as well as occupied habitat. As a part of the baseline monitoring for wildlife species associated with aquatic resources, the baseline monitoring will identify, map, and/or characterize actual and potential threats to aquatic habitats. During baseline studies, inventories will be conducted within the HMAs to 1) identify actual and potential physical, biological, water quality, recreation-related, and other impacts in the watersheds of aquatic habitat on adjacent development properties and 2) prioritize management and restoration activities accordingly. This monitoring shall occur at FONM³, East Garrison Reserve, Laguna Seca Recreational Expansion, Salinas River Habitat Area, and NAE.

Timing: No later than 5 years from transfer of the property from the Army or from issuance of the permits under this HCP for areal mapping, or 8 years for presence/absence, whichever is later.

³ Monitoring as described in Monitoring Measure-7 will be conducted by the Cooperative on FONM, on condition of BLM permission of entry and coordination.

6.3.1.4 Threats

Concurrently with natural community and wildlife habitat areal mapping, HCP species threats (e.g., invasive plants and noxious weeds, non-native predatory species, sudden oak death or other disease outbreaks, highly eroded or degraded sites) will be mapped (see Section 6.3.3.3, *Non-Native Invasive Species*) This information will serve a baseline for effectiveness monitoring and help prioritize sites for mitigation measure implementation. On all HMAs the following monitoring measures are required to establish the adjusted baseline.

Monitoring Measure-8. Identify and map non-native invasive plants, predatory species, and disease outbreaks to identify and prioritize management. The Cooperative will identify and prioritize problems, map locations, and prioritize management during adjusted baseline surveys. The goal of the eradication and reduction efforts will be to limit the overall area of individual target species infestations to no more than 5% of the total habitat area. If an area has a current weed cover of target species less than 5%, a more aggressive target will be set based on the results of the adjusted baseline and incorporated into its resource management plan to ensure that habitat for HCP species is enhanced. Categories of target species will be identified by the TAC in collaboration with the Monterey County Weed Management Area (WMA) based on a local assessment of distribution, impact, and invasiveness of each species. The categories will be site-specific to Fort Ord and will be derived from noxious weeds (as defined by the California Department of Food and Agriculture) and invasive exotic plants listed by the California Invasive Plant Council (California Invasive Plant Council 2007 or latest list). The Cooperative will maintain this list of target species. In addition, noxious weed control may also include the removal of non-native annual grasses and seeding with native grasses to encourage their propagation. Thresholds that trigger adaptive management will be identified (see Appendix G for details on thresholds that trigger adaptive management).

Timing: No later than 5 years from transfer of the property from the Army or from issuance of the permits under this HCP, whichever is later.

Monitoring Measure-9. Identify high priority sites where erosion control and site restoration measures are warranted. The Cooperative will conduct an inventory to identify and prioritize sites for erosion control, hardstand removal (i.e., compacted areas, paved areas), and restoration. Sites could include heavily used unsurfaced roads and trails, former military roads (paved and unpaved), gullies and hardstand, or other disturbed areas, especially those adjacent to populations of HCP species or to riparian or wetland habitats. Existing degraded areas will be assessed and their enhancement or restoration prioritized (facilitated passive restoration or active restoration). This will serve to document if degradation occurred pre- versus post-transfer⁴. Thresholds that will trigger adaptive management will be identified.

Timing: No later than 5 years from transfer of the property from the Army or from issuance of the permits under this HCP, whichever is later.

Monitoring Measure-10. Identify levels and locations of public access and other access. The Cooperative will identify and map each HMA's principal access points (see Section 3.2.3, *Habitat*

⁴ BLM has prepared a watershed and riparian assessment report (WRAR) that inventories and identifies erosion sites in 2002. BLM initially estimates that over 100 miles of former roads and/or associated gullies and unneeded hardstand areas will be restored and stabilized in maritime chaparral habitat over the life of the HCP.

Management Areas, for details and locations of access points) and destinations, the existing road and trail network, existing barriers (e.g., fences, steep topography, and other features that prevent or impede access), and locations that are sensitive, dangerous, or otherwise inadvisable for public access or other access as part of adjusted baseline surveys. New trail and road construction will be compared to the adjusted baseline surveys. New trails and roads will be sited to avoid and minimize impacts to high density populations of HCP species in non-federal HMAs. The current and anticipated levels and types of uses associated with these locations will be described and assessed in each HMA's resource management plan.

6.3.1.5 HMA-Specific Baseline Requirements

The Landfill Parcel HMA has unique features and monitoring needs. The following monitoring measure will be required for this HMA.

Monitoring Measure-11. Prepare a public recreational use assessment for the Landfill Parcel as part of the baseline studies and present it to the TAC for review. Timing: No later than 3 years from transfer of the property from the Army or from the issuance of HCP permits, whichever is later.

6.3.2 Status and Trends Monitoring

Status and trends monitoring will focus on vegetation mapping through time, natural community and HCP species monitoring, and threat monitoring, and it will yield both quantitative and qualitative data. Quantitative data will be collected on the abundance and distribution of HCP species, land cover, and invasive species or other known threats, and such data will build on the information collected in land use status monitoring and adjusted baseline establishment. Qualitative assessments of condition of vegetative structure or habitat quality will also be a component of status and trends monitoring. Examples of status and trends monitoring include quantitative data on covered species, acres of land cover in the Plan Area, occurrences of invasive plant populations, and incidences of natural disturbance (e.g., fire).

Annual reporting will provide a regular means of evaluating the results of status and trends monitoring and whether or not HCP biological goals and objectives have been achieved. Triggers for remedial actions are described in each species section (see Section 6.6, Species Monitoring).

The Cooperative will be responsible for conducting all status and trends monitoring through retention of a monitoring contractor (or equivalent). Funding for status and trends monitoring will be drawn from the HCP Implementation Fund during the permit term. By the end the permit term, the HCP Implementation Fund will be fully endowed (Section 9.3, *Funding Sources and Assurances*). Status and trends monitoring will continue into perpetuity; however, the frequency of some monitoring efforts will be decreased. For all species except for western snowy plover, monitoring that occurred annually will occur every 3–5 years; monitoring that occurred every 3–5 years will occur every 7–10 years; and monitoring that occurred every 10 years will continue to occur every 10 years. Annual monitoring required for western snowy plover will continue in perpetuity.

Status and trends monitoring measures are proposed at the species- and natural community-levels; these are individually discussed in Sections 6.4, *Maritime Chaparral Monitoring*, and 6.6, *Species Monitoring*.

6.3.2.1 Natural Communities

The following monitoring measure is required in order to evaluate the status and trends of natural communities within the HMAs.

Monitoring Measure-12. Conduct status and trends monitoring for natural communities. Map vegetation for all natural communities within the HMAs every 10 years consistent with the methods used for Monitoring Measure-4 and Monitoring Measure-5 (Section 6.3.1.1, *Natural Communities*). Status and trends monitoring will compare the extent of natural communities mapped in the updated mapping against the adjusted baseline for all natural communities. The result of monitoring will be used to inform adaptive management. At this time, recommended thresholds are as follows.

- 10% decline in total areal coverage of any natural community compared to the adjusted baseline for each HMA, management entity region, or base-wide.
- In addition to the above, for maritime chaparral (and all other natural communities), a 10% decline in adjusted baseline (abundance).

These thresholds may need to be revised in accordance with results of the pilot study, power analysis, and adjusted baseline.

6.3.3 Effects Monitoring

Effects monitoring will be used to evaluate the success of specific management projects initiated in response to HCP mitigation measures. Results will be used to evaluate whether the biological goals and objectives have been achieved and, if necessary, to alter management. Understanding the effects of mitigation measure implementation is an important part of monitoring and adaptive management.

Although effects monitoring measures for particular projects will be developed on a case-by-case basis, specific required effects monitoring measures for the maritime chaparral natural community and HCP species are nonetheless required; these are identified in Sections 6.4, *Maritime Chaparral Monitoring*, and 6.6, *Species Monitoring*. In addition, several base-wide monitoring measures are required; these are identified in Sections 6.3.3.1, *Natural Communities*, 6.3.3.2, *Prescribed Burning and Alternative Vegetative Management*, and 6.3.3.3, *Non-Native Invasive Species*. The following monitoring measure is required.

Monitoring Measure-13. Conduct effects monitoring to evaluate the success of specific management projects. Effects monitoring will include the development and assessment of success criteria for mitigation measures such as habitat restoration and enhancement. The success criteria will be tied to the biological goals and objectives described in Chapter 5, *Conservation Strategy*, and will be reviewed and approved by USFWS and CDFW. Monitoring the effects of management will also include tracking the response of HCP species to these mitigation measures. The effects of threat-abatement activities such as the density of noxious weeds and erosion control will also be evaluated (Atkinson et al. 2004).

Specific management projects will be evaluated through monitoring efforts catered to the project's particular circumstances, affected species and habitats, goals, and objectives. Given the size of the base, the number of HCP species and habitats, and the diversity of HMA-specific management projects that might occur over the term of the permits, it is not feasible to identify a set of procedures for all project monitoring that could occur as part of this HCP. Instead, success criteria

and monitoring protocols will be developed by each HMA manager prior to implementing specific projects. The Cooperative and Wildlife Agencies will have the opportunity to review these plans prior to finalization. The types of management projects that shall be monitored include the following.

- *Large projects*, such as coastal dune restoration, controlled burns, or widespread weed abatement treatments, which by virtue of their large spatial impacts could potentially have large impacts on one or more of the HCP species.
- *Species-specific significant projects*, which might be small in spatial scale, but have significant impacts on one or more HCP species (including especially rare species such as seaside bird's beak [*Cordylanthus rigidus* ssp. *littoralis*]).
- *Ecologically informative projects*, which are designed and implemented to provide information regarded as essential in guiding long-term management.

The project work plan will be consistent with resource management plans and base-wide monitoring program.

6.3.3.1 Natural Communities

The following monitoring measures will be required in conjunction with those measures identified in Section 6.4, *Maritime Chaparral Monitoring*, and Section 6.6, *Species Monitoring*.

Monitoring Measure-14. Record and quantify impacts of recreational use and public access to determine effect on HCP species; adjust use and access as needed to prevent adverse HCP species impacts.

Monitoring Measure-15. Evaluate native species regeneration at MPRPD.

Monitoring Measure-16. Monitor livestock grazing to determine its effectiveness and ensure it does not adversely affect HCP species or natural communities. This includes monitoring grazing to determine if it is contributing to the spread of non-native invasive species.

Monitoring Measure-17. Monitor oak woodlands for indications of sudden oak death or other disease outbreaks.

6.3.3.2 Prescribed Burning and Alternative Vegetative Management

The following prescribed burning and alternative vegetative management effects monitoring measure will be required in conjunction with those measures identified in Section 6.4, *Maritime Chaparral Monitoring*, and Section 6.6, *Species Monitoring*.

Monitoring Measure-18. Evaluate the effectiveness of prescribed burns and alternative vegetative treatments. This monitoring measure consists of the following actions.

- Conduct pre- and post-burn prescribed burn monitoring to provide data to inform future management decisions.
- Every 2 years, assess maritime chaparral stands that are adjacent to developed or future development lands at East Garrison to determine fire threats to communities at risk. Consider special fuels management strategies in these areas to lessen the chance of a wildfire moving towards or from these communities. Periodically patrol these areas to educate landowners and

visitors about wildfire risks. These fuel reduction measures would complement the fuelbreak and fire-wise planning measures on the Borderlands parcels that abut the Parker Flats Reserve.

- Monitor the approximately 150-acre training burn area to evaluate its contribution to habitat restoration goals and to inform further chaparral management at Parker Flats Reserve and elsewhere. Success of the training burn in establishing conditions that meet the vegetation management objectives for maritime chaparral and site-specific criteria will be documented through directed monitoring tied to the pre-burn planning and site preparation. This monitoring will be conducted in addition to the standard monitoring required in all chaparral communities. If success criteria are not met, additional restoration work in reserve areas and/or an adaptive management program for the training burn area will be implemented by the JPA in coordination with the TAC.
- Evaluate a range of actions including prescribed burning to support oak woodland habitat.
- Monitor and evaluate maritime chaparral diversity pre- and post-treatment to measure effects on chaparral recruitment and regeneration including fuel load management adjacent to development.
- Track the effectiveness of burning versus other actions in achieving the management objective including fuel load management adjacent to development.
- Evaluate a range of actions including prescribed burning to support sustainable and healthy maritime chaparral, coastal scrub, and HCP species.

6.3.3.3 Non-Native Invasive Species

The following non-native invasive species control effects monitoring measures will be required in conjunction with those measures identified in Section 6.4, *Maritime Chaparral Monitoring*, and Section 6.6, *Species Monitoring*.

Monitoring Measure-19. Monitor reclaimed areas, revegetation sites, fuelbreaks, and occupied and potential HCP species' habitat for non-native invasive plant species colonization.

- Conduct pre- and post- project monitoring to document the status of non-native invasive plant species in the project area. Post-project monitoring will occur for a minimum of 3 years at frequent intervals to capture potential seasonal and annual variations in non-native invasive plant populations.
- Establish photo documentation locations. Evaluate a range of actions to support non-native invasive species control, including cultural, manual, mechanical, and chemical methods, as appropriate.
- Compare the results of monitoring against the baseline in Monitoring Measure-8.

Monitoring Measure-20. Evaluate native species regeneration in the woodland adjacent to the Salinas River and in grassland habitat in the HMAs.

- Conduct pre- and post-project monitoring to document the status of native species regeneration in the project area. Post-project monitoring shall occur for a minimum of 3 years at frequent intervals to capture potential seasonal and annual variations in native plant populations.
- Establish photo documentation locations.

- Evaluate a range of actions to support native regeneration in grassland and oak woodland habitat.
- Compare the results of monitoring against the baseline in Monitoring Measure-8.

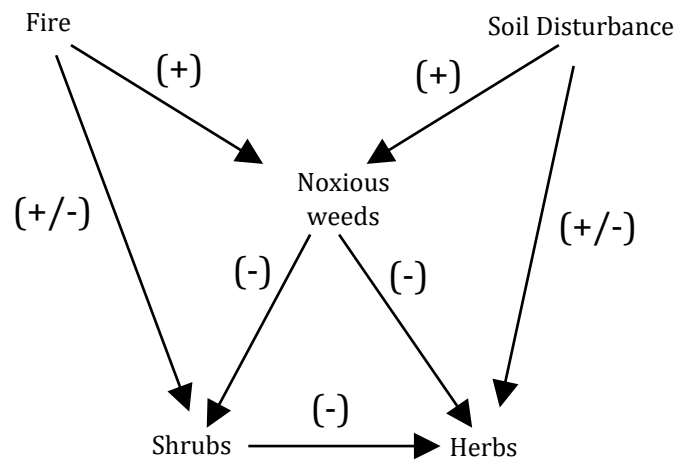
Monitoring Measure-21. Monitor predator populations (i.e., presence and absence) and the effectiveness of predator control programs. Conduct surveys for the presence of bullfrogs and predatory fish to determine the effectiveness of eradication efforts. This will also allow for an assessment of the response of native amphibian populations to non-native species eradication efforts.

6.4 Maritime Chaparral Monitoring

The maritime chaparral natural community is the most abundant community within the Plan Area and supports most of the HCP plant species. In addition, its management is the most intensive because fire is needed for community regeneration. Natural community-level monitoring focuses on the response of the natural community to mitigation measure implementation (especially restoration and enhancement). As such, monitoring will focus on vegetative response (or other selected natural-community indicators) to prescribed burning, weed abatement, alternative vegetative management, and restoration to reduce the biomass of non-native vegetation.

6.4.1 Background

Maritime chaparral supports all HCP plant species. Maritime chaparral covers a large portion of the HMAs. It is a dynamic system that requires active management using prescribed fire to simulate the natural disturbance regime that helps native species adapted to recurring fire persist. Like other communities within the installation, maritime chaparral has been degraded by the invasion and spread of noxious weeds and soil disturbances due to vehicle and recreational use. Management proposed in the HCP focuses on the importance of maintaining natural community structure and the populations of the HCP species within this important community. Through a variety of direct and indirect mechanisms, fire, soil disturbances, and exotic plant species have independent and interactive effects on populations of the maritime chaparral species, which are themselves ecologically related (see diagram below).



The simplified ecological model for the maritime chaparral ecosystem of Fort Ord shows the direct effects of fire, soil disturbance, and noxious weeds on HCP herbs and associated shrub species. Positive signs indicate direct positive effects, minus signs indicate direct negative effects, and both signs indicate both positive and negative direct effects on populations. To simplify the illustration, indirect effects are not shown, but can be inferred. For example, soil disturbances can have an indirect negative effect on HCP herbs by enhancing populations of noxious weeds.

Given the ecological interrelationships between the HCP herbs and associated shrubs within the maritime chaparral community, integrating monitoring for the co-occurring species and the factors that influence their populations will greatly assist in evaluating observed declines within the context of management and the ecology of the system. For example, if abundance of one or more of the HCP herbs declines, it will be possible to evaluate the extent to which increases in shrub canopy cover is correlated with the decline and weigh the relative ecological benefits of mitigation measure implementation. Because the HCP herbs co-occur within maritime chaparral, it is possible to collect data on multiple species within common sample plots, adding to the cost-effectiveness of the coordinated monitoring program.

The monitoring program includes aerial mapping and qualitative field sampling and will track the distribution of the maritime chaparral patches and all HCP plant species within those patches, rather than individual monitoring programs for each shrub species (see Appendix G).

6.4.2 Monitoring Goals

The monitoring protocols for maritime chaparral have been designed to maximize statistical power and detection probability using the most cost-effective methods available. The objective of the monitoring protocols is to have at least 80% statistical power to detect 20% declines in the abundance of each HCP species, with a 10% or smaller chance of indicating a statistically significant change has occurred when one has not.

The monitoring program for the HCP species of maritime chaparral seeks information on the following.

- **Distribution.** Areal extent mapping will be performed to monitor the distribution of maritime chaparral patches within the HMAs (Monitoring Measure-4 [baseline] and Monitoring Measure-12 [status and trends]). This effort will facilitate the design of management and other monitoring studies (including quantitative sampling, below) and provide insight into the factors affecting the distribution and persistence of the community.
- **Abundance.** Quantitative field sampling will be conducted to monitor the abundance of the HCP species.
- **Threats.** The conditions that degrade maritime chaparral habitat.

Together, this information allows these questions to be answered.

- What is the status and trend of the distribution of maritime chaparral habitat within the HMAs?
- Within maritime chaparral, what are the statuses and trends of the HCP plant populations?
- What are the factors that degrade their habitat?

Additional goals of the monitoring program include the following.

- Monitor the factors that degrade HCP plant species' habitat, including noxious weeds, soil disturbance, and canopy closure resulting from fire exclusion.
- Aid evaluation of the effectiveness of the management program and inform future management projects.
- Increase understanding of the ecology of the system and species.

And finally, the monitoring program seeks to understand how mitigation measure implementation (i.e., prescribed burns, weed abatement and alternative vegetation treatments) affect chaparral habitat.

6.4.3 Overview of Monitoring for Maritime Chaparral

Monitoring of maritime chaparral will consist of quantifying the distribution, composition, and structure (i.e., canopy closure) of maritime chaparral and evaluating changes over time. In addition, the monitoring program seeks to identify threats and assess the efficacy of specific threat-abatement programs, such as weed abatement, erosion control, and canopy closure.

Any projects designed to improve the quality of maritime chaparral habitat or increase its distribution will be evaluated for success and managed adaptively. These projects include experiments that evaluate the effects of canopy closure as a result of fire exclusion and use of alternative vegetative treatments to create canopy openings and a successional mosaic.

6.4.4 Document and Monitor Community Status

Monitoring Measure-22. Conduct status and trends monitoring for maritime chaparral and the HCP plant species it supports. Thresholds for maritime chaparral exist at the species level, rather than the community level. Areal mapping will be used to provide information about the distribution of maritime chaparral that will be combined with the abundance sampling (below) to evaluate thresholds for the HCP plant species. Status and trends monitoring (Monitoring Measure-12) will be compared against the baseline (Monitoring Measure-5). The result of monitoring will be

used to inform adaptive management. The following thresholds are proposed to trigger remedial efforts based on the results of maritime chaparral sampling.

- 20% decline in abundance (density or cover) relative to the adjusted baseline.
- 10% increase in the percent cover of anthropogenic factors that negatively impact maritime chaparral species.

Thresholds for abundance will be evaluated using trend analysis. After data are available from five iterations of the sampling data, route regression will be used to examine the mean trend in HCP species abundance and cover of anthropogenic factors across all permanent quadrats (Elzinga et al. 2001) within each management entity region and base-wide. The mean slope will be weighted by the average cover in each quadrat to accurately depict overall changes in abundance.

Single interval declines in HCP species abundance and/or increases in the cover of anthropogenic factors can be evaluated using paired t-tests. Though this might be a reliable indicator of changes in the cover of noxious weeds, soil disturbance and erosion, and the cover of woody species, changes in herbaceous plant abundance detected over single sampling intervals should be cautiously interpreted, owing to the potential for natural variability in abundance due to climate and sampling error to result in such changes.

Mixed linear models will be needed to partition the variance among multiple factors inherent in sampling using a split panel design (Urquhart et al. 1998; Piepho and Ogutu 2002; McDonald 2003).

Observed declines in the abundance of the HCP species should be evaluated within the context of the ecological model for maritime chaparral system, using the additional data obtained from the sample plots. For example, if sand gilia abundance is found to decline by 20% over a 5-year period, additional analyses should be used to determine whether the decline is biological significant and, if so, whether anthropogenic factors contributed to the decline.

6.4.5 Evaluate Effectiveness of Mitigation Measures

Monitoring Measure-23. Evaluate the effectiveness of mitigation measures for maritime chaparral and the HCP plant species it supports. Prescribed burns, weed abatement, erosion control, restoration, and alternative vegetative management will be used to preserve, enhance, and maintain the quality and extent of maritime chaparral within the Plan Area. HMA managers of the FONR, East Garrison Reserve, Parker Flats Reserve, and Range 45 Reserve are required to implement maritime chaparral HCP required actions. BLM will allow effectiveness evaluation of mitigation measures for maritime chaparral and the HCP plant species it supports on FONM.⁵ Project-specific effectiveness monitoring and success criteria will be detailed in each HMA's resource management plan and used to evaluate the effectiveness of the mitigation measures.

Effectiveness monitoring will be used to measure the effectiveness of conservation actions and alternative treatments at achieving management goals and objectives and to inform the adaptive

⁵ Monitoring as described in Monitoring Measure-23 will be conducted by the Cooperative on FONM, on condition of BLM permission of entry and coordination. BLM supports the HCP while it pursues the management goals and objectives of its RMP, the HMP, the FONM proclamation, and BLM's governing statutory and regulatory authorities, including FLPMA, 43 USC 1701 et seq. For more information, see Section 1.9.3, *Role of Bureau of Land Management*.

management strategy. In addition, these actions will also serve to maintain or increase the distribution of HCP species within each HMA where they occur at the time of the adjusted baseline study. Monitoring that evaluates the status and trends of covered species in the maritime chaparral community will be linked to the results of natural community monitoring and will help evaluate the effectiveness of mitigation measure implementation. To track the efficacy of the actions to restore, enhance, and maintain the chaparral community, the following monitoring actions will be required.

- Develop success criteria for maritime chaparral restoration, enhancement, and maintenance consistent with biological goals and objectives.
- Track effectiveness of mitigation measure implementation using success criteria.
- Monitor HCP species' response, if applicable.
- Consider implementing extracurricular analyses identified in Appendix G.
- Link mitigation measure implementation with status and trends monitoring for covered species within the maritime chaparral community.

6.5 Research-Oriented Actions to Inform Adaptive Management

Monitoring Measure-24. Evaluate research-oriented actions to inform adaptive management.

Research-oriented actions will be used to test vegetative treatments and inform adaptive management of each natural community. For these actions the following monitoring actions will be required.

- Conduct targeted research that identifies key factors affecting regeneration, composition, distribution, and structure of all HCP natural communities.
- Track effectiveness of various management actions (i.e., cultural vs. manual vs. mechanical vs. chemical) in achieving management objective.
- Monitor target HCP species' response.

6.6 Species Monitoring

Following establishment of the adjusted baseline (Section 6.3.1, *Baseline Studies*), HCP species monitoring shall occur on a specific schedule for each HCP species as specified below. Methods used in ongoing monitoring shall be consistent with those used for the adjusted baseline to obtain comparable data. Monitoring over time will allow for long-term review of trends against the adjusted baseline. Specific monitoring methods are applied to each of the annual HCP plant species.

Plant and animal surveys will be conducted using species-specific protocols. Plant species monitoring will be conducted following the methodology established by the *Plant Monitoring Program for the Installation-Wide Multispecies Habitat Conservation Plan for the Former Fort Ord*

(McGraw 2005; Appendix G)⁶. Animal species monitoring will also follow the protocols summarized in Appendix H and is described in the subsequent sections. Alternative methods may be proposed but must be approved by USFWS and CDFW through the Cooperative prior to implementation (Section 8.4, *Minor and Major Amendments*). The Cooperative will assist agencies in interpreting these monitoring requirements. In all cases of monitoring of HCP species in this section, unless specifically described otherwise, the Cooperative will conduct monitoring on FONM with permission of entry and coordination with BLM.

A brief description of each species and an overview of the monitoring issues and goals are provided below.

6.6.1 Sand Gilia

6.6.1.1 Background

Sand gilia is an annual herb. It occurs on sandy soils in stabilized coastal dunes and canopy gaps in maritime chaparral and oak woodlands where other vegetative cover is low. It is known to occur in most of the HMAs.

The distribution of sand gilia could be reduced due to fire exclusion, which increases shrub and tree cover; trampling and habitat degradation due to unnatural disturbance including recreation; and the invasion and spread of large, highly competitive noxious weeds (e.g., jubata grass (*Cortaderia jubata*), Chilean sea fig (*Carpobrotus chilensis*), French broom (*Genista monspessulana*)). Its abundance could be reduced by the invasion and spread of European annual plants and perhaps unnaturally high levels of deer herbivory. Sand gilia abundance and small-scale distribution are influenced by interannual variability in climate.

Sand gilia exhibits seed dormancy, such that viable seed exists within a soil seed bank. This belowground component of the population of sand gilia may play an essential role in facilitating population persistence by precluding extirpation caused by failure of the aboveground population to reproduce during one or more “bad” years. More information is needed about the demography and ecology of the sand gilia seed bank to understand its role in population dynamics and growth. Because monitoring belowground populations is very difficult, this program monitors aboveground populations, the status and trends of which are assumed to reflect persistence of the overall population, until such time that research indicates otherwise.

6.6.1.2 Monitoring Goals

The monitoring program for sand gilia seeks information on the following.

- **Distribution:** Areal extent mapping will be performed to monitor sand gilia distribution. This effort will facilitate the design of management and other monitoring studies (including quantitative sampling, below) and provide insight into the factors affecting population distribution and persistence.

⁶ Information in this section regarding Yadon’s piperia occurrence and monitoring protocol has been updated from the Plant Monitoring Program based on more recent location information within the Plan Area.

- **Density:** Abundances sampling will be used to estimate and monitor sand gilia density. Biologically meaningful declines in density will be detected amidst the background fluctuations in abundance, and link declines to changes in habitat conditions to inform remedial efforts.
- **Mitigation measure effectiveness:** Effectiveness of mitigation measures (i.e., restoration, controlled burning and alternative vegetative management) in maintaining and/or increasing the distribution and abundance of sand gilia will be assessed.
- **Anthropogenic threats:** Monitor anthropogenic threats, including aggressive exotic plants (jubata grass, iceplant, or other large exotics), dense infestations of European annual plants, trampling and pet pollution near trails, and erosion caused by roads or recreation use (historical or current).

6.6.1.3 Overview of Monitoring for Sand Gilia

Sand gilia monitoring will involve both status and trends monitoring and effects monitoring, which evaluates the impact of mitigation measure implementation (e.g., weed abatement, dune stabilization, other restoration). Sand gilia monitoring will also be addressed as part of natural community monitoring and specific experimental actions to test covered-species response to burning and alternative vegetative treatments. The following is a summary of species-specific monitoring protocols. Detailed monitoring protocols can be found in Appendix G.

6.6.1.3.1 Document and Monitor Species Status

Monitoring Measure-25. Conduct status and trends monitoring for sand gilia. Areal mapping is a primary component of the monitoring program for sand gilia (details on mapping protocols are described in Appendix G). Due to the low frequency at which areal mapping will be conducted, thresholds used to trigger remedial efforts for sand gilia are based on single intervals (e.g., 2025 compared to 2015). Status and trends monitoring will be compared against the baseline (Monitoring Measure-6). The result of monitoring will be used to inform adaptive management. At this time, recommended thresholds are as follows.

- 10% decline in total areal coverage compared to the adjusted baseline for each HMA, management entity region, or base-wide.
- 10% increase in the total areal coverage of anthropogenic factors that negatively impact sand gilia distribution, including noxious weeds and unnatural disturbances and erosion caused by recreation.

These thresholds may need to be revised per results of the pilot study, power analysis, and adjusted baseline.

In addition, the abundance of sand gilia will be monitored by repeatedly sampling sand gilia density within patches of occupied habitat identified in the areal mapping in each of the HMAs. The objectives of the monitoring protocol are to have 80% power to detect 20% declines in sand gilia over at least 5 sampling intervals, with a 10% chance of indicating a statistically significant change has occurred when one has not. Details of monitoring protocols for abundance sampling of sand gilia can be found in Appendix G.

The following thresholds are proposed to trigger remedial efforts based on the results of the sand gilia density sampling.

- 20% decline in density relative to the adjusted baseline.
- 10% increase in the percent cover of anthropogenic factors that negatively impact sand gilia.

These thresholds will be evaluated using trend analysis. After data are available from five iterations of the sampling data, route regression will be used to examine the mean trend in sand gilia density and cover of anthropogenic factors across all permanent quadrats (Elzinga et al. 2001) within each management entity region and base-wide. The mean slope will be weighted by the average cover in each quadrat, to accurately depict overall changes in abundance.

Single interval declines in sand gilia density and/or increases in the cover of anthropogenic factors can be evaluated using paired t-tests. Though this might be a reliable indicator of changes in the cover of noxious weeds, soil disturbance/erosion, and/or the cover of woody species, changes in sand gilia abundance detected over single sampling intervals should be cautiously interpreted, owing to the potential for natural variability in abundance due to climate and sampling error to result in such changes.

Mixed linear models will be needed to partition the variance among multiple factors inherent in sampling using a split panel design (Urquhart et al. 1998; Piepho and Ogutu 2002; McDonald 2003).

6.6.1.3.2 Evaluate the Effectiveness of Mitigation Measures

Monitoring Measure-26. Evaluate the effectiveness of mitigation measures for sand gilia.

Mitigation measures were developed to achieve the HCP plant species biological goals and objectives identified above. Those HMAs on which sand gilia is located will tailor their management activities to ensure maintenance or increase of distribution of the species. To evaluate the efficacy of management, the following monitoring actions will be required.

- Develop success criteria based on biological goals and objectives for species management, enhancement and restoration actions, including prescribed burning, weed abatement, alternative to burning, erosion control, road-use management, and sand dune stabilization.
- Monitor species abundance and distribution pre- and post-treatment to measure effects on recruitment and regeneration; include documentation of noxious weed abundances. Monitoring of the number of above ground individuals of sand gilia will occur each year during the first five-year period following habitat restoration in any area known to support these species prior to restoration efforts. Such monitoring will serve to provide information regarding the effects of stockpiling seed bank of these species.
- Evaluate effectiveness of actions using success criteria.
- Record and quantify impacts of recreational use and public access to determine species effects; adjust use and access as needed to prevent adverse species impacts.
- Consider implementing extracurricular analysis identified in Appendix G.
- In preparing the vegetation and fire management program, develop a specific protocol, probably a specially designed frequency survey, to follow the geographic extent of sand gilia and Monterey spineflower on the FONR.
- Assess results of experimental studies; use results to inform future mitigation measure implementation.

- Monitor anthropogenic factors, including noxious weeds, unnatural disturbances, and erosion caused by recreation, which may influence species distribution.

6.6.2 Yadon's Piperia

6.6.2.1 Background

Yadon's piperia is a perennial herb that exhibits dormancy through which plants can remain alive, underground and not emerge in a given year. It occurs along the edge of shrubs in maritime chaparral and in the sparse herbaceous understory of Monterey pines (U.S. Fish and Wildlife Service 2009). Within the HMAs, Yadon's piperia is known from the Marina Northwest Corner and FONM (Chapter 2, Section 2.2.2, *Yadon's Piperia*). Little is known about the ecological factors influencing the distribution, abundance, and population persistence of Yadon's piperia, or its threats. Like other herbaceous plants, it may be impacted by trampling and unnatural soil disturbance caused by recreation, and the invasion and spread of noxious weeds. Yadon's piperia may require fire or similar disturbance for regeneration. Herbivory of inflorescences by deer may also reduce populations (Doak and Graff 2001; U.S. Fish and Wildlife Service 2004a). More research is needed to inform successful management of this rare orchid.

6.6.2.2 Monitoring Goals

Based on recent information regarding the species occurrence within the Plan Area, a monitoring protocol has been created from recommendations made within the Plant Monitoring Program (Appendix G) as well as existing monitoring protocols for other herbaceous species of similar distribution and are presented in the Monitoring Protocols for Yadon's piperia (Appendix H). Based on its distribution and abundance within the HMAs, the monitoring goals for Yadon's piperia are to obtain information on the following.

- **New species populations:** Reconnaissance surveys will be conducted annually for 10 years to identify new species populations. Any new populations identified will be included in the adjusted baseline.
- **Distribution:** Areal extent mapping will be updated annually and used to determine and monitor the distribution of Yadon's piperia. Areal mapping will allow spatially explicit examination of the distribution that will facilitate the design of management and other monitoring studies (including census monitoring below) and provides insight into the factors affecting the population distribution and persistence.
- **Cover:** Census monitoring will determine the abundance of Yadon's piperia.
- **Anthropogenic threats:** Monitor anthropogenic threats—such as disturbance, trespassing, erosion, pet pollution, and trash—to reduce or prevent the increase in anthropogenic factors that negatively affect Yadon's piperia.

Mitigation measure effectiveness: Effectiveness of mitigation measure implementation (i.e., restoration, controlled burning and alternative vegetative management) in maintaining and/or increasing the distribution and abundance of Yadon's piperia will be assessed.

In the event that Yadon's piperia distribution and abundance is much higher than currently known within the Plan Area, alternative methods may be proposed but must be approved by USFWS and CDFW through the Cooperative prior to implementation (Section 8.4, *Minor and Major Amendments*).

6.6.2.3 Overview of the Monitoring Program for Yadon's Piperia

Yadon's piperia monitoring will involve both status and trends monitoring and effects monitoring, which evaluates the impact of mitigation measure implementation (e.g., weed abatement, erosion control). The following is a summary of species-specific monitoring protocols. Detailed monitoring protocols can be found in Appendix H.

6.6.2.3.1 Document and Monitor Species Status

Monitoring Measure-27. Conduct status and trends monitoring for Yadon's piperia. Three complementary monitoring protocols will be used for species monitoring. Reconnaissance surveys will be used to identify new species populations; while aerial surveys and census monitoring will be used to determine species distribution and density (see Appendix H for detailed monitoring protocols). New populations identified by reconnaissance surveys will be iteratively added to the adjusted baseline over the 10-year period for both species distribution and density. Areal mapping will be conducted annually; therefore, thresholds used to trigger remedial efforts for Yadon's piperia are based on the total patch area accumulated over a 10-year monitoring period (e.g., 2015–2025 compared to 2025–2035). Status and trends monitoring will be compared against the baseline (Monitoring Measure-6). The result of monitoring will be used to inform adaptive management. At this time, recommended thresholds are as follows.

- 10% decline in total areal coverage compared to the adjusted baseline for each HMA, management entity region, or base-wide.
- 10% increase in the total areal coverage of anthropogenic factors that negatively affect Yadon's piperia distribution, including noxious weeds and unnatural disturbances and erosion caused by recreation.

These thresholds may need to be revised per results of the pilot study, power analysis, and adjusted baseline.

At the recommendation of USFWS, the adjusted baseline for Yadon's piperia density will be established simultaneous to the adjusted baseline for the species' distribution, through the implementation of reconnaissance surveys (species census) over a 10-year period. The adjusted baseline for abundance will be calculated as applicable for each HMA, management entity region, and base-wide as the average of 10-year densities for each mapped polygon. Subsequent census monitoring will be conducted annually.

The following thresholds are proposed to trigger remedial efforts based on the results of the Yadon's piperia census averages.

- 20% decline in density relative to the adjusted baseline.
- 10% increase in the percent cover of anthropogenic factors that negatively affect Yadon's piperia.

6.6.2.3.2 Evaluate Effectiveness of Mitigation Measures

Monitoring Measure-28. Evaluate the effectiveness of mitigation measures for Yadon's piperia. Mitigation measures were developed to achieve the HCP plant species biological goals and objectives identified above. Those HMAs on which Yadon's piperia is located will tailor their management activities to ensure maintenance or increase distribution of the species. To evaluate the efficacy of management the following monitoring actions will be required.

- Develop success criteria based on the biological goals and objectives for weed abatement and erosion-control activities.
- Monitor Yadon's piperia abundance and distribution pre- and post-treatment to measure effects on recruitment and regeneration.
- Evaluate effectiveness of weed abatement and erosion-control activities using success criteria.
- Monitor the effectiveness of the Yadon's piperia salvage efforts (i.e., implementation of AMM-13 and Mitigation Measure-37).
- Monitor the survivorship and recruitment of translocated and restored occurrences of Yadon's piperia.

6.6.3 Monterey Spineflower

6.6.3.1 Background

Monterey spineflower is an annual herb. It occurs on stabilized coastal dunes and in canopy gaps in maritime chaparral and is known to occur in most of the HMAs.

The distribution of Monterey spineflower could be reduced by trampling and loss of habitat due to unnatural disturbance including recreation; the invasion and spread of large, highly competitive noxious weeds (e.g., jubata grass, Chilean sea fig, French broom); and by fire exclusion, which increases shrub and tree cover within maritime chaparral. Its abundance is likely reduced by the competition from European annual plants. Monterey spineflower abundance (density and cover) is influenced by interannual variability in climate (Fox et al. 2006). There is no strong evidence suggesting that Monterey spineflower has a persistent seed bank (e.g., most or all the seeds germinate the following year; Fox et al. 2006); however, more research is needed to evaluate this.

6.6.3.2 Monitoring Goals

The monitoring program for Monterey spineflower seeks information on the following.

- **Distribution:** Areal mapping will determine and monitor Monterey spineflower distribution. It will identify and track the location and areal coverage of Monterey spineflower patches within the HMAs as well as allowing spatially explicit examination of the distribution that will facilitate the design of management and other monitoring studies (including quantitative sampling below) and providing insight into the factors affecting the population distribution and persistence.
- **Cover:** Abundances sampling will be used to estimate and monitor Monterey spineflower cover. It will detect biologically meaningful declines in cover amidst the background fluctuations in abundance, and link declines to changes in habitat conditions to inform remedial efforts.

- **Mitigation measure effectiveness:** Effectiveness of mitigation measure implementation (i.e., restoration, controlled burning and alternative vegetative management) in maintaining and/or increasing the distribution and abundance of Monterey spineflower will be assessed.

6.6.3.3 Overview of Monitoring for Monterey Spineflower

Monterey spineflower monitoring will involve both status and trends monitoring and effects monitoring, which evaluates the impact of mitigation measure implementation (e.g., weed abatement, dune stabilization, other restoration). Monterey spineflower monitoring will also be addressed as part of natural community monitoring, in which specific experimental actions will test covered maritime species response (establishment of new patches) to burning and alternative vegetative treatments. The following is a summary of species-specific monitoring protocols. Detailed monitoring protocols can be found in Appendix G.

6.6.3.3.1 Document and Monitor Species Status

Monitoring Measure-29. Conduct status and trends monitoring for Monterey spineflower. As described in the section on adjusted baseline and status and trends monitoring above, areal mapping and abundance sampling are the main components of the monitoring program for Monterey spineflower (details on mapping protocols are described in Appendix G). Due to the low frequency at which areal mapping will be conducted, thresholds used to trigger remedial efforts for Monterey spineflower are based on single intervals (e.g., 2025 compared to 2015). Status and trends monitoring will be compared against the baseline (Monitoring Measure-6). The result of monitoring will be used to inform adaptive management. At this time, recommended thresholds are as follows.

- 10% decline in total areal coverage compared to the adjusted baseline for each HMA, management entity region, or base-wide.
- 10% increase in the total areal coverage of anthropogenic factors which negatively impact Monterey spineflower distribution, including noxious weeds and unnatural disturbances and erosion caused by recreation.

These thresholds may need to be revised per results of the pilot study, power analysis, and adjusted baseline.

The following thresholds are proposed to trigger remedial efforts based on the results of the Monterey spineflower abundance sampling.

- 20% decline in cover relative to the adjusted baseline.
- 10% increase in the percent cover of anthropogenic factors that negatively affect Monterey spineflower.

These thresholds will be evaluated using trend analysis. After data are available from five iterations of the sampling data, route regression will be used to examine the mean trend in Monterey spineflower abundance and the cover of anthropogenic factors across all permanent quadrats (Elzinga et al. 2001) within each management entity region and base-wide. The mean slope will be weighted by the average cover in each quadrat, to accurately depict overall changes in abundance.

Single interval declines in Monterey spineflower cover and/or increases in the cover of anthropogenic factors can be evaluated using paired t-tests. Though this might be a reliable

indicator of changes in the cover of noxious weeds, soil disturbance/erosion, and/or the cover of woody species, changes in Monterey spineflower abundance detected over single sampling intervals should be cautiously interpreted, owing to the potential for natural variability in abundance due to climate and sampling error to result in such changes.

6.6.3.3.2 Evaluate Effectiveness of Mitigation Measures

Monitoring Measure-30. Evaluate the effectiveness of mitigation measures for Monterey spineflower. Mitigation measures were developed to achieve the HCP plant species biological goals and objectives identified above. Those HMAs on which Monterey spineflower is located will tailor their management activities to ensure maintenance or increase distribution of the species. To evaluate the efficacy of management the following monitoring actions will be required.

- Develop success criteria based on the biological goals and objectives for species management, enhancement and restoration actions, including prescribed burning, weed abatement, alternative to burning, erosion control, road-use management, and sand dune stabilization.
- Monitor species abundance and distribution pre- and post-treatment to measure effects on recruitment and regeneration; include documentation of noxious weed abundances. Monitoring of the number of above ground individuals of Monterey spineflower will occur each year during the first 5-year period following habitat restoration in any area known to support these species prior to restoration efforts.
- Evaluate effectiveness of actions using success criteria.
- Record and quantify impacts of recreational use and public access to determine species effects; adjust use and access as needed to prevent adverse species impacts.
- In preparing the vegetation and fire management program, develop a specific protocol, probably a specially designed frequency survey, to follow the geographic extent of sand gilia and Monterey spineflower on the FONR.
- Assess results of experimental studies; use results to inform future mitigation measure implementation.
- Consider implementing extracurricular analysis identified in Appendix G.
- Monitor anthropogenic threats—such as disturbance, trespassing, erosion, pet pollution and trash—that may influence species distribution.

6.6.4 Seaside Bird's Beak

6.6.4.1 Background

Seaside bird's beak is an annual herb. It occurs on sandy soils in stabilized coastal dunes and in canopy gaps in maritime chaparral and is known to occur in only four HMAs: the FONM, the FONR, East Garrison South, and the Monterey Peninsula Regional Parks District Reserve.

Little is known about the ecological factors which influence the distribution and abundance of seaside bird's beak, but recent field experiments have identified several factors that reduce productivity and survivorship. A recent study found that the species was limited by the lack of host plants, mammalian herbivory, moth larvae herbivory on seeds, litter deposition, and competition from non-native plants. Seaside bird's beak is a hemiparasite, with deep-rooted woody perennials

likely important hosts. Mammalian herbivores, commonly present in very high numbers in reserves near developed areas, may decrease plant survivorship due to overbrowsing. Insect seed predators, particularly moth larvae, can decrease reproductive success. Seaside bird's beak is found in fire-adapted closed-cone pine forest and chaparral, indicating that fire suppression may reduce germination capacity. Non-native grasses compete with native plants for resources and by reducing germination due to the accumulation of plant litter. (Watts et al. 2010.) Seaside bird's beak may also be influenced by interannual variability in climate.

6.6.4.2 Monitoring Goals

The objectives of the monitoring protocol are to have 80% power to detect 20% declines in seaside bird's beak over at least 5 sampling intervals, with a 10% chance of indicating a statistically significant change has occurred when one has not. The monitoring program for seaside bird's beak seeks information on the following.

- **Distribution:** Areal mapping will determine and monitor seaside bird's beak distribution. It will identify and track the location and areal coverage of seaside bird's beak patches within the HMAs and will allow spatially explicit examination of the distribution that will facilitate the design of management and other monitoring studies (including quantitative sampling below) and provides insight into the factors affecting the population distribution and persistence.
- **Density:** Abundance sampling will estimate and monitor seaside bird's beak density. It will detect biologically meaningful declines in density amidst the background fluctuations in abundance, and link declines to changes in habitat conditions to inform remedial efforts.
- **Mitigation measure effectiveness:** Effectiveness of mitigation measure implementation (i.e., restoration, controlled burning and alternative vegetative management) in maintaining and/or increasing the distribution and abundance of seaside bird's beak will be assessed.
- **Anthropogenic threats:** Monitor anthropogenic threats, including aggressive exotic plants (jubata grass, iceplant, or other large exotics), dense infestations of European annual plants, trampling and pet pollution near trails, and erosion caused by roads or recreation use (historical or current).

6.6.4.3 Overview of the Monitoring Program for Seaside Bird's Beak

Seaside bird's beak monitoring will involve both status and trends monitoring and effects monitoring, which evaluates the impact of mitigation measure implementation (e.g., weed abatement, dune stabilization, other restoration). Seaside bird's beak monitoring will also be addressed as part of natural community monitoring and specific experimental actions test covered-species response to burning and alternative vegetative treatments. The following is a summary of species-specific monitoring protocols. Detailed monitoring protocols can be found in Appendix G.

6.6.4.3.1 Document and Monitor Species Status

Monitoring Measure-31. Conduct status and trends monitoring for Seaside bird's beak. As described in the section on status and trends monitoring above, areal mapping and abundance sampling are the primary components of the monitoring program for seaside bird's beak (details on mapping protocols are described in Appendix G). Due to the low frequency at which areal mapping

will be conducted, thresholds used to trigger remedial efforts for seaside bird's beak are based on single intervals⁷. Status and trends monitoring will be compared against the baseline (Monitoring Measure-6). The result of monitoring will be used to inform adaptive management. At this time, recommended thresholds are as follows.

- 10% decline in total areal coverage compared to the adjusted baseline for each HMA, management entity region, or base-wide.
- 10% increase in the total areal coverage of anthropogenic factors which negatively impact seaside bird's beak distribution.

These thresholds may need to be revised per results of the pilot study, power analysis, and adjusted baseline.

The following thresholds are proposed to trigger remedial efforts based on the results of the seaside bird's beak density sampling.

- 20% decline in density relative to the adjusted baseline.
- 10% increase in the percent cover of anthropogenic factors that negatively impact seaside bird's beak.

These thresholds will be evaluated using trend analysis. After data are available from five iterations of the sampling data, route regression will be used to examine the mean trend in seaside bird's beak density and cover of anthropogenic factors across all permanent quadrats (Elzinga et al. 2001) within each management entity region and base-wide. The mean slope will be weighted by the average cover in each quadrat, to accurately depict overall changes in abundance.

Single interval declines in seaside bird's beak density and/or increases in the cover of anthropogenic factors can be evaluated using paired t-tests. Though this might be a reliable indicator of changes in the cover of noxious weeds, soil disturbance/erosion, and/or the cover of woody species, changes in seaside bird's beak abundance detected over single sampling intervals should be cautiously interpreted, owing to the potential for natural variability in abundance due to climate and sampling error to result in such changes.

Mixed linear models will be needed to partition the variance among multiple factors inherent in sampling using a split panel design (Urquhart et al. 1998; Piepho and Ogutu 2002; McDonald 2003).

6.6.4.3.2 Evaluate Effectiveness of Mitigation Measures

Monitoring Measure-32. Evaluate the effectiveness of mitigation measures for Seaside bird's beak. Mitigation measures were developed to achieve the HCP plant species biological goals and objectives identified above. Those HMAs on which seaside bird's beak is located will have their management activities tailored to ensure maintenance or increase distribution of the species. To evaluate the efficacy of management the following monitoring actions will be required.

⁷ The interval is the time period between monitoring studies. For example, if an annual monitoring interval is used, then results from year 1 would be compared to year 2. If a 5 year interval is used between monitoring studies, year 1 results would be compared to year 5 results. Species monitoring intervals are summarized in Table 6-3.

- Develop success criteria based on biological goals and objectives for species management, enhancement, and restoration actions, including prescribed burning, weed abatement, alternatives to burning, erosion control, and road-use management.
- Monitor species abundance and distribution pre- and post-treatment to measure effects on recruitment and regeneration; include documentation of noxious weed abundances.
- Evaluate effectiveness of actions using success criteria.
- Record and quantify impacts of recreational use and public access to determine species effects; adjust use and access as needed to prevent adverse species impacts.
- Consider implementing extracurricular analysis identified in Appendix G.
- Assess results of experimental studies; use results to inform future mitigation measure implementation.

6.6.5 Smith's Blue Butterfly

6.6.5.1 Background

Smith's blue butterfly is found in a number of inland and coastal sand dunes, serpentine grasslands, and cliffside chaparral plant communities along the central California coast. Within the Plan Area, Smith's blue butterflies have only been documented on FODSP (Appendix A, Figure A-5a); host plants occur east of Highway 1 but presence has not been determined.

The Smith's blue butterfly occupies areas supporting two buckwheat species, coast buckwheat (*Eriogonum latifolium*) and seacliff buckwheat (*Eriogonum parvifolium*). Smith's blue butterflies complete their one-year life cycle in close association with the coastal buckwheat species, on which they mate, lay their eggs, and feed, both as larva, which eat the flowers and seeds, and adults, which feed on nectar. Thus, the distribution of Smith's blue butterfly is limited to areas supporting one or both of the buckwheat species. Previous studies have indicated that the abundance of Smith's blue butterfly was greatest in "high quality" habitat patches defined by their higher density of flowering buckwheat species, relative to low- and medium-quality habitat patches, suggesting butterfly abundance is correlated with buckwheat abundance (Arnold 2002)

Subpopulations of Smith's blue butterfly exhibit high inter-annual variability due to climate, disease, and predation, among other factors; numbers of individuals can vary substantially in any given area over time. However, studies have not been conducted to determine the extent and effects of these threats at the population level (U.S. Fish and Wildlife Service 2006). As perennial species, the host plants of the endangered butterfly exhibit less dramatic variation in abundance. Given their integral role in the species life cycle, they provide a good indicator of habitat suitability.

6.6.5.2 Monitoring Goals

Data on both buckwheat and butterflies will be collected through this monitoring program. Numerical thresholds are established for butterfly habitat while presence/absence criteria are used for the species itself. The monitoring program for Smith's blue butterfly seeks information on the following.

- **Distribution:** Air-photo interpretation will be used to aid habitat mapping efforts that will identify and track the location and extent of suitable habitat for Smith's blue butterfly and allow

for an examination of habitat distribution that will inform the design of restoration, management, and other monitoring studies.

- **Abundance:** Abundances sampling to estimate and monitor host plant populations and detect changes in abundance that could reflect changes in overall Smith's blue butterfly habitat extent or quality.
- **Mitigation measure effectiveness:** Effectiveness of mitigation measure implementation (e.g., restoration, noxious weed removal) in maintaining and/or increasing the distribution and abundance of species and host plant will be assessed. This includes assessing species use of restored coastal dune areas including the migration corridor that will be created for this species through restoration at FODSP.

6.6.5.3 Overview of the Monitoring Program for Smith's Blue Butterfly

The monitoring program for the Smith's blue butterfly includes both status and trends monitoring, as well as effects monitoring, which evaluates the impact of mitigation measure implementation. The status and trends monitoring includes assessing the extent and distribution of butterfly habitat and recording the presence/absence of butterflies in various areas. Currently, there are a total of 119 acres of potential species habitat located across FODSP, FONR, City of Seaside, and City of Marina lands.

Aerial photo interpretation will be used in addition to two types of surveys: (1) abundance sampling of larval and adult host plants, and (2) presence/absence surveys of adults in potential habitat. Evaluation of the impacts of mitigation measure implementation will inform the adaptive management process. Understanding both the quantity and quality of habitat and the species response to changes in that habitat will allow evaluation of the relationship between the two and will further understanding of how management activities affect the butterfly. The following is a summary of species-specific monitoring protocols. Detailed monitoring protocols can be found in Appendix H.

6.6.5.3.1 Document and Monitor Host Plant Status

Monitoring Measure-33. Conduct status and trends monitoring for Smith's blue butterfly. In conjunction with aerial photo interpretation and habitat mapping to determine areal habitat extent, the adjusted baseline for Smith's blue butterfly will be established by mapping host-plant abundance and noxious weeds for 3 consecutive years.

For status and trends monitoring of butterfly habitat, both surveys of host plants and habitat mapping will be used. Host-plant abundances will be monitored every 3-5 years⁸ using the same sampling design as the baseline surveys. The following thresholds are proposed to trigger remedial efforts based on the results of sampling for the Smith's blue butterfly host plant.

- 15% overall decline in the abundance of flowering individuals of either or both of the host plants.
- 15% increase in the percent cover of noxious weeds or soil disturbance.

⁸ Flexibility in monitoring is provided to allow for weather or budget constraints. For example, if it is a particularly dry winter, surveys may be delayed to the following year. Surveys will be conducted at least every 5 years.

In addition to host-plant monitoring, areal mapping will be conducted every 10 years. Thresholds used to trigger remedial efforts for the area of Smith's blue butterfly habitat will be based on single intervals (e.g., 2025 compared to 2015). Status and trends monitoring will be compared against the baseline (Monitoring Measure-7). The result of monitoring will be used to inform adaptive management. At this time, recommended thresholds are as follows.

- 15% decline in total areal coverage compared to the adjusted baseline.

These thresholds may need to be revised per results of the pilot study, power analysis, and adjusted baseline.

6.6.5.3.2 Document and Monitor Species Presence

Species presence will also be documented and monitored as part of Monitoring Measure-33. The adjusted baseline for presence/absence of Smith's blue butterfly will be established by surveying for 3 consecutive years once habitat mapping is complete. Biweekly surveys will be conducted from June 15 to September 15. Surveys for presence/absence can be suspended when presence is confirmed within a habitat patch.

The adjusted baseline will be calculated as follows based on 3-year averages.

- Number and location of habitat patches with occurrences of Smith's blue butterfly.
- Total area occupied by Smith's blue butterfly.

After the baseline surveys have determined the extent of butterfly habitat within the HMAs, these same survey protocols will be used every 5 years. All habitat patches will be surveyed, and occupied habitat patches will be compared to the adjusted baseline surveys. These surveys will serve to detect shifts in distribution and new colonization of habitat.

The following thresholds are proposed to trigger remedial efforts based on the results of the Smith's blue butterfly presence/absence surveys.

- 20% decline in number of habitat patches occupied by Smith's blue butterfly per survey (occurring once every 5 years) compared to the adjusted baseline.
- 20% decline in the total area occupied by Smith's blue butterfly per survey (occurring once every 5 years) compared to the adjusted baseline.

There will be no species abundance triggers, only species distribution triggers, for species monitoring through presence/absence surveys. Rather, host plant abundance triggers will be used as discussed in the previous section.

6.6.5.3.3 Evaluate Effectiveness of Mitigation Measures

Monitoring Measure-34. Evaluate the effectiveness of mitigation measures for Smith's blue butterfly. Mitigation measures were developed to achieve the species biological goals and objectives identified above. Those HMAs on which Smith's blue butterfly is located will tailor their management activities to ensure maintenance or increased distribution of the species. To evaluate the efficacy of management, the following monitoring actions will be required.

- Development of species-specific success criteria based on the biological goals and objectives for management, enhancement, and restoration of coastal dune habitat, including host-plant

establishment. Initial criteria will be developed upon completion of the adjusted baseline surveys.

- Monitor host-plant abundance and distribution pre- and post-treatment to measure effects on host-plant recruitment and regeneration; include documentation of noxious weed abundances. In the case that spot-treatments of non-native invasive plants cause adverse effects on host buckwheat stands, convene the TAC to discuss and plan remedial actions.
- Monitor presence of Smith's blue butterfly pre- and post-treatment of noxious weeds.
- Document Smith's blue butterfly presence within created migration corridors using the same monitoring methods as status and trends monitoring.
- Record and quantify impacts of recreational use and public access to determine species effects; adjust use and access as needed to prevent adverse species impacts. These data will be collected annually during the 3 years of adjusted baseline surveys and subsequently as part of the focused surveys conducted every 5 years.
- Evaluate effectiveness of mitigation measure implementation using maintained or increased species distribution success criteria.
- Monitor anthropogenic threats—such as disturbance, trespassing, erosion, and trash—that may influence species distribution.

6.6.6 Western Snowy Plover

6.6.6.1 Background

Western snowy plovers nest along beaches and adjacent dunes of the Pacific coast from Washington to Baja California. The species also occurs along the shores of salt ponds and alkali or brackish inland lakes. Monterey Bay is considered one of eight primary coastal nesting areas within the species' range. Within the Plan Area, the western snowy plover is known to occur only in FODSP. Nesting, rearing, and overwintering of western snowy plovers has occurred along the Fort Ord coast, despite the narrow shoreline to the south and public access at Marina State Beach to the north. In total, there are 71 acres of suitable habitat for western snowy plovers in FODSP. The primary factors that affect western snowy plover nesting and rearing habitat quality at FODSP are human-related disturbance and predation. Continued protection of habitat for all life stages of the western snowy plover (nesting, chick rearing, and winter roosting) in the beach and foredune areas at FODSP will determine the success of management efforts for this species.

Currently, PBCS conducts monitoring and research for western snowy plover along the coast within Santa Cruz and Monterey Counties in coordination with the USFWS, CDFW, and State Parks. PBCS coordinates western snowy plover monitoring at FODSP with regional and coast-wide efforts to track the recovery of this species. Monitoring of western snowy plovers during the nesting period along the FODSP shoreline under the Plan will continue to be conducted annually.

6.6.6.2 Monitoring Goals

The monitoring program for western snowy plover seeks information on the following.

- **Distribution:** Aerial photo interpretation will identify and track the location and areal extent of available habitat for western snowy plover and allow for an examination of habitat distribution that will inform the design of restoration, management, and other monitoring studies.
- **Habitat Quality:** In conjunction with aerial photo interpretation, conduct monitoring for dry and wet sand beach width during a standardized time period to quantify the amount of suitable habitat available each year.
- **Abundance:** “Window surveys” to estimate the abundance and distribution of western snowy plovers during a standardized time period within the nesting and overwintering periods. Document general status and trends of the local population as compared to the adjusted baseline.
- **Demographic monitoring:** Conduct monitoring during the nesting period that evaluates the number of nesting attempts, rate of nest success, chick survival, and number of young produced per male each year. This level of monitoring has been conducted by PBCS and CDPR within FODSP in the past and that level of effort shall continue under this HCP. Monitors will also conduct informal recreation and predator surveys concurrently with nest monitoring.
- **Mitigation measure effectiveness:** Effectiveness of mitigation measure implementation (e.g., access control, predator control) in maintaining and/or increasing species distribution and abundance will be assessed.

6.6.6.3 Overview of Monitoring Program for Western Snowy Plover

Western snowy plover monitoring includes both status and trends monitoring and effects monitoring, which evaluates the impact of mitigation measure implementation (e.g., recreation management use, predator control, habitat enhancement; Figure 6-3). Status and trends monitoring will be consistent with regional monitoring programs that include annual “window surveys” of all suitable habitat during the nesting and overwintering period. The adjusted baseline for western snowy plover will allow for a consistent assessment of status and trends (i.e., there will be a consistent baseline across all species) but will not be used to alter the threshold for the biological goals and objectives. Evaluation of the impacts of mitigation measure implementation will inform changes in management through the adaptive management process. Understanding both the quantity and quality of habitat and the species response to changes in that habitat will allow evaluation of the relationship between the two and further understanding of how management activities could be modified to benefit the species. The following is a summary of species-specific monitoring protocols. Detailed monitoring protocols can be found in Appendix H.

6.6.6.3.1 Document and Monitor Species Status

Monitoring Measure-35. Conduct status and trends monitoring for western snowy plover.

Suitable Habitat Survey

After aerial mapping is conducted, suitable habitat will be quantified by measuring the amount of dry and wet sand present on the beach. The entire length of the Fort Ord Dunes State Beach will be included in the survey. The adjusted baseline will be calculated based on a 3-year average. Acres of dry sand habitat will be measured twice per year in March and September at low tide. Dry sand habitat will be measured by walking the high tide line and the base of the bluffs with a GPS unit.

- Acres of dry sand habitat available per year.

After the baseline surveys have determined the extent of western snowy plover habitat on the beach, these same survey protocols will be used every 5 years. The results will be compared to the adjusted baseline. These surveys will serve to detect shifts in the spatial distribution of available western snowy plover habitat.

The following thresholds are proposed to trigger remedial efforts based on the results of the habitat quality monitoring.

- 20% decline in the acres of dry sand habitat (e.g., decline as a result of sea level rise) observed per five-year average compared to the adjusted baseline.

Window Surveys

Concurrent with areal mapping, the adjusted baseline for western snowy plover will be established by species “window surveys” for 3 consecutive years during the overwintering and breeding seasons to evaluate the following metric.

- Total number of adults per survey day.

“Window surveys” will be conducted twice annually, once during the overwintering period and once during the breeding period. Both the overwintering and breeding period “window surveys” will be conducted in all suitable habitat along the Fort Ord coastal strand. The overwinter period survey will be conducted annually between December 1 and January 31, whereas the breeding period survey will be conducted between May 24 and June 7. All monitoring data will be provided to the USFWS for the regional monitoring effort that is part of the species recovery program. “Window survey” methodology will remain consistent with the regional effort coordinated by USFWS (U.S. Fish and Wildlife Service 2007).

The following thresholds are proposed to trigger remedial efforts based on the results of the western snowy plover surveys.

- 20% decline in number of adults observed per 3-year average compared to the adjusted baseline.

Demographic, Recreational, and Predator Monitoring

Demographic, recreational, and predator monitoring will evaluate the effectiveness of habitat enhancement and public access control, as well as inform and trigger adaptive management decisions. The adjusted baseline will be established to ensure comparable results of monitoring during the permit term.⁹ Data from status and trends monitoring will be compared against the adjusted baseline (Monitoring Measure-7). The result of monitoring will be used to inform adaptive management. Demographic monitoring under this HCP will be consistent with Appendix J of the western snowy plover recovery plan (U.S. Fish and Wildlife Service 2007). During each nesting period, an attempt will be made to find and document all nesting attempts by western snowy plover within FODSP. Once discovered, nests will be monitored to determine nest fate. If the nest hatches, the chicks will be monitored until fledged. Both the nest hatch rate and chick fledge rate will ultimately result in an estimate of reproductive success for FODSP. Western snowy plover monitors

⁹ Demographic monitoring has been occurring for most of what is now FODSP, for over 20 years. The monitoring methods and frequency required under the Plan are different than what has been conducted in the past (e.g., more frequent). As such, an adjusted baseline will be established to ensure comparable results.

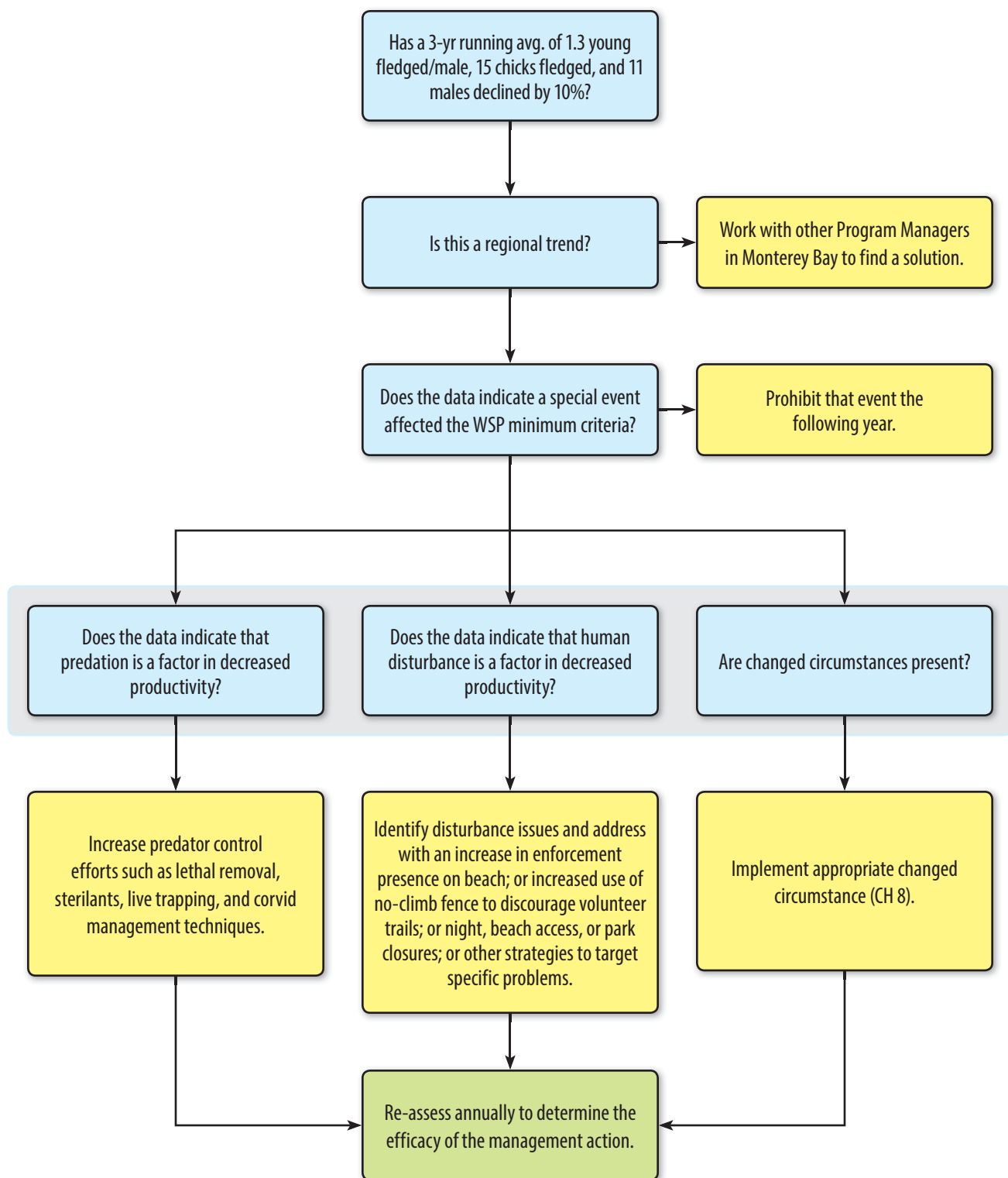


Figure 6-1
Western Snowy Plover Adaptive Management Strategy

will track recreational use and predator observations during demographic monitoring. Monitors will record the types and amount of beach activity and predator sightings and tracks. Informal access routes through the symbolically fenced habitat will be identified, recorded, and removed. Informal recreation and predator surveys will be conducted as part of Monitoring Measure-35.

The adjusted baseline for western snowy plovers will be established through implementation of the survey protocol during 3 consecutive years after permit issuance. The following metrics will be tracked to establish adjusted baseline and during subsequent status and trends monitoring.

- The number of breeding males per year.
- The number of chicks fledged per year.
- The number of chicks fledged per adult male.
- The total number of observed predators, beach fires within/outside of the symbolically fenced habitat, and the number of people observed on the beach and their activity per month.

The 3-year rolling average for number of breeding males per year, number of chicks fledged per year, and number of chicks fledged per adult male will be compared against the following demographic targets from Objective 12.2b¹⁰ (see Section 5.3.3.2, *HCP Animal Species*) to assess the effectiveness of the conservation strategy in achieving Objective 12.2b. At no time during the permit term will these demographic targets be adjusted, unless scientifically merited and approved by the regulatory agencies.

- Running 3-year average of 11 males
- Running 3-year average of 15 chicks
- Running 3-year average of 1.3 chicks fledged per adult male

The following thresholds are proposed to trigger remedial efforts based on the results of the demographic, recreational, and predator monitoring. All thresholds are based on 3-year rolling averages and will be compared to the demographic targets above (except for the number of informal access routes observed per month and the number of mammalian predators. See bullets below for the threshold criteria for these metrics.). At no time during the permit term will these demographic targets and thresholds be adjusted, unless scientifically merited and approved by the Wildlife Agencies.

- 10% decrease in the average number of chicks fledged per male.
- 10% decrease in average number of males.
- 10% decrease in the average number of chicks.
- 10% increase in the number of informal access routes observed per month, or if more than two nests are lost because of visitor use in one nesting season.
- 10% increase in mammalian or avian predators, or more than two nests are lost because of predators in one nesting season.

¹⁰ The demographic targets were derived from the approximate averages from 2006 to 2014 at FODSP. Although monitoring has occurred prior to this period, these data are most recent and most consistent and therefore reflect the recent conditions at FODSP. 1.3 juveniles per male is below the average (1.5) but is identified in the recovery plan as the threshold needed for recovery.

6.6.6.3.2 Evaluate Effectiveness of Mitigation Measures

Monitoring Measure-36. Evaluate the effectiveness of mitigation measures for western snowy plover. Mitigation measures were developed to achieve the species biological goals and objectives identified above. Those HMAs on which western snowy plover is located (currently only FODSP) will tailor their management activities to ensure maintenance or increased distribution of the species. To evaluate the efficacy of management the following monitoring actions will be required.

- Monitor the number of nest losses and determine the cause of all nest losses.
- Identify those nest losses that result from predators and determine the effectiveness of predator-control programs.
- Monitor changes in avian predator populations.
- Monitor and report changes in the level and types of recreation that occur on Fort Ord beaches during the permit term.
- Develop species-specific success criteria based on the biological goals and objectives for management, enhancement, and restoration of coastal dune habitat. Initial criteria will be developed upon completion of the adjusted baseline surveys.
- Determine effectiveness of human access control and education measures, including symbolic fencing, signage, and interpretive programs.
- Monitor anthropogenic threats—such as disturbance, trespassing, erosion, and trash—that may influence species distribution.

As part of the annual western snowy plover monitoring program, the reasons for nest failure will be documented for all nests that do not have at least one egg hatch; specifically, the cause of loss for each egg will be determined when possible. The number of nests that are depredated by predators will be tracked and the monitors will attempt to identify the species of predators responsible. An increase in commensal predators (e.g., raccoons, skunks, ravens) as the result of an increased local human population could affect the success of the western snowy plover population on adjacent beaches. Any predators observed on the beach will also be documented during demographic monitoring and informal recreation surveys (described below). Changes in predator populations and the effectiveness of predator control efforts will be related to western snowy plover nest success and the average number of nests lost to predators annually.

Informal recreation surveys will be conducted during the western snowy plover breeding season to reveal trends in the number of people using the Fort Ord beach and their effect on snowy plovers. Surveys will be conducted three times a week from the wet sand beach (outside of nesting habitat). Western snowy plover monitors will remain within view of one access corridor (each access corridor will be monitored within the period of a week) for 1 hour to document recreation and observed predators. Recreation observations will include the number of people entering the beach from the access route (e.g., location, legal/illegal), dogs (on-leash/off-leash), and any other sighting of prohibited activities. Recreation will be documented concurrently with disturbances to plovers. Sightings may include disturbances to foraging plovers (documented as flying/running/walking away) and how often the plover leaves (as a result of human/dog disturbance) and/or cannot return to its nest. Western snowy plover disturbance will be compared to the number of nests, young, or adults presumed killed or injured as the result of a human-plover interaction as well as trends in visitor use and plover disturbance. Coupled with annual western snowy plover monitoring, these observations will also determine the effectiveness of public access deterrents or control measures

(e.g., symbolic fencing, signage, interpretive programs). These qualitative assessments will be considered in conjunction with trends in human population over time to determine if there is a relationship between the number of people on the beach and species impact.

6.6.7 California Tiger Salamander

6.6.7.1 Background

California tiger salamanders occur only in California from the coastline to the Sierra Nevada crest and from Sonoma to Santa Barbara Counties. California tiger salamanders use aquatic habitats (primarily seasonal ponds) for breeding and larval development. California tiger salamanders inhabit ground squirrel or other small-mammal burrows in surrounding upland areas (up to 2.2 kilometers [1.4 miles] from the breeding pond) during the remainder of the year. Aquatic habitats must retain water for at least ten weeks to provide suitable breeding habitat for tiger salamanders. Breeding activity can fluctuate, as it is highly dependent upon annual weather patterns.

The Plan Area contains 64 wetlands that could function as breeding habitat for the salamander. California tiger salamanders were documented in 22 ponds at Fort Ord during HMP baseline studies and by later studies conducted by the Army, researchers from the University of California, and others (DENR/POM 2004; Denise Duffy & Associates 2011). Overall, the Plan Area contains 89 acres of potential and known breeding habitat for the species and 19,598 acres of potential upland habitat within 2.2 km of this breeding habitat (DENR/POM 2004; Denise Duffy & Associates 2011). Potential upland habitat is grassland, oak woodlands, and maritime chaparral within 2.2 km [1.4 miles] of known and potential breed habitat.

Monitoring will focus on all known aquatic resources identified during HMP baseline studies and subsequent studies described above. Updated surveys will be conducted every year for a representative sample of all suitable ponds, with the goal of having all ponds sampled within a 3-year period. This frequency will allow for adjustments to be made to the sampling effort in extremely wet or dry years. Suitable ponds and associated adjacent upland habitat will be categorized into four zones (see Section 4.3.7, *California Tiger Salamander* for detailed description) based on the probability of upland use and dispersal distance from known aquatic resources pools. Aquatic sampling will follow the protocol established in Appendix H or methods established through the Cooperative with approval from USFWS and CDFW. Documentation of larvae in ponds and demonstration of successful metamorphosis will characterize breeding habitat. If breeding is demonstrated through positive survey results, California tiger salamander presence will be assumed in all suitable upland habitats within 2.2 kilometers [1.4 miles] of known breeding ponds. Surveys of upland habitat will take place on a ten-year rotation. Success shall be based on maintaining or improving the number, size and habitat quality of identified breeding ponds, successful metamorphosis, and the total acreage of adjacent upland aestivation area. Success determinations will be based on comparisons to the adjusted baseline (Chapter 5, *Conservation Strategy*).

6.6.7.2 Monitoring Goals

The monitoring program for California tiger salamanders seeks information on the following.

- **Distribution:** Suitable aquatic sites and adjacent upland habitat will be characterized and mapped. Aquatic site sampling will be used to determine whether an aquatic site supports a

breeding population of California tiger salamanders in a given year and indicators of successful metamorphosis.

- **Threats:** Factors that could contribute to population declines in California tiger salamanders will be identified.
- **Mitigation measure effectiveness:** Effectiveness of mitigation measure implementation (e.g., access control, vegetative management) in maintaining and/or increasing species distribution and abundance will be assessed.

6.6.7.3 Overview of Monitoring Program for California Tiger Salamander

The monitoring program for California tiger salamander includes both status and trends monitoring and effects monitoring, which evaluates the impact of mitigation measure implementation. The status and trends monitoring includes monitoring of California tiger salamander habitat and use of presence/absence surveys to assess the California tiger salamander population itself. Evaluation of mitigation measure impacts will inform the adaptive management process. Understanding both the quantity and quality of habitat and the species response to changes in that habitat will allow evaluation of the relationship between the two and further understanding of how management activities affect the species. The following is a summary of species-specific monitoring protocols. Detailed monitoring protocols can be found in Appendix H.

6.6.7.3.1 Document and Monitor Species Status

Monitoring Measure-37. Conduct status and trends monitoring for California tiger salamander. Once areal mapping is conducted (consistent with Monitoring Measure-7 and Appendix H), the adjusted baseline for California tiger salamander will be established by species surveys for 3 consecutive years. This will include both breeding and upland habitat surveys. Breeding habitat surveys will be conducted in both known occupied and potential habitat. Upland habitat surveys will be conducted using habitat indicators (e.g., vegetative type, presence of small mammal burrows) as a proxy for species status. Status and trends monitoring will evaluate the information against the baseline (Monitoring Measure-7). The result of monitoring will be used to inform adaptive management.

- Number of ponds/wetlands occupied by California tiger salamander larvae and/or breeding adults. This information will provide an index of abundance.
- Assessment of upland habitat around occupied and potential breeding habitat. Areal extent of mammal burrows, vegetation type and land use will be used to assess suitability of upland habitat.

The same protocol used in the baseline surveys will be followed for surveys in subsequent years on a three year rotation. As such, both known occupied and potential breeding habitat will be surveyed. Upland habitat will be surveyed every 10 years. With a goal of maintaining no net loss of ponds that support California tiger salamander breeding, the following threshold is proposed to trigger remedial efforts based on the results of the California tiger salamander breeding habitat surveys. This threshold may change with adaptive management or as a result of changed circumstances that influence the number of ponds that support California tiger salamander.

- 15% decline in number of ponds that support the full life cycle of California tiger salamander larvae compared with the adjusted baseline.

Due to the low frequency at which upland habitat characterization and mapping will be conducted, thresholds used to trigger remedial efforts for the area of California tiger salamander upland habitat will be based on single intervals (e.g., 2025 compared to 2015). At this time, the recommended threshold for changes in extent of upland habitat is as follows.

- 20% decrease in areal extent of small mammal burrows.
- 20% decrease in all non-developed, non-aquatic area within 2.2 km of occupied and potential breeding habitat due to anthropogenic factors and natural succession that could be detrimental to California tiger salamander.

During the breeding season, when adult California tiger salamander are in breeding pools, and shortly after that when larvae are developing, the probability of detecting individuals is high if they are present. Surveys will be conducted during the breeding season by a biologist with the appropriate permits to handle individuals, using the most recent methodologies that are accepted by USFWS and CDFW.

During the non-breeding season, when individuals are underground in upland areas, this species is more difficult to detect and methods to do so are often cost prohibitive. To determine quality and quantity of upland habitat for this species, surveys for California ground squirrel colonies and pocket gopher activity will serve as a surrogate. This is discussed further below. In general, it will be assumed that if upland habitat is suitable and within the typical dispersal distance from a known breeding location, then the upland habitat is likely occupied as well. Densities of adult salamanders using upland habitat in a given area will be extrapolated from densities of adult and larval salamanders detected in breeding habitat.

6.6.7.4 Monitor Additional Threats

Monitoring Measure-38. Monitor additional threats to California tiger salamander. Ongoing monitoring will be conducted to identify, map, and/or characterize actual and potential threats to adjacent aquatic habitats. Every 10 years, the Cooperative will conduct inventories within the HMAs to identify actual and potential physical, biological, water quality, recreation-related and other impacts in the watersheds of adjacent aquatic habitat and prioritize management and restoration activities accordingly. This monitoring shall occur at FONM, East Garrison Reserve, Laguna Seca Recreational Expansion, Salinas River Habitat Area, and NAE. The results of these monitoring efforts will be measured against the most recent inventory beginning with the data collected during the initial adjusted baseline monitoring.

Monitoring will be conducted for diseases including chytrid fungus and any other harmful diseases that are discovered in the FONM during implementation. Spread of these diseases becomes a concern when biologists access more than one breeding site in a short period of time. Biologists will utilize accepted antiseptic protocols during all aquatic survey work to minimize the potential for cross-contamination.

Targeted effort will be undertaken to monitor for the presence of factors (threats) that may affect breeding success at a given location such as non-native bullfrogs, predatory fish, and non-native salamanders (specifically, introduced barred tiger salamanders [*Ambystoma tigrinum mavortium*]) in the Plan Area. If non-native species are detected within the Plan Area, they will be removed.

Hybrid California tiger salamander-barred tiger salamanders are known to occur in the Plan Area. Mitigation Measure-27 is intended to control hybrids in the Plan Area, with initial efforts focused on

controlling paedomorphs in East Garrison Pond and the additional pond(s) to be restored as part of Mitigation Measure-19. This monitoring measure will focus on monitoring the efficacy in controlling hybrid tiger salamanders and identifying other ponds where paedomorphs occur. Hybrid monitoring and management will require ongoing coordination with the wildlife agencies to ensure that the approach is consistent with the best available science and the recovery plan (Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*), USFWS 2017) for the species. In particular, the Cooperative will work with the Wildlife Agencies and species experts to develop methods to identify ponds where hybrids should be controlled.

6.6.7.4.1 Evaluate Effectiveness of Mitigation Measures

Monitoring Measure-39. Evaluate the effectiveness of mitigation measures for California tiger salamander. Mitigation measures were developed to achieve the species biological goals and objectives identified above. Those HMAs on which the California tiger salamander is located will tailor their management activities to ensure maintenance or increased distribution of the species. To evaluate the efficacy of management the following annual monitoring actions will be required for the duration of mitigation measure implementation. The same monitoring techniques identified above and detailed in Appendix H will be used.

- Develop success criteria based on the biological goals and objectives for species habitat management, enhancement, and restoration actions, including prescribed burning, weed abatement, erosion control, road-use management, predator eradication, and wetland restoration. **Timing:** No later than 3 years from transfer of the property from the Army or from the issuance of the permits under this HCP.
- Determine species presence pre- and post-treatment to measure effects of habitat management, restoration, and enhancement. **Timing:** Annually for aquatic habitat in conjunction with annual presence/absence surveys. Every 10 years for upland habitat, or in conjunction with upland habitat surveys.
- Determine species presence in restored aquatic and adjacent upland habitat. **Timing:** Annually for aquatic habitat in conjunction with annual presence/absence surveys. Every 10 years for upland habitat, or in conjunction with upland habitat surveys.
- Monitor predator populations (i.e., presence/absence) and the effectiveness of predator control programs; surveys for presence of bullfrogs and predatory fish will be conducted to determine the effectiveness of eradication efforts. This will also allow for an assessment of the response of native amphibian populations to non-native species eradication efforts. **Timing:** Annually for aquatic habitat in conjunction with annual presence/absence surveys.
- Monitor aquatic habitat for presence of hybrid California tiger salamander-barred tiger salamanders. This measure will include monitoring the efficacy of efforts to control hybrid tiger salamanders. This monitoring will inform the Cooperative of ponds in need of hybrid control and the efficacy of control efforts. As part of Adaptive Management Measure-9, the Cooperative, in collaboration with the Wildlife Agencies will consider a genetic threshold for controlling hybrids, when such information is available. Measures used to identify (and monitor) level of hybridization to inform control efforts will be adopted and integrated into this monitoring measure consistent with Adaptive Management Measure-9. **Timing:** Annually for aquatic habitat in conjunction with annual presence/absence surveys.

- Monitor sheep grazing to determine its effects on upland species habitat; as described above, use burrow density and presence of small mammals (such as California ground squirrel) adjacent to breeding habitat as indicator of habitat quality. **Timing:** Every 10 years for upland habitat, or in conjunction with upland habitat surveys.
- Periodically monitor water quality in seasonal pools and perennial ponds to determine effects of adjacent land use (e.g., recreational and livestock use) on breeding habitat quality. **Timing:** Annually for aquatic habitat in conjunction with annual presence/absence surveys.
- Monitor vehicle routes within 175 meters of any known breeding ponds for California tiger salamander on mornings after nights with rainfall to attempt to detect mortality caused by motor vehicles. **Timing:** Annually.
- Conduct species monitoring during restoration activities conducted on BLM FONM. The Cooperative will notify BLM and Wildlife Agencies if more than one individual is discovered killed in any given year.
- Monitor anthropogenic threats—such as disturbance, trespassing, erosion, and trash—that may influence species distribution.

6.6.7.4.2 Evaluate Use of Breeding Habitat and Adjacent Uplands

Monitoring of habitat conditions will occur in occupied or potential breeding habitat and adjacent uplands as determined by the results of the adjusted baseline as part of Monitoring Measure-37. Due to the importance of both breeding and upland habitat to the success of this species, this information will be used to determine what the limiting biological factors are for unoccupied breeding habitat.

In general, changes in species presence will be correlated with management in surrounding upland areas to determine how those management techniques are affecting the population. For example, if prescribed burning, or mowing to mimic burning, is instituted in uplands surrounding California tiger salamander unoccupied, potential breeding habitat, and the habitat becomes occupied, then some of that success could be attributed to the upland management techniques. In addition, monitoring the response of small mammal burrow density to upland management techniques will be used as a proxy to determine the quality and quantity of upland habitat available for California tiger salamander. The species response will be monitored with respect to changes in riparian vegetation and water quality as the result of enhancement or restoration activities that occur under this HCP. In addition, water quality monitoring will be used to determine the effects of adjacent land use (e.g., livestock grazing, recreation) on breeding habitat.

6.6.7.4.3 Evaluate Effectiveness of Mitigation Measures

Those HMAs on which California tiger salamander is located will tailor their management activities to ensure maintenance or increased distribution of the species. To evaluate the efficacy of management, the following monitoring actions will be required on FONM, East Garrison Reserve, Laguna Seca Recreational Expansion, Salinas River Habitat Area, and NAE HMAs as part of Monitoring Measure-39.

- Periodically monitor water quality in seasonal pools and perennial ponds to determine effects of recreational and livestock use on habitat quality.
- Record and quantify impacts of recreational use and public access to determine species effects; adjust use and access as needed to prevent adverse species impacts.

- Conduct periodic patrols by law enforcement officers and other visitor support staff to reduce or eliminate illegal vehicle use into aquatic and riparian/wetland habitats.
- Monitor vehicle routes within 175 meters of any known breeding pond for California tiger salamander on mornings after nights with rainfall to attempt to detect mortality caused by motor vehicles. If more than two California tiger salamanders are observed crushed in any 1 year, then HMA managers will initiate protective measures such as posting caution signs where routes cross within 175 meters of known breeding ponds and restricting driving privileges along these routes during periods when California tiger salamander are active.

The following monitoring actions are limited to the Laguna Seca Recreational Expansion.

- Periodically monitor water quality in ponds that are within and immediately adjacent to the Laguna Seca Recreational Expansion. Collect water (standard grab) samples in ponds in concert with the baseline studies and ongoing monitoring and analyze for basic water quality parameters (e.g., turbidity, pH, nitrates, disease). If results indicate levels above accepted standards or significant increases over baseline conditions, make every reasonable effort to identify the source problem and initiate remedial action in accordance with watershed protection measures described herein or other adaptive management strategies.
- Visually inspect water quality in ponds that are within and immediately adjacent to the Laguna Seca Recreational Expansion after each event where the Laguna Seca Recreational Expansion is used. Compare visual turbidity to baseline and/or pre-event observations. If increased sedimentation or physical damage is noted, appropriate actions will be taken to control the source and prevent future impacts due to expanded use of the area.

6.6.8 California Red-Legged Frog

6.6.8.1 Background

California red-legged frog's historic and current distribution includes inland counties in the Sacramento and San Joaquin Valleys as well as Sierra Nevada and Interior Coast Range counties from Riverside to Shasta County, California (U.S. Fish and Wildlife Service 2010). California red-legged frogs utilize different habitats depending on their life stage and the season. The species typically requires a perennial water source with emergent vegetation and suitable upland areas. This species was not found at Fort Ord during the HMP baseline studies; however, a single breeding site has since been identified. Suitable habitat comprises coldwater ponds with emergent and submergent vegetation and riparian vegetation along the edges. In total, there are 89 acres of potential and occupied breeding habitat and 16,362 acres of potential upland habitat for California red-legged frogs in the Plan Area, less than 1% of the known range for the species. California red-legged frogs have been recorded from the Salinas River, which is within dispersal distance of Fort Ord. Since California red-legged frogs can travel long distances overland to aquatic habitats, the potential exists for the species to become established elsewhere in the Plan Area during the permit term.

Monitoring for California red-legged frogs will be conducted on a five year rotation and will focus on suitable aquatic habitats identified by the baseline studies and later studies, categorizing them by habitat quality classes¹¹. Documentation of adults, larvae, or egg masses in ponds or wetlands will

¹¹ There are two habitat quality classes: known occupied habitat and unoccupied potential habitat.

determine California red-legged frog presence and possibly breeding. Success shall be based on maintaining or improving, if feasible, the number, size and habitat quality of identified breeding ponds in conformance with the goals and objectives for aquatic habitats (Chapter 5, *Conservation Strategy*).

6.6.8.2 Monitoring Goals

The objective of the monitoring program is to determine whether suitable breeding sites are being maintained in the Plan Area and if these sites come to support breeding populations of California red-legged frogs. As such, the monitoring program for California red-legged frogs seeks information on the following.

- **Distribution:** Suitable aquatic sites and adjacent upland habitat will be characterized and mapped. Aquatic site sampling will be used to determine whether an aquatic site supports a breeding population of California red-legged frogs.
- **Threats:** Factors that could contribute to aquatic site use by California red-legged frogs will be identified.
- **Mitigation measure effectiveness:** Effectiveness of mitigation measure implementation (e.g., access control, vegetative management) in maintaining suitable habitat and increasing species distribution and abundance will be assessed.

6.6.8.3 Overview of Monitoring Program for California Red-Legged Frog

The monitoring program will focus on documenting the habitat quality of existing and potential breeding sites through status and trends monitoring. As all mitigation measures for California red-legged frogs overlap with those of California tiger salamander, monitoring for their effects on habitat quality will be sufficient for both species. When occupied breeding sites are found (one occupied pond has been identified on the FONM), monitoring actions will expand to monitor species response to mitigation measure implementation. The following is a summary of species-specific monitoring protocols. Detailed monitoring protocols can be found in Appendix H.

6.6.8.3.1 Document and Monitor Species Status

Monitoring Measure-40. Conduct status and trends monitoring for California red-legged frog. Once areal mapping of all potential upland and breeding habitat is conducted, the adjusted baseline for California red-legged frogs will be established by species surveys for 3 consecutive years. This will include both breeding and upland habitat surveys. Breeding habitat surveys will be conducted in potential habitat to determine habitat quality and to sample for California red-legged frog adults and larvae. Upland habitat surveys will be conducted using habitat indicators (e.g., riparian vegetation and refugia such as boulders, rocks, downed trees, and logs) as a proxy for species status. Baseline information will comprise the following.

- Number of ponds/wetlands occupied by California red-legged frogs of any life stage
- Number of ponds where California red-legged frog breeding has been confirmed (presence of eggs or larvae).

The following monitoring actions will be done in concordance with those for California tiger salamander.

- Unoccupied breeding habitat with the potential to support breeding populations. USFWS protocol guidelines will be followed as indicated in Appendix H.
- Assessment of upland habitat around potential breeding habitat; areal extent of riparian vegetation, refugia such as boulders, rocks, downed trees and logs, and small mammal burrows, will be used as a proxy for habitat extent; land use will be documented.
- Presence of factors (threats) that appear to affect habitat quality and use at a given location, such as non-native bullfrogs and predatory fish species.

The same protocol used in the baseline surveys will be followed for surveys once every 5 years in subsequent years for all potential breeding habitat during the breeding season. However, upland habitat will only be surveyed twice within a five year interval. Status and trends monitoring will be compared against the baseline (Monitoring Measure-7). The result of monitoring will be used to inform adaptive management. The following threshold is proposed to trigger remedial efforts based on the results of the California red-legged frog surveys.

- 20% decline in number of ponds that have the potential to support California red-legged frogs larvae compared with the adjusted baseline. Ponds with potential to support California red-legged frogs have standing water through late July; have dense, shrubby riparian or emergent vegetation along margins; and do not contain bullfrogs or predatory fish. Ponds that contain bullfrogs or introduced predatory fish (e.g., catfish, mosquitofish) are not ideal habitat, but may be viable if the ponds are drained and the predatory fish and/or bullfrogs are removed. Measures should be taken to control the population of predatory fish and bullfrogs in the pond.

Early in the breeding season, when adult California red-legged frogs typically move into breeding pools, surveys will be conducted to determine presence/absence of potential breeding adults. Surveys during the breeding season will be conducted consistent with the most recent methodologies developed by USFWS (U.S. Fish and Wildlife Service 2005), which have been developed to determine presence or absence.

To increase the probability of detecting adult frogs, night and day surveys will be conducted to determine if adults are present in the pond or wetland of interest. Once it is established that potential breeding adults are using a pond or wetland, a more in-depth survey will be conducted to determine the size of the breeding population and an estimate of breeding success.

The number of individuals detected during surveys will be used as an index to determine the local population of California red-legged frogs and will contribute to an overall population status and trends assessment across the Plan Area. Monitoring surveys may consist of two visits: the first at the beginning of the breeding season to evaluate the initial breeding effort of adult California red-legged frogs, and the second performed during initial metamorphosis, to evaluate breeding success. It may be necessary to visit the monitoring sites briefly several more times throughout the season, to estimate the beginning and end of breeding.

6.6.8.3.2 Evaluate Effectiveness of Mitigation Measures

Monitoring Measure-41. Evaluate the effectiveness of mitigation measures for California red-legged frog. Mitigation measures were developed to achieve the species biological goals and objectives identified above. Those HMAs on which California red-legged frogs are located will tailor

their management activities to ensure maintenance or increased distribution of the species. To evaluate the efficacy of management the following annual monitoring actions will be required for the duration of mitigation measure implementation. The same monitoring techniques identified above and detailed in Appendix H will be used.

- Develop success criteria based on the biological goals and objectives for species habitat management, enhancement, and restoration actions, including prescribed burning, weed abatement, erosion control, road-use management, predator eradication, and wetland restoration. **Timing:** No later than 3 years from transfer of the property from the Army or from the issuance of the permits under this HCP.
- Determine species presence in restored aquatic and adjacent upland habitat. **Timing:** Annually for aquatic habitat in conjunction with annual presence/absence surveys. Every 10 years for upland habitat, or in conjunction with upland habitat surveys.
- Monitor predator populations (i.e. presence/absence) and the effectiveness of predator control programs; surveys for presence of bullfrogs and predatory fish will be conducted to determine the effectiveness of eradication efforts. This will also allow for an assessment of the response of native amphibian populations to non-native species eradication efforts.
- Record and quantify impacts of recreational use and public access to determine species effects; adjust use and access as needed to prevent adverse species impacts.
- Monitor sheep grazing to determine its effects on upland species habitat; as described above, use riparian vegetation and refugia such as boulders, rocks, downed trees, and logs adjacent to breeding habitat as an indicator of habitat quality. **Timing:** Annually for aquatic habitat in conjunction with annual presence/absence surveys.
- Periodically monitor water quality in seasonal pools and perennial ponds to determine effects of adjacent land use (e.g., recreational and livestock use) on breeding habitat quality. **Timing:** Annually for aquatic habitat in conjunction with annual presence/absence surveys.
- Monitor anthropogenic threats—such as disturbance, trespassing, erosion, and trash—that may influence species distribution.

6.6.8.3.3 Evaluate Use of Breeding Habitat and Adjacent Uplands

Monitoring of habitat conditions will occur in occupied or potential breeding habitat and adjacent uplands as part of Monitoring Measure-40 and as determined by the results of the adjusted baseline. Due to the importance of both breeding and upland habitat to the success of this species, this information will be used to determine what the limiting biological factors are for unoccupied breeding habitat.

In general, changes in breeding populations will be correlated with management in surrounding upland areas to determine how those management techniques are affecting the population. For example, if prescribed burning, or mowing to mimic burning, is instituted in uplands surrounding the California red-legged frog's unoccupied, potential breeding habitat, and habitat becomes occupied, then some of that success may be attributed to the upland management techniques. In addition, monitoring the response of riparian vegetation, downed tree and log density, and small mammal density to upland management techniques will be used as a proxy to determine the quality and quantity of upland habitat available for California red-legged frogs. The response of riverine populations of California red-legged frogs will be monitored with respect to changes in riparian

vegetation and corridor widths as the result of enhancement or restoration activities that occur under this HCP. For riverine and pond/wetland populations, water quality monitoring will be used to determine the effects of adjacent land use (e.g., livestock grazing, recreation) on breeding habitat.

6.7 Additional Monitoring

Catastrophic events (e.g., fire, earthquakes—see discussion regarding changed circumstances in Chapter 8, Section 8.1.1.2, *Changed Circumstances*) or active restoration activities covering more than 1% of the acreage administered by the land recipient and identified as habitat or potentially suitable habitat for HCP species shall require annual monitoring and reporting for 5 consecutive years following those events or activities to document rapid changes in species composition. In responding to a catastrophe, an HMA manager may request to do less than defined herein in the case of exceptional burden, by presenting a specific proposal for monitoring protocol and scope for USFWS and CDFW approval through the Cooperative.

6.8 Adaptive Management

Adaptive management is a decision-making process promoting flexible management such that actions can be adjusted as uncertainties become better understood or as conditions change (Figure 6-1). Monitoring the outcomes of management is the foundation of an adaptive approach, and thoughtful monitoring can both advance scientific understanding and modify conservation strategy implementation iteratively (Williams et al. 2007).

Adaptive management is necessary because of the uncertainty and variability associated with species and their responses to management. Based on the best scientific information currently available, it is expected that the HCP required actions will effectively achieve the biological goals and objectives. However, there is some uncertainty associated with the management techniques and conditions on the ground. In addition, the status of covered species may change in unexpected ways during implementation. It is possible that additional and different management measures not identified in the Plan will be identified in the future and proven to be more effective in achieving biological goals and objectives than those currently implemented. Results of effectiveness monitoring may also indicate that some management measures are less effective than anticipated. To address these uncertainties, an adaptive approach will be used to inform management, and the monitoring program is designed to support this adaptive approach.

The four elements that USFWS recommends for adaptive management strategies in HCPs (65 FR 35252) include the following.

- Identify uncertainties and the questions that need to be addressed to resolve uncertainties.
- Develop alternative strategies and determine which experimental strategies to implement.
- Integrate a monitoring program that can detect the information necessary for strategy evaluation.
- Incorporate feedback loops that link implementation and monitoring to a decision-making process.

Figure 6-2 illustrates the adaptive-management processes. The Wildlife Agencies will have review and approval authority over alternate management or monitoring identified through the adaptive management process.

The adaptive management strategy uses an experimental approach in which monitoring will yield scientifically valid results that inform management decisions. Information collected through monitoring will be used to manage HMAs and protect HCP species habitat. The monitoring program will measure and evaluate change in species status and threats within the HMAs using standardized protocols, sampling design, and integrative data analysis.

Monitoring results will inform the Cooperative and HMA managers of the status of HCP species and natural communities such that mitigation measures can be revised if necessary, to meet the biological goals of the Plan. The monitoring actions for each species are documented above in Section 6.6, *Species Monitoring* and for the maritime chaparral community in Section 6.4, *Maritime Chaparral*. To evaluate the effectiveness of mitigation measures, individual site restoration plans—including project goals, performance indicators, and success criteria—will be developed (see Chapter 5, Section 5.5.3.1, *Site Restoration Plans*). Adaptive management will be based on the results of status and trends monitoring for species and effects monitoring for habitat management and threats. Success criteria developed within each site restoration plan (see Chapter 5) will guide adaptive management actions.

In summary, adaptive management is the HMA manager's response to new information. Adaptive management measures will likely take place at the following junctures.

- In response to the results of targeted studies including pilot projects.
- In response to downward trends in the status of covered species or key natural-community variables.
- When new information from the literature or other relevant research indicates that a feasible and superior alternative method for achieving the biological goals and objectives exists.
- When monitoring indicates that the expected or desired result of habitat management is not occurring, based on the success criteria developed as part of the site restoration plans.

Adaptive management responses that would require a minor or major amendment to the HCP and permits and the process for each of those situations are addressed in Chapter 8, *Assurances and HCP Amendments*, Section 8.4, *Minor and Major Amendments*.

6.8.1 Adaptive Management Measures

Most adaptive management measures will occur when habitat management does not produce the desired outcome or when species' populations decrease in size. In such cases, new actions will be implemented to try to improve the outcome for species and habitat. Such actions include but are not limited to the following.

- AMMs for recreational, educational, and research use in HMAs and property ownership adjacent to HMAs.
- AMMs for road and trail maintenance in HMAs.
- Mitigation measures for habitat restoration and enhancement.
- Mitigation measures for prescribed burning and alternative vegetation management.

- Mitigation measures for non-native invasive species control.

Any of the HCP required actions can be modified by the Cooperative with concurrence of the Wildlife Agencies in response to new information following the principles of adaptive management (see also Section 6.8.2, *Structure of the Adaptive Management Process*). The following adaptive management measures are those known at this time.

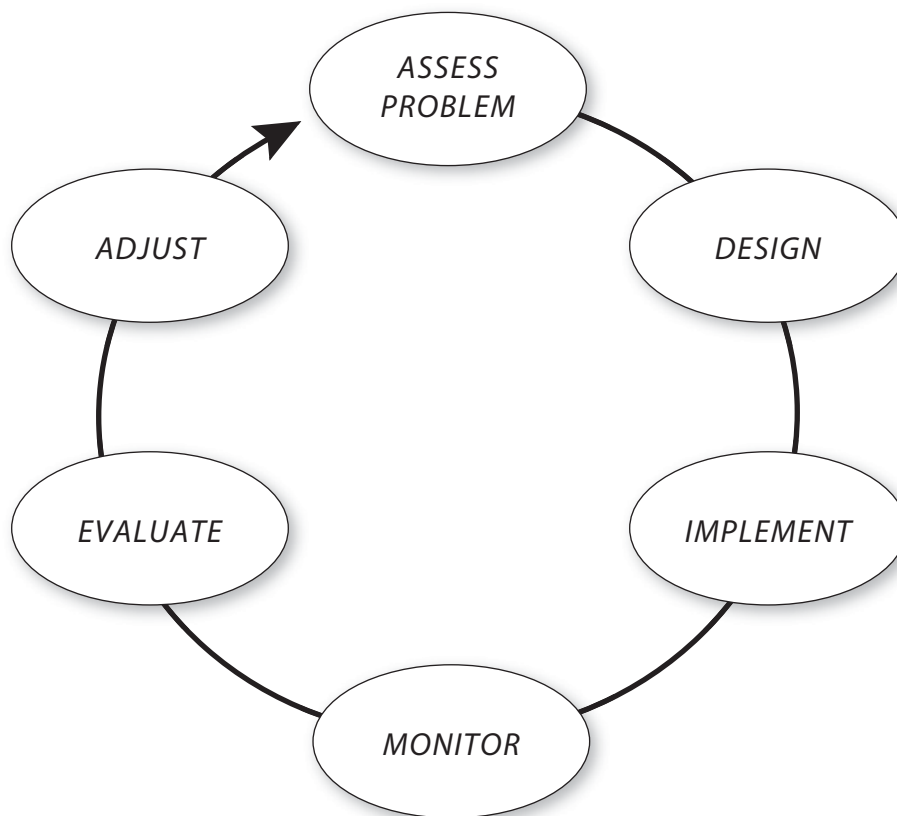
Adaptive Management Measure-1. Work with HMA managers to determine adjustments that can be made to Borderlands management strategies if Borderlands AMMs are not sufficient to maintain the integrity of adjacent HMAs. Base-wide biological monitoring will be used to evaluate the effectiveness of Borderlands AMMs. In the event that the Borderland AMMs are not meeting the objective of minimizing and mitigating effects on HCP species and natural communities in adjacent HMAs, the Cooperative will work with the HMA managers to determine alternatives and adjustments that can be made to the management strategies. The determination that Borderlands AMMs are not meeting objectives will be made through evaluation of the base-wide biological monitoring data. If biological objectives are not being met in the HMAs, the extent to which Borderlands management activities are contributing to that situation will be considered by the Cooperative, and management strategies may be modified as a result. Borderlands AMMs may also be modified in response to requests by the adjacent HMA manager, or in light of current scientific data, as discussed and reviewed through the TAC.

Adaptive Management Measure-2. Adjust avoidance and minimization measures for maintaining roads, trails, and fuelbreaks if measures are found to contribute to declines in HCP species. Maintenance and minimization measures for maintaining roads, trails, and fuelbreaks may be adjusted if measures authorized by this HCP are found to contribute to declines in HCP species according to the thresholds established in the Monitoring and Adaptive Management described in this chapter. Adjustments may include changing methods of stockpiling soil containing HCP species seed, such as changes in timing, excavation, or storage methods. Where evidenced that access to trails and roads through HMAs have increased in HCP plant species trampling or pet pollution beyond the thresholds established, maintenance adjustments may include fencing and additional signage. Adjustments may also include altering road, trail, and fuelbreak construction methods to reduce impacts from overgrading, increased erosion, or increases in non-native invasive plant species due to soil disturbance.

Road and trail rotations would be implemented to keep used trails from excess wear and to provide additional open habitat for annual plant establishment and contribution to the seed bank. Rotations would be implemented in response to monitoring (see Monitoring Measure-10) and in accordance with the recommendations of the vegetation and fire management program.

Adaptive Management Measure-3. If more than two California tiger salamanders are observed crushed in any one year, implement protective measures such as posting signs or restricting driving privileges during periods when California tiger salamanders are active. The Cooperative will monitor motor vehicle routes on non-Federal HMAs within 175 meters (574 feet) of any known breeding pond after nights with rainfall to attempt to detect mortality of California tiger salamander caused by road use. If more than two California tiger salamanders are observed crushed in any one year, then the Cooperative will consider protective measures such as posting signs or restricting driving privileges during periods when California tiger salamanders are active. BLM is governed by the terms and conditions of its Biological Opinion for CTS protection measures. Currently, those measures are to monitor motor vehicle routes within 175 meters (574

Adaptive Management Process



Adapted from William et al. 2007.

Figure 6-2
Adaptive Management Process

feet) of any known breeding pond on mornings after nights with rainfall to attempt to detect mortality caused by motor vehicles. If more than two California tiger salamanders are observed crushed in any one year, then BLM will consider protective measures such as those stated above (USFWS, 2017).

Adaptive Management Measure-4. Evaluate alternatives for improved management of the perimeter fuelbreaks to lessen the coverage of invasive grasses and other weedy species in accordance with the recommendations of the vegetation and fire management program.

Adaptive Management Measure-5. Modify access and erosion control methods in response to monitoring results. Access and erosion control methods will be modified if 1) through HCP compliance monitoring, HMA managers determine that current measures are ineffective or are negatively impacting HCP species or natural communities, 2) through base-wide biological monitoring, HCP species declines can be directly or indirectly attributed to measures currently employed, or 3) notification or reports issued by law enforcement or staff patrols are received.

Adaptive Management Measure-6. Modify habitat restoration and enhancement mitigation measure implementation in response to monitoring. The success of habitat restoration programs will be tracked through project monitoring, HCP compliance monitoring, and base-wide biological monitoring. HMA managers may be obligated to modify the process of converting disturbed areas by changing the methods of soil treatment, changing the methods and materials used in revegetation (e.g., more reliance on direct seeding over plantings, variations in species composition) and changing the maintenance regime to favor other plant (and animal) species in selected areas. In some cases, monitoring may direct passive (i.e., through natural successional processes) rather than active restoration. HMA managers are required to respond to the results of monitoring in order to achieve the stated restoration objectives.

Adaptive Management Measure-7. Modify or adapt the prescribed burn program and other vegetation management treatments (e.g., research-oriented) in certain areas if monitoring indicates harmful effects on HCP species. A coordinated, management-oriented study will be conducted to assess the alternatives for managing maritime chaparral at the wildland urban interface and where burn conditions are very hazardous. As part of the adaptive management program, targeted studies at FONM and FONR will be used to inform maritime chaparral, coastal scrub, and HCP species management (see Section 5.5.3.6, *Evaluate Alternatives to Burning*). Studies will build upon the data already collected at Parker Flats and the Army's data. Annual monitoring results will be submitted through the TAC for review and included in the annual report to the Cooperative. The Cooperative will submit annual monitoring results to the Wildlife Agencies in the annual report.

Fire is considered the primary management tool for maintaining a healthy, mixed successional maritime chaparral ecosystem. The desired result is to provide a range of successional stages, maintain native species diversity and, in particular, to maintain habitat for herbaceous HCP plant species. Prescribed burns will be monitored prior to and following the burn to determine if desired results are achieved. Specific objectives against which to measure the monitoring results will be determined as part of the project monitoring program, which is to be developed prior to implementation. Monitoring will also be structured to identify deleterious effects on HCP species as a result of the prescribed burning activities.

Alternative methods to burning (e.g., mechanical clearance, smoke treatment) are not currently able to simulate the conditions created by a fire that promote regeneration of HCP species; accordingly,

without further evidence of their effectiveness, the methods are not suitable substitutes for prescribed fire. However, alternative methods to burning may be warranted, especially if regulatory and/or other considerations preclude implementation of a prescribed burn program. The Cooperative will use research-oriented treatments such as cutting, mowing, goat grazing, out-of-season prescribed burning (i.e., before or after the optimum October/September window), and other measures to gain a better understanding of the effects of alternative vegetation management strategies. BLM is currently doing these treatments in accordance with its existing Biological Opinion. UC/NRS will evaluate a range of actions to support sustainable and healthy maritime chaparral, coastal scrub and oak woodland habitats and HCP species. The Cooperative, on behalf of Monterey County and Monterey Peninsula College, will coordinate with BLM and UC/NRS on the range of alternatives to burning and implement pilot projects as necessary. All of these treatments will be monitored, and the results will be reviewed through the TAC. The desired result of the use of alternatives to prescribed burning is to maintain native species diversity and, in particular, to maintain habitat for herbaceous HCP plant species. In maritime chaparral, alternative treatments should also provide a range of successional stages.

Adaptive Management Measure-8. Modify non-native invasive species control measures in response to monitoring results or to incorporate new treatment methods. HMA managers will review the effects of the invasive species removal programs on an annual basis. They will also track the introduction and spread of new weed species, invasive species, and other pathogens. In response to this annual review in coordination with the Cooperative and the TAC, non-native species eradication programs may need to be modified or new pest control programs implemented to provide the best opportunities for success of native species, especially HCP species. New treatment methods may be tested, existing methods may be compared and reevaluated, and monitoring or surveys may be increased to further evaluate the distribution and abundance of non-native species, pests, and pathogens. Non-native plant species eradication/removal programs target a goal of limiting the overall area of individual infestations to no more than 5% of the total area of habitat. Where this is not achieved, new management strategies will be discussed and addressed through the TAC.

Adaptive Management Measure-9. Evaluate, modify, and apply appropriate management and control measures for native and hybrid California tiger salamanders.

The Cooperative will work with the Wildlife Agencies and species experts to evaluate developing and adoptive a genetic threshold for eradication. Methods for removal of hybrid individuals are still being developed and are largely untested; however, new management actions, including eradication of hybrids, will be required to ensure that hybrids do not preclude the recovery of California tiger salamanders or adversely affect other native species. State and Federal permits required for hybrid control can be completed under section 10(a)1(A) for the Federal requirements and separately permitted by the state wildlife agency; actions taken on Army/BLM lands would not require a State permit.

Relocation practices: Any salamander found during a construction or monitoring activity will be relocated to the closest suitable upland habitat. As the hybrid management policy develops it may become necessary for additional steps to be made prior to any relocation event.

Evaluate control methods: On non-Federal HMAs, actions such as draining of perennial pools or enclosing a pond with drift fencing to control pools supporting hybrid salamanders may be considered. Control methods to preserve the native species have yet to be developed, but it is

expected that the necessary methods for control will include the collection and elimination of hybrid salamanders. Such paedomorph “round ups” are only anticipated at the Federal HMA ponds. Evaluation of these control methods will result in the creation of a general decision-making process for determining hybrid management, control, or elimination steps on non-Federal and Federal HMAs. (See Section 5.5.3.4, *Non-native Invasive Species Control*, MM-27 for more about non-native controls.)

Pure population preservation: Special management considerations will be made for ponds with “pure” native populations in order to preserve the long-term survival of the native genotype. Actions to be considered may include enclosing “pure” native ponds and their associate upland habitat in order to prevent hybrids from entering the specific breeding population, or elimination of hybrid individuals within dispersal distance.

Manage for a preferred hydro-period: Collect extended pond hydroperiod data in conjunction with late season adaptive management monitoring for predators (bullfrog eradication). Ponds with extended hydroperiods are known to have a disproportionately higher level of hybrid genes. Slowly draining ponds that exhibit extended hydroperiods in a manner that mimics ponds that are known to support native salamanders may be an important tool to help reduce hybrid success.

Monitor management effects on related species: The effects of California tiger salamander management on other HCP species will be monitored. California red-legged frogs may co-occur with California tiger salamanders and may be affected by management proposed to address the California tiger salamander hybridization issue. If monitoring results indicate that the hybrid management strategy for California tiger salamanders is adversely affecting other HCP species, the management will be modified through the adaptive management process with Wildlife Agency approval.

Adaptive Management Measure-10. Modify or adapt livestock grazing practices if monitoring indicates harmful effects on the watershed or aquatic habitat for HCP species. Where livestock grazing is used as a method to control non-native invasive grasses and reduce thatch in the FONM, the Cooperative will develop and implement a monitoring and adaptive management strategy to address the potential impacts on California tiger salamanders of water use by livestock. BLM’s adaptive management strategy would be consistent with its existing Biological Opinions. The efficacy of the strategy will be addressed with Wildlife Agencies through the CRMP. Alternatives to livestock grazing could include prescribed burning, mowing, or other research-oriented alternatives following an integrated vegetation management approach.

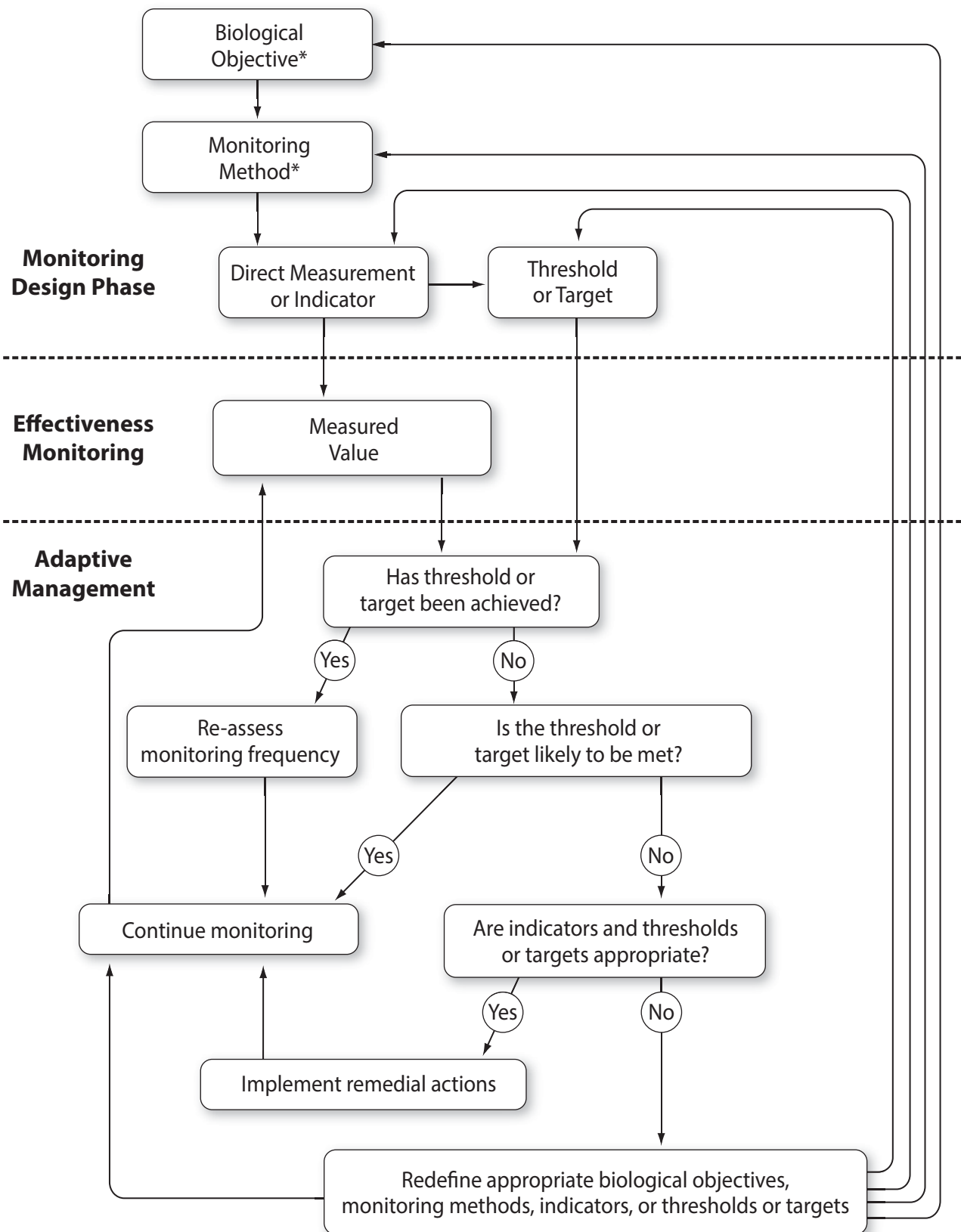
Adaptive Management Measure-11. Refine the integrated vegetation management program through monitoring and adaptive management in an effort to reduce dependence on herbicides.

Adaptive Management Measure-12. Adjust management and recreational use strategies to increase western snowy plover nesting and fledgling success. Biological monitoring will indicate whether the western snowy plover management program is producing results consistent with the biological goals and objectives. If the BGO’s are not being met, the adaptive management framework depicted in Figure 6-3 will be used to determine ineffective protection measures and the appropriate course of action. The Cooperative, in coordination with USFWS, HMA managers, and western snowy plover monitors, will determine the most effective strategy for FODSP. This HCP was drafted under the working assumption that the effects of the proposed development and use of FODSP can be adequately minimized and mitigated on site, such that the minimum thresholds for western snowy plover breeding success are met (see Section 5.3.3.2, *HCP Animal Species*). However,

all breeding areas are unique, and permitting of a development of the proposed magnitude (i.e., a new campground in and adjacent to occupied breeding habitat) is unprecedented. Therefore, there is uncertainty as to whether the proposed action can be adequately minimized and mitigated on site. If, through the adaptive management process, it is determined that the proposed development and use cannot be adequately minimized and mitigated such that the minimum thresholds are met, then resources intended for management in the Plan Area will be shifted to another location(s) within Recovery Unit 4 (as described below). Such a shift would only be implemented if the USFWS agrees that adaptive management options within the Plan Area have been exhausted and it is necessary to provide off-site mitigation for the loss of reproductive success within the FODSP. As long as suitable habitat remains, resources will be split between the expanded study area and Fort Ord Plan Area, as determined by USFWS, State Parks, and the Cooperative, so that low-level monitoring (2 days per week) may continue within the Plan Area, but most resources will be expended in the expanded study area.

Expansion of the Plan Area is the final phase of the adaptive management strategy and will be implemented under two scenarios: sea level rise (described in Chapter 8) and predators, recreation, or any other unknown cause. The implementation of HCP required actions in the expanded study area will occur if the western snowy plover is not achieving the minimum thresholds (Chapter 5) and only after other adaptive management strategies are determined to be ineffective or the beach is lost entirely (Chapter 8). The expanded study area will encompass all of Recovery Unit 4, but local management areas within Recovery Unit 4 will be chosen at the time expansion is implemented, in coordination with the Cooperative, USFWS, and State Parks, based on current site conditions and potential for nesting and fledging success (Figure 6-4). The only covered activities allowed in the expanded study area are those management and monitoring actions necessary to meet the agreed upon thresholds, which will be determined at the time of expansion implementation by the authorities listed above. No development will be allowed in these areas as covered activities under the Plan. The thresholds within the expanded study area must exceed the known 3-year average (at time of implementation) to account for the losses at Fort Ord. Lands acquired or protected using permanent or temporary management agreements will be managed to protect and enhance the plover populations. Temporary management agreements (e.g., 5–10 year agreements as opposed to agreements in perpetuity) may be used to protect nesting habitat on areas not immediately planned for development or on lands where permanent protection is not possible or necessary. If an area is managed only temporarily to mitigate for the loss of reproductive success within the FODSP, then that area must be replaced at the end of the temporary management agreement (i.e., mitigation efforts may be moved to different locations within Recovery Unit 4, but the mitigation must continue in perpetuity).

Global climate change and subsequent sea level rise is likely to affect western snowy plover. A direct loss of all habitat for the western snowy plover at FODSP as a result of sea level rise is foreseeable during the permit term. It is anticipated that the existing dunes would not erode at a rate fast enough to maintain the beach at FODSP. The resulting landscape would be steep bluffs with little to no beach at their base. Suitable habitat for western snowy plover would no longer be present. For the purposes of the Plan, this is regarded a changed circumstance. If sea level rise modifies western snowy plover habitat at FODSP so that the demographic thresholds (Chapter 5) (based on a 3-year rolling average) cannot be achieved, or all western snowy plover habitat is lost, resources intended for western snowy plover management will be shifted to another beach(es) within Recovery Unit 4. If all foredune habitat is lost, the beach will be qualitatively assessed four times yearly to determine if the habitat may recover naturally. However, if any suitable habitat remains at



*Changes or updates to biological objectives or monitoring methods would trigger a minor amendment.

Adapted from Draft Guadalupe River Project, Downtown San Jose, California, Mitigation Monitoring Report (Jones & Stokes 2002).

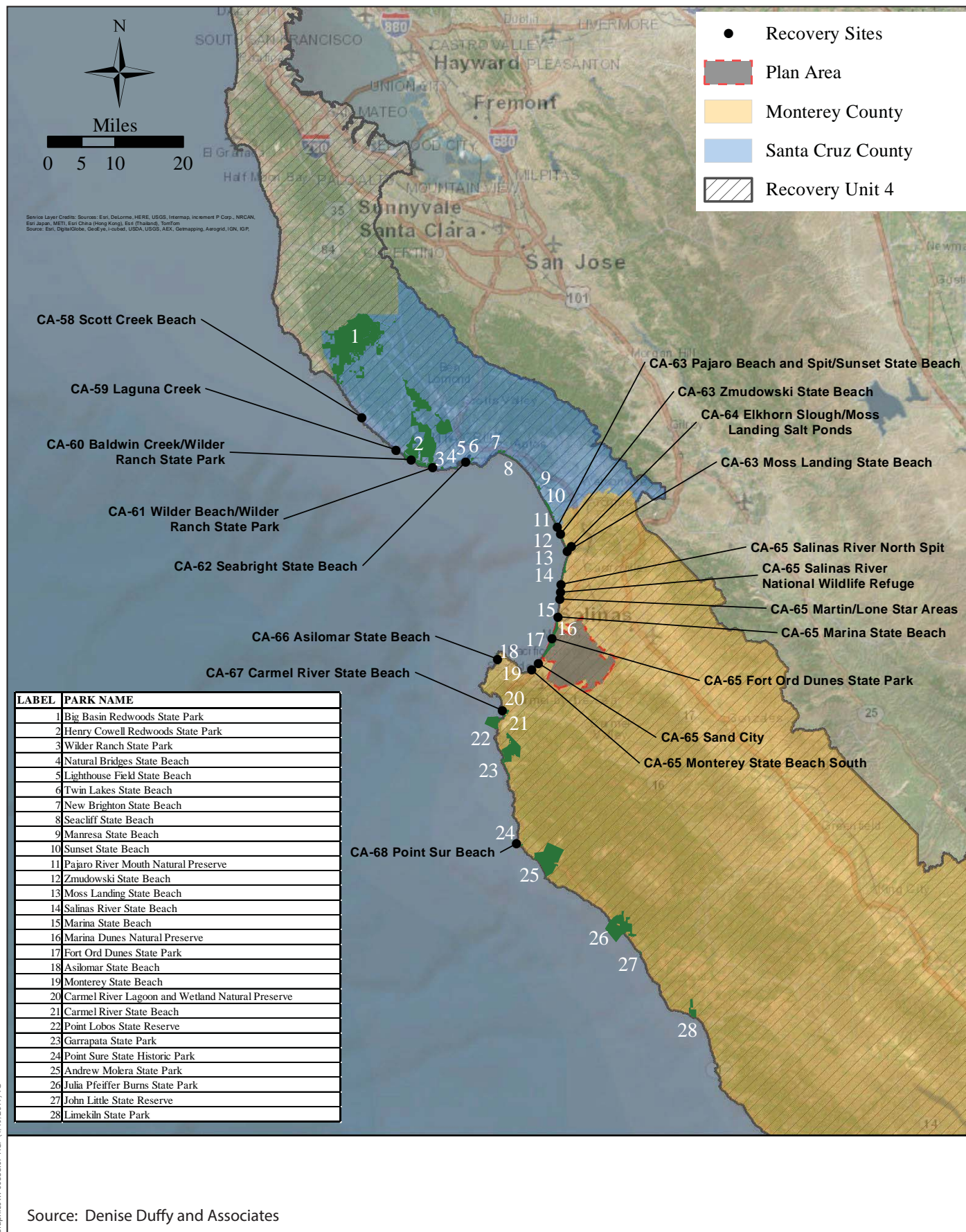


Figure 6-4
Western Snowy Plover Expanded Study Area

FODSP, low-level monitoring (twice weekly) for western snowy plovers and nests will occur simultaneously at FODSP and other beach(es) for 3 years. After 3 years, USFWS, State Parks, and the Cooperative will coordinate to determine if it is advantageous to continue monitoring at all locations or if FODSP should be abandoned. If coastal erosion results in the loss of 420-restored acres, State Parks would work with the USFWS to identify other coastal dune areas to restore to meet their obligation of restoring 420 acres of coastal dune habitat within Monterey County.

Adaptive Management Measure-13. Modify management strategies if Smith's blue butterfly distribution in FODSP is reduced. Impacts such as habitat fragmentation and an increased level of activity near a habitat patch may affect Smith's blue butterfly distribution. Presence/absence surveys will measure changes in Smith's blue butterfly distribution. If species distribution is adversely affected by ongoing covered activities (e.g., recreation access), adaptive management measures could include host plant material removal and relocation, restricted access, fencing, seasonal closures, buffers, or closure/relocation of the facility. The Cooperative and State Parks, in coordination with the Wildlife Agencies will determine the most suitable strategy to maintain or increase species distribution in the HMAs. If coastal erosion results in the loss of 420-restored acres, State Parks would work with the USFWS to identify other coastal dune areas to restore to meet their obligation of restoring 420 acres of coastal dune habitat within Monterey County.

Adaptive Management Measure 14. Refine the Yadon's piperia management plan to improve the success of salvage, translocation, propagation, enhancement and restoration of Yadon's piperia occurrences. Because little is known about the suitable methods to salvage, translocate, propagate, and restore Yadon's piperia occurrences, monitoring will focus on assessing the survivorship and regeneration of individuals (and seeds) planted from salvaged and propagated plants. The Cooperative, in collaboration with the wildlife agencies and species experts, will evaluate and refine the management plan every 10 years after its development and implementation. Adaptive management measures may include testing alternative methods for salvaging, restoring, and enhancing occurrences to improve survivorship and regeneration. Similarly, propagation methods may be evaluated if survivorship of propagated individuals is poor.

While Fort Ord lies within the range of Yadon's piperia, the primary population center is in the Del Monte Forest to the south where recent surveys documented over 160,000 Yadon's piperia (see Section 2.2.3, *Yadon's Piperia*, *Piperia yadonii*). If the species-specific mitigation measures do not trend toward meeting the aim of 2 : 1 replacement, Cooperative staff will work with USFWS and City of Monterey to include the protection and stewardship of the area to meet Permittees' obligations.

6.8.2 Structure of the Adaptive Management Process

The adaptive management strategy will be administered by the Cooperative in conjunction with the TAC and the Wildlife Agencies. The Cooperative, TAC, and Wildlife Agencies will be involved in many of the decisions on changes to the conservation strategy or monitoring program as a result of new information. Together with the Wildlife Agencies, the Cooperative will approve HCP management changes on the behalf of the Permittees. BLM has discretion to approve decisions related to adaptive management in the FONM and in coordination with the Cooperative and the Wildlife Agencies. When required, a process of minor and major amendments will be followed (see Section 8.4, *Minor and Major Amendments*).

The key to the success of the adaptive management program is a clear and effective structure for making decisions on the basis of new data from HCP monitoring and information from other sources

(Figure 6-2). In general, the Cooperative oversees the adaptive management and monitoring program. The TAC will provide important information and expertise to inform the technical and scientific aspects of HCP implementation, including specific recommendations to address changes in management and/or monitoring that would be triggered by analysis of monitoring results by way of the adaptive management program. The Wildlife Agencies will provide input and help guide the program, but the Cooperative has ultimate responsibility for implementing the program and instituting changes through adaptive management. Additional responsibilities of the Cooperative include prioritizing management actions, disseminating information, developing site restoration plans, creating annual reports, and facilitating input from the public.

An annual formal review of HCP implementation will occur once annual monitoring results become available. The TAC will assess management issues and uncertainties and determine how to address these uncertainties through the adaptive management process. This includes reviewing the effectiveness of adaptive management measures implemented during the year. The meeting outcomes will be summarized and provided to the Cooperative for review and approval. They will evaluate the adaptive management recommendations provided by the TAC and approve changes to management or monitoring prior to their implementation or incorporation in the annual report. The approved adaptive management will be incorporated in the annual HCP implementation summary report and submitted to the Wildlife Agencies for review and comment. The report will describe the annual monitoring results and clearly identify any suggested changes to management and monitoring.

The Wildlife Agencies will provide feedback on the implementation of the adaptive management and monitoring program and have approval authority over proposed management or monitoring changes. Formal feedback will be sought by the Cooperative annually as described in the preceding paragraph. Informal feedback may be sought during implementation of the adaptive management measures that are time sensitive. At this time only Adaptive Management Measure-12 is considered time sensitive; however, other measures may be identified during Plan implementation. For all time-sensitive measures, a decision-making process is or will be identified to ensure that management changes are implemented within a framework already agreed upon among the TAC, Cooperative, and Wildlife Agencies. The Cooperative will make such changes only with concurrence of the Wildlife Agencies; the Wildlife Agencies will make best efforts to respond to all requests for adaptive management within 30 days.

Conversely, if either Wildlife Agency determines that one or more of the adaptive management provisions in the HCP have been triggered and that the Cooperative has not changed its management practices in accordance with this section, the respective Wildlife Agency shall so notify the Cooperative and will direct the Cooperative to make the required changes. Within thirty (30) days after receiving such notice, the Cooperative will make the required changes and report to the respective Wildlife Agency on the Cooperative's actions.

The Wildlife Agencies will also have review and approval authority over resource management plans, success criteria and monitoring protocols, and site-specific plans to ensure compliance with the permits, Implementing Agreement, and HCP. Each of these items would be reviewed as they are developed. Wildlife Agency approval is required prior to their implementation.

6.9 Reporting

HCP monitoring reports shall be submitted to the Cooperative by December 1 each year. These reports will detail the results of both HCP compliance monitoring (Section 6.2, *HCP Compliance Monitoring*) and effectiveness monitoring (Section 6.3, *HCP Effectiveness Monitoring*).

The Service requires the submittal of an annual report throughout the length of the permit by the Cooperative; information from the HCP monitoring reports is included in this annual report. Reporting requirements are summarized in Section 7.9.3, *Reporting*.

Table 6-1. HCP Required Actions– Monitoring and Adaptive Management Measures and Species Benefited

Monitoring and Adaptive Management Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red- Legged Frog
Compliance Monitoring								
Monitoring Measure-1. Track land transfers from the Army.	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-2. Track impacts to HCP species habitat from covered activity implementation	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-3. Track implementation of all HCP permit required activities.	✓	✓	✓	✓	✓	✓	✓	✓
Effectiveness Monitoring – Baseline								
Monitoring Measure-4. Identify, characterize and map the areal extent of natural communities within the HMAs.	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-5. Calculate the adjusted baseline for maritime chaparral.	✓	✓	✓	✓			✓	✓
Monitoring Measure-6. Identify and map the extent and abundance of HCP plant species within the HMAs.	✓	✓	✓	✓				
Monitoring Measure-7. Identify, characterize and map the areal extent of suitable habitat, and determine presence or absence of HCP animal species within the HMAs following species-specific protocols for each.					✓	✓	✓	✓
Monitoring Measure-8. Identify and map non-native invasive plants, predatory species, and disease outbreaks to identify and prioritize management.	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-9. Identify high priority sites where erosion control and site restoration measures are warranted.	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-10. Identify levels and	✓	✓	✓	✓	✓	✓	✓	✓

Monitoring and Adaptive Management Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red- Legged Frog
locations of public and other access.								
Monitoring Measure-11. Prepare a public recreational use assessment for the landfill parcel as part of the baseline studies and present it to the TAC for review.	✓		✓		✓		✓	
Effectiveness Monitoring – Status and Trends								
Monitoring Measure-12. Conduct status and trends monitoring for natural communities.	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-13. Conduct effects monitoring to evaluate the success of specific management projects.	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-14. Record and quantify impacts of recreational use and public access to determine effects to HCP species; adjust use and access as needed to prevent adverse HCP species impacts.	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-15. Evaluate native species regeneration at MPRPD NAE.			✓	✓			✓	✓
Monitoring Measure-16. Monitor livestock grazing to determine its effectiveness and ensure it does not adversely affect HCP species or natural communities.	✓	✓	✓	✓			✓	✓
Monitoring Measure-17. Monitor oak woodlands for indications of sudden oak death or other disease outbreaks.	✓		✓				✓	
Monitoring Measure-18. Evaluate the effectiveness of prescribed burns and alternative vegetative treatments.	✓		✓	✓				

Monitoring and Adaptive Management Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red-Legged Frog
Monitoring Measure-19. Monitor reclaimed areas, revegetation sites, fuelbreaks, and new occupied and potential HCP species' habitat for weed non-native invasive plant species colonization.	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-20. Evaluate native species regeneration in the woodland adjacent to the Salinas River and in grassland habitat in the HMAs.							✓	✓
Monitoring Measure-21. Monitor predator populations (i.e., presence/absence) and the effectiveness of predator control programs.						✓	✓	✓
Monitoring Measure-22. Conduct status and trends monitoring for maritime chaparral and the HCP plant species it supports.	✓	✓	✓	✓				
Monitoring Measure-23. Evaluate the effectiveness of mitigation measures for maritime chaparral and the HCP plant species it supports.	✓	✓	✓	✓				
Monitoring Measure 24. Evaluate research-oriented actions to inform adaptive management.	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-25. Conduct status and trends monitoring for sand gilia.	✓							
Monitoring Measure-26. Evaluate the effectiveness of mitigation measures for sand gilia.	✓							
Monitoring Measure-27. Conduct status and trends monitoring for Yadon's piperia.		✓						
Monitoring Measure-28. Evaluate the effectiveness of mitigation measures for Yadon's piperia.		✓						
Monitoring Measure-29. Conduct status and trends monitoring for Monterey spineflower.			✓					
Monitoring Measure-30. Evaluate the effectiveness of mitigation measures for Monterey spineflower.			✓					
Monitoring Measure-31. Conduct status and trends monitoring for Seaside bird's beak.				✓				

Monitoring and Adaptive Management Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red- Legged Frog
Monitoring Measure-32. Evaluate the effectiveness of mitigation measures for Seaside bird's beak.				✓				
Monitoring Measure-33. Conduct status and trends monitoring for Smith's blue butterfly.					✓			
Monitoring Measure-34. Evaluate the effectiveness of mitigation measures for Smith's blue butterfly.					✓			
Monitoring Measure-35. Conduct status and trends monitoring for western snowy plover.						✓		
Monitoring Measure-36. Evaluate the effectiveness of mitigation measures for western snowy plover.						✓		
Monitoring Measure-37. Conduct status and trends monitoring for California tiger salamander.							✓	
Monitoring Measure-38. Monitor additional threats to California tiger salamander.							✓	
Monitoring Measure-39. Evaluate the effectiveness of mitigation measures for California tiger salamander.							✓	
Monitoring Measure-40. Conduct status and trends monitoring for California red-legged frog.								✓
Monitoring Measure-41. Evaluate the effectiveness of mitigation measures for California red-legged frog.								✓
Adaptive Management								
Adaptive Management Measure-1. Work with HMA managers to determine adjustments that can be made to Borderlands management strategies if Borderlands AMMs are not sufficient to maintain the integrity of adjacent HMAs.	✓	✓	✓	✓	✓	✓	✓	✓

Monitoring and Adaptive Management Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red- Legged Frog
Adaptive Management Measure-2. Adjust avoidance and minimization measures for maintaining roads, trails, and fuelbreaks if measures are found to contribute to declines in HCP species.	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-3. If more than two California tiger salamanders are observed crushed in any one year, implement protective measures such as posting signs or restricting driving privileges during periods when California tiger salamanders are active.							✓	
Adaptive Management Measure-4. Evaluate alternatives for improved management of the perimeter fuelbreaks to lessen the coverage of invasive grasses and other weedy species in accordance with the recommendations of the vegetation and fire management program.	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-5. Modify access and erosion control methods in response to monitoring results.	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-6. Modify habitat restoration and enhancement mitigation measure implementation in response to monitoring.	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-7. Modify or adapt the prescribed burn program and other vegetation management treatments (e.g., research-oriented) in certain areas if monitoring indicates harmful effects on the HCP species.	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-8. Modify non-native invasive species control measures in response to monitoring results or to incorporate new treatment methods.	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-9. Evaluate,							✓	

Monitoring and Adaptive Management Measures	Sand Gilia	Yadon's Piperia	Monterey Spineflower	Seaside Bird's Beak	Smith's Blue Butterfly	Western Snowy Plover	California Tiger Salamander	California Red- Legged Frog
modify, and apply appropriate management and control measures for native and hybrid California tiger salamanders.								
Adaptive Management Measure-10. Modify or adapt livestock grazing practices if monitoring indicates harmful effects on the watershed or aquatic habitat for HCP species.	✓	✓	✓	✓			✓	✓
Adaptive Management Measure-11. Refine the integrated vegetation management program through monitoring and adaptive management in an effort to reduce dependence on herbicides.	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-12. Adjust management and recreational use strategies to increase western snowy plover nesting and fledgling success.						✓		
Adaptive Management Measure-13. Modify management strategies if Smith's blue butterfly distribution in FODSP is reduced.					✓			
Adaptive Management Measure 14. Refine the Yadon's piperia management plan to improve the success of salvage, translocation, propagation, enhancement and restoration of Yadon's piperia occurrences.		✓						

Table 6-2. HCP Required Actions – Monitoring and Adaptive Management Measures by Location

Monitoring and Adaptive Management Measures	HMAs														
	FONM	FODSP	FONR	EG	PF	OO	YC	LS	LF	R45	AR	SR	NWC	NAE	
Compliance															
Monitoring Measure-1. Track land transfers from the Army.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Monitoring Measure-2. Track impacts to HCP species habitat from covered activity implementation.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Monitoring Measure-3. Track implementation of all HCP permit required activities.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Effectiveness Monitoring – Baseline															
Monitoring Measure-4. Identify, characterize and map the areal extent of natural communities within the HMAs.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Monitoring Measure-5. Calculate the adjusted baseline for maritime chaparral.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Monitoring Measure-6. Identify and map the extent and abundance of HCP plant species within the HMAs.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Monitoring Measure-7. Identify, characterize and map the areal extent of suitable habitat, and determine presence or absence of HCP animal species within the HMAs following species-specific protocols for each.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Monitoring Measure-8. Identify and map non-native invasive plants, predatory species, and disease outbreaks to identify and prioritize management.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Monitoring and Adaptive Management Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	YC	LS	LF	R45	AR	SR	NWC	NAE
Monitoring Measure-9. Identify high priority sites where erosion control and site restoration measures are warranted.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-10. Identify levels and locations of public and other access.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-11. Prepare a public recreational use assessment for the landfill parcel as part of the baseline studies and present it to the TAC for review.									✓					
Effectiveness Monitoring – All Natural Communities														
Monitoring Measure-12. Conduct status and trends monitoring for natural communities.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-13. Conduct effects monitoring to evaluate the success of specific management projects.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-14. Record and quantify impacts of recreational use and public access to determine HCP species effects; adjust use and access as needed to prevent adverse HCP species impacts.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-15. Evaluate native species regeneration at MPRPD NAE.														✓
Monitoring Measure-16. Monitor livestock grazing to determine its effectiveness and ensure it does not adversely affect HCP species or natural communities.	✓													

Monitoring and Adaptive Management Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	YC	LS	LF	R45	AR	SR	NWC	NAE
Monitoring Measure-17. Monitor oak woodlands for indications of sudden oak death or other disease outbreaks.	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Effectiveness Monitoring – Prescribed Burning and Alternative Vegetative Management Effects Monitoring														
Monitoring Measure-18. Evaluate the effectiveness of prescribed burns and alternative vegetative treatments.	✓		✓	✓	✓			✓	✓	✓			✓	✓
Effectiveness Monitoring – Non-Native Invasive Species Control														
Monitoring Measure-19. Monitor reclaimed areas, revegetation sites, fuelbreaks, and new occupied and potential HCP species' habitat for weed non-native invasive plant species colonization.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring Measure-20. Evaluate native species regeneration in the woodland adjacent to the Salinas River and in grassland habitat in the HMAs.												✓		
Monitoring Measure-21. Monitor predator populations (i.e., presence/absence) and the effectiveness of predator control programs.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Effectiveness Monitoring – HCP Species														
Monitoring Measure-22. Conduct status and trends monitoring for maritime chaparral and the HCP plant species it supports.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
Monitoring Measure-23. Evaluate the effectiveness of mitigation measures for maritime chaparral and the HCP plant species it supports.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Monitoring and Adaptive Management Measures	HMAs														
	FONM	FODSP	FONR	EG	PF	OO	YC	LS	LF	R45	AR	SR	NWC	NAE	
Monitoring Measure 24. Evaluate research oriented actions to inform adaptive management.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Monitoring Measure-25. Conduct status and trends monitoring for sand gilia.	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓		
Monitoring Measure-26. Evaluate the effectiveness of mitigation measures for sand gilia.	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓		
Monitoring Measure-27. Conduct status and trends monitoring for Yadon’s piperia.	✓												✓		
Monitoring Measure-28. Evaluate the effectiveness of mitigation measures for Yadon’s piperia.	✓												✓		
Monitoring Measure-29. Conduct status and trends monitoring for Monterey spineflower.	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	
Monitoring Measure-30. Evaluate the effectiveness of mitigation measures for Monterey spineflower.	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	
Monitoring Measure-31. Conduct status and trends monitoring for Seaside bird’s beak.	✓		✓	✓						✓				✓	
Monitoring Measure-32. Evaluate the effectiveness of mitigation measures for Seaside bird’s beak.	✓		✓	✓						✓				✓	
Monitoring Measure-33. Conduct status and trends monitoring for Smith’s blue butterfly.		✓	✓												
Monitoring Measure-34. Evaluate the effectiveness of mitigation measures for Smith’s blue butterfly.		✓	✓												

Monitoring and Adaptive Management Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	YC	LS	LF	R45	AR	SR	NWC	NAE
Monitoring Measure-35. Conduct status and trends monitoring for western snowy plover.		✓												
Monitoring Measure-36. Evaluate the effectiveness of mitigation measures for western snowy plover.		✓												
Monitoring Measure-37. Conduct status and trends monitoring for California tiger salamander.	✓	✓		✓		✓	✓	✓	✓	✓			✓	✓
Monitoring Measure-38. Monitor additional threats to California tiger salamander.	✓	✓		✓		✓	✓	✓	✓	✓			✓	✓
Monitoring Measure-39. Evaluate the effectiveness of mitigation measures for California tiger salamander.	✓	✓		✓		✓	✓	✓	✓	✓			✓	✓
Monitoring Measure-40. Conduct status and trends monitoring for California red-legged frog.	✓	✓		✓		✓	✓	✓				✓	✓	✓
Monitoring Measure-41. Evaluate the effectiveness of mitigation measures for California red-legged frog.	✓	✓		✓		✓	✓	✓				✓	✓	✓
Adaptive Management														
Adaptive Management Measure-1. Work with HMA managers to determine adjustments that can be made to Borderlands management strategies if Borderlands AMMs are not sufficient to maintain the integrity of adjacent HMAs.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Monitoring and Adaptive Management Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	YC	LS	LF	R45	AR	SR	NWC	NAE
Adaptive Management Measure-2. Adjust avoidance and minimization measures for maintaining roads, trails, and fuelbreaks if measures are found to contribute to declines in HCP species.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-3. If more than two California tiger salamanders are observed crushed in any one year, implement protective measures such as posting signs or restricting driving privileges during periods when California tiger salamander are active.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-4. Evaluate alternatives for improved management of the perimeter fuelbreaks to lessen the coverage of invasive grasses and other weedy species in accordance with the recommendations of the vegetation and fire management program.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-5. Modify access and erosion control methods in response to monitoring results.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-6. Modify habitat restoration and enhancement mitigation measure implementation in response to monitoring.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Monitoring and Adaptive Management Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	YC	LS	LF	R45	AR	SR	NWC	NAE
Adaptive Management Measure-7. Modify or adapt the prescribed burn program and other vegetation management treatments (e.g., research-oriented) in certain areas if monitoring indicates harmful effects on the HCP species.	✓		✓	✓	✓			✓	✓	✓			✓	✓
Adaptive Management Measure-8. Modify non-native invasive species control measures in response to monitoring results or to incorporate new treatment methods.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-9. Evaluate, modify, and apply appropriate management and control measures for native and hybrid California tiger salamanders.	✓	✓		✓		✓	✓	✓	✓	✓			✓	✓
Adaptive Management Measure-10. Modify or adapt livestock grazing practices if monitoring indicates harmful effects on the watershed or aquatic habitat for HCP species.	✓													
Adaptive Management Measure-11. Refine the integrated vegetation management program through monitoring and adaptive management in an effort to reduce dependence on herbicides.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adaptive Management Measure-12. Adjust management and recreational use strategies to increase western snowy plover nesting and fledgling success.		✓												

Monitoring and Adaptive Management Measures	HMAs													
	FONM	FODSP	FONR	EG	PF	OO	YC	LS	LF	R45	AR	SR	NWC	NAE
Adaptive Management Measure-13. Modify management strategies if Smith's blue butterfly distribution in FODSP is reduced.		✓												
Adaptive Management Measure 14. Refine the Yadon's piperia management plan to improve the success of salvage, translocation, propagation, enhancement and restoration of Yadon's piperia occurrences.	✓												✓	

7.1 Overview

HCP implementation begins when the ESA Section 10(a)(1)(B) incidental take permit (Federal Permit) and the CESA Section 2081 permit (State Permit) are issued. Primary responsibility for implementing the HCP rests with the Permittees and BLM¹. An HCP Joint Powers Authority, called the Fort Ord Regional Habitat Cooperative (Cooperative), will be formed prior to permit issuance. The Cooperative will coordinate and track HCP activities required by the permits and will evaluate the consistency of covered activities with the terms of the HCP, as defined in this chapter.

The successful execution of HCP activities requires coordinated actions among the Permittees, BLM, Wildlife Agencies, and the private sector. This chapter identifies the organizational structure, institutional arrangements, and roles and responsibilities of these parties, land managers, and other stakeholders.

7.2 Implementing Structure

7.2.1 Permittees

The following entities will be Permittees under the HCP.

- Fort Ord Reuse Authority².
- County of Monterey.
- City of Marina.
- City of Seaside.
- City of Del Rey Oaks.
- City of Monterey.
- Regents of the University of California (Santa Cruz Campus).
- Board of Trustees of California State University (on behalf of the Monterey Bay).
- Monterey Peninsula College.
- Monterey Peninsula Regional Park District.
- Marina Coast Water District.
- California Department of Parks and Recreation.

¹ BLM has a special role in implementing the HCP because it is not a Permittee, but, for the State Permit, it has committed to supporting the HCP goals and objectives to be met. (See Section 7.3.2). For the Federal Permit, BLM will cooperate with the Cooperative to allow additional mitigation measures on FONM. (See also Section 1.9.3).

² When the Fort Ord Reuse Authority sunsets (expected in 2020), it will no longer be a member of the Cooperative.

- Fort Ord Regional Habitat Cooperative.

These 13 entities are requesting to be the Permittees under one ESA Section 10(a)(1)(B) incidental take permit and one CESA Section 2081 permit. These two permits have joint and several liability. The permits would provide authorization for take that occurs as a result of implementing covered activities (see Chapter 3, *Covered Activities*). The species for which take is requested under each permit are identified in Table 1-1³.

The Cooperative, formed prior to permit issuance as a Joint Powers Authority (JPA), will implement and coordinate the HCP on behalf of the Permittees. Forming the Cooperative prior to permit issuance will allow the Cooperative to be a Permittee. Although all the Permittees will be members of the Cooperative, each must also individually be a Permittee, and each alone will have the ability to extend take authorization to private developers under its jurisdiction, if applicable, as part of the development approval process. (Extending Take always requires an application packet; see Section 7.5, *Providing Take Authorization under the HCP*.)

7.2.2 Bureau of Land Management

In consideration of the State Permit, BLM will implement its portion of the conservation strategy consistent with the HCP and the State Permit. BLM will manage the majority of the land within the HCP area that supports the conservation strategy in accordance with its RMP, National Monument proclamation, HMP, and FLPMA. BLM will commit to its habitat management requirements pursuant to the HCP to the extent that the HCP is consistent with BLM plans prepared under FLPMA and subject to the limitations of the Federal Anti-Deficiency Act (Title 31, USC, Sections 1341 and 1517).

Under the Federal Permit, FONM and the actions of BLM are not counted for the HCP conservation strategy. However, BLM will cooperate with the Cooperative to allow additional, Permittee-funded mitigation measures on the FONM. The Cooperative will commit to funding and conducting biological monitoring within BLM's FONM. In addition, the Cooperative will fund some mitigation measures such as aquatic habitat restoration, and maritime chaparral and grassland restoration that will occur on FONM (Chapter 5, Conservation Strategy; see Table 5-7 which identifies the mitigation measures that will be implemented by the Permittees, BLM, or both).

BLM will not be a Permittee; however, BLM will consider signing the HCP JPA Agreement with the Permittees as a cooperating entity, to the extent allowed under governing law and regulation.

7.2.3 Technical Advisory Committee and Coordinated Resource Management and Planning

Technical guidance for implementing the HCP will be provided through the Technical Advisory Committee (TAC). The TAC is similar in structure to the Coordinated Resource Management and Planning (CRMP) Fort Ord program, which is comprised of technical staff from stakeholder agencies

³ Authorization for take under the CESA is required for all State-listed species and cannot be extended to species which are not listed under the CESA. Within the Plan Area, species for which State take authorization can be provided are sand gilia, seaside's bird's beak, and California tiger salamander. Authorization for take under the ESA can be provided for all covered species (listed and non-listed species).

and representatives from planning departments. The CRMP was formed in 1994 to serve the HMP as a practical means of coordinating base-wide resource management and planning among the participating entities at former Fort Ord. The TAC-appointed membership of planners, ecologists, and conservation biologists comes from Permittees, BLM, CDFW, and USFWS. As the HCP becomes the preeminent habitat management oversight plan, the TAC will assume an advisory role to the Cooperative on resource planning, problem-solving, and management processes in former Fort Ord. The Cooperative will not be required to implement the advice of the TAC on land management, monitoring, and adaptive management, unless explicitly stated in the HCP. The TAC will meet on at least a quarterly basis to review HCP compliance data from the Cooperative and make specific recommendations. Other services of the TAC include providing a forum for information and resource exchange on habitat management-related issues and relating the HCP to the HMP standards for habitat management, monitoring, and reporting.

The Fort Ord CRMP program members consist of local jurisdictions with habitat management responsibilities, CDFW, USFWS, State Parks, and BLM. They have been meeting regularly since the program's formation. As the Fort Ord CRMP program lead, BLM coordinates and facilitates meetings and activities. The main objectives of the CRMP are to create a forum for information and resource exchange on habitat related issues and compile annual HMP reports for the wildlife agencies.

7.2.4 Wildlife Agencies

The Wildlife Agencies (i.e., USFWS and CDFW) are participants in the oversight of HCP implementation and compliance.

7.2.5 Consultants and Contractors

Consultants will be retained to meet any technical or scientific needs that cannot be effectively or efficiently addressed through in-house staff due to insufficient expertise or availability. It is expected that consultants will be used to implement the conservation strategy and monitoring for HMAs that the Cooperative is managing on behalf of the local jurisdiction. In addition, consultants are expected to be hired to conduct the base-wide biological monitoring on all of the HMAs. Contractors will be needed for construction tasks within the Reserve System requiring specialized skills or the use of heavy equipment, such as road grading, restoration grading, plant propagation, restoration planting, and maintenance.

7.3 Roles and Responsibilities

The Permittees, BLM, TAC members, Wildlife Agencies, and consultants and contractors will have different HCP implementation roles and responsibilities. The HCP implementation roles and responsibilities differ slightly for CDFW and USFWS in relation to the State permit (Figures 7-1a) and the Federal Permit (Figure 7-1b). Because Federal land (i.e., FONM) does not contribute to the habitat preservation requirements for the Federal permit, BLM is not directly involved with implementing the requirements of the Federal permit. FORA, the Cooperative, UC/NRS, and State Parks will play a large role in implementing activities required by the HCP permits. HMAs owned by State Parks and UC/NRS will be managed by these entities according to the terms of the HCP. Unless otherwise stated, all obligations and responsibilities described in this chapter rest with the Permittees and the Cooperative.

Issues at FODSP, for example, will follow a chain of responsibilities particular to the location. State Parks will be notified by the Cooperative with observations that trigger consideration of a park closure as early in advance as possible, to enable State Parks to implement adaptive measures in coordination with the Coastal Commission. Changes to State Park's normal activities, such as closing of beach access, will be coordinated between the Cooperative, State Parks, USFWS, and the Coastal Commission.

The Cooperative has the authority to contract with others to implement some of its responsibilities on its behalf. The Cooperative may be able to more effectively and efficiently ensure implementation of the HCP by partnering with these existing institutions. Options available to perform the work of the Cooperative include those listed below.

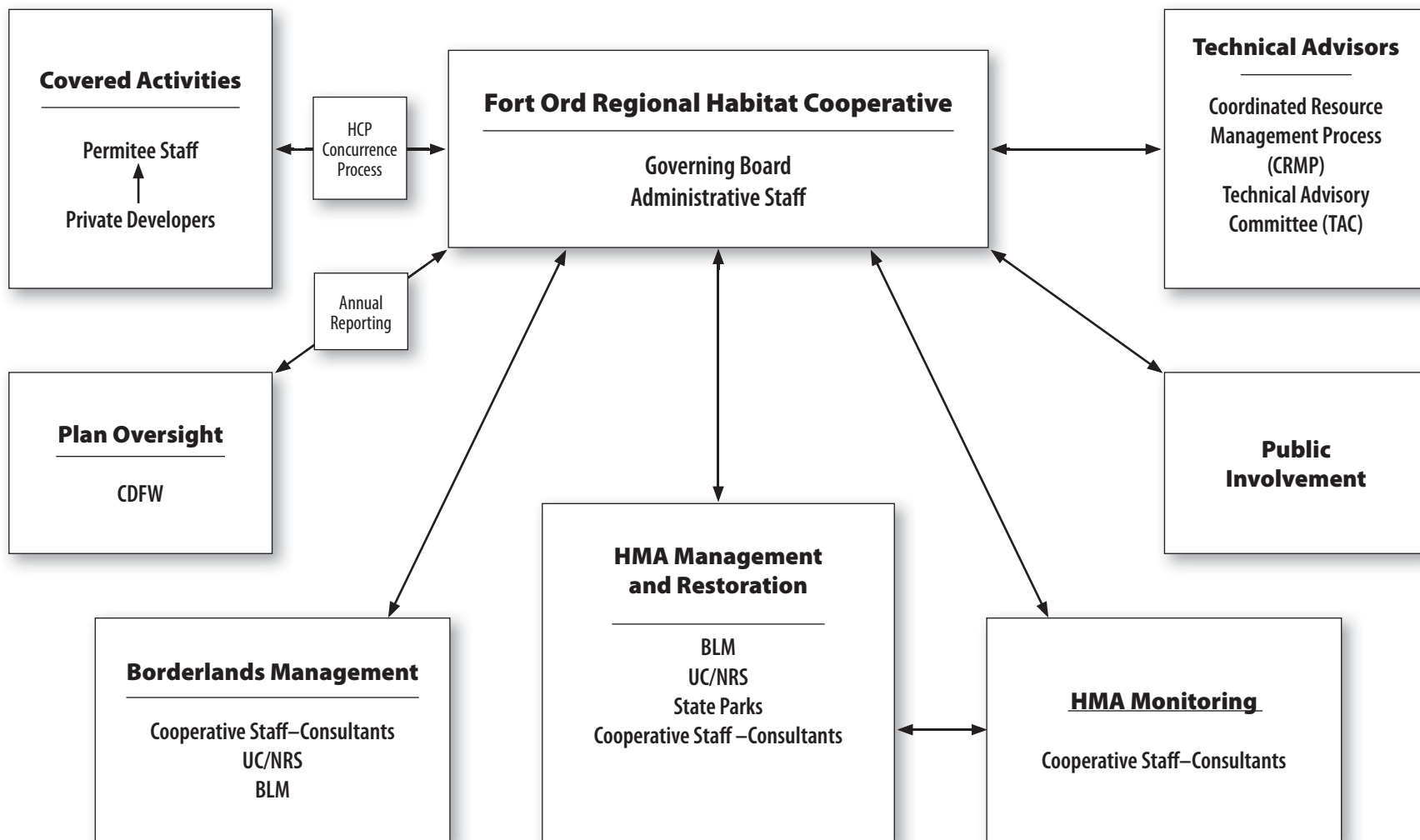
- Staff dedicated to the Cooperative and independent of other agencies.
- Staff wholly or partly dedicated to the Cooperative but funded by FORA and/or housed within one or more existing jurisdictions, government agencies, or nonprofit organizations.
- Contracts with other organizations that have relevant experience and expertise, such as experience with land management or monitoring (e.g., FORA, BLM, State Parks, consultants, contractors).

The Cooperative's decision-making and dispute resolution processes are detailed in the HCP JPA Agreement and Section 7.9, *Implementation Process*.

7.3.1 Permittees

The Permittees are ultimately responsible for ensuring implementation of the Plan. As such, the decision-making body of the Cooperative will be a Governing Board (Board) of elected officials or officers provided by and representing each Permittee. The Cooperative staff, led by a Program Administrator, will oversee and facilitate day-to-day implementation of the HCP on behalf of the Permittees. The roles and responsibilities of the Governing Board and Cooperative Program administrator are described in Section 7.3.1.1.1, *Governing Board*, and Section 7.3.1.1.2, *Cooperative Program Administrator*, respectively, and shown in Figure 7-2. In addition, the Permittees will play a role in administering take authorization under the HCP (Section 7.5.1, *Evaluation Process for Projects Funded or Implemented by Permittees*).

Although some of the Permittees (i.e., Regents of the University of California and CSUMB, FORA, State Parks, Monterey Peninsula College, Monterey Peninsula Regional Park District, MCWD, and the Cooperative) are within the boundaries of the cities and county, under the HCP permits, they would have take coverage for covered activities for which they implement on land they own (Section 7.5, *Providing Take Authorization under the HCP*). If such a Permittee sells property, the new owner would need to obtain a certificate of inclusion for take coverage from the relevant jurisdiction (city or county), unless the new owner is also a Permittee (Section 7.5). Aside from complying with the requirements of the HCP described herein, upon permit issuance, State government entities such as CSUMB do not have to seek authorization from the local jurisdictions to carry out their covered activities. However, they are responsible for tracking their covered activities.



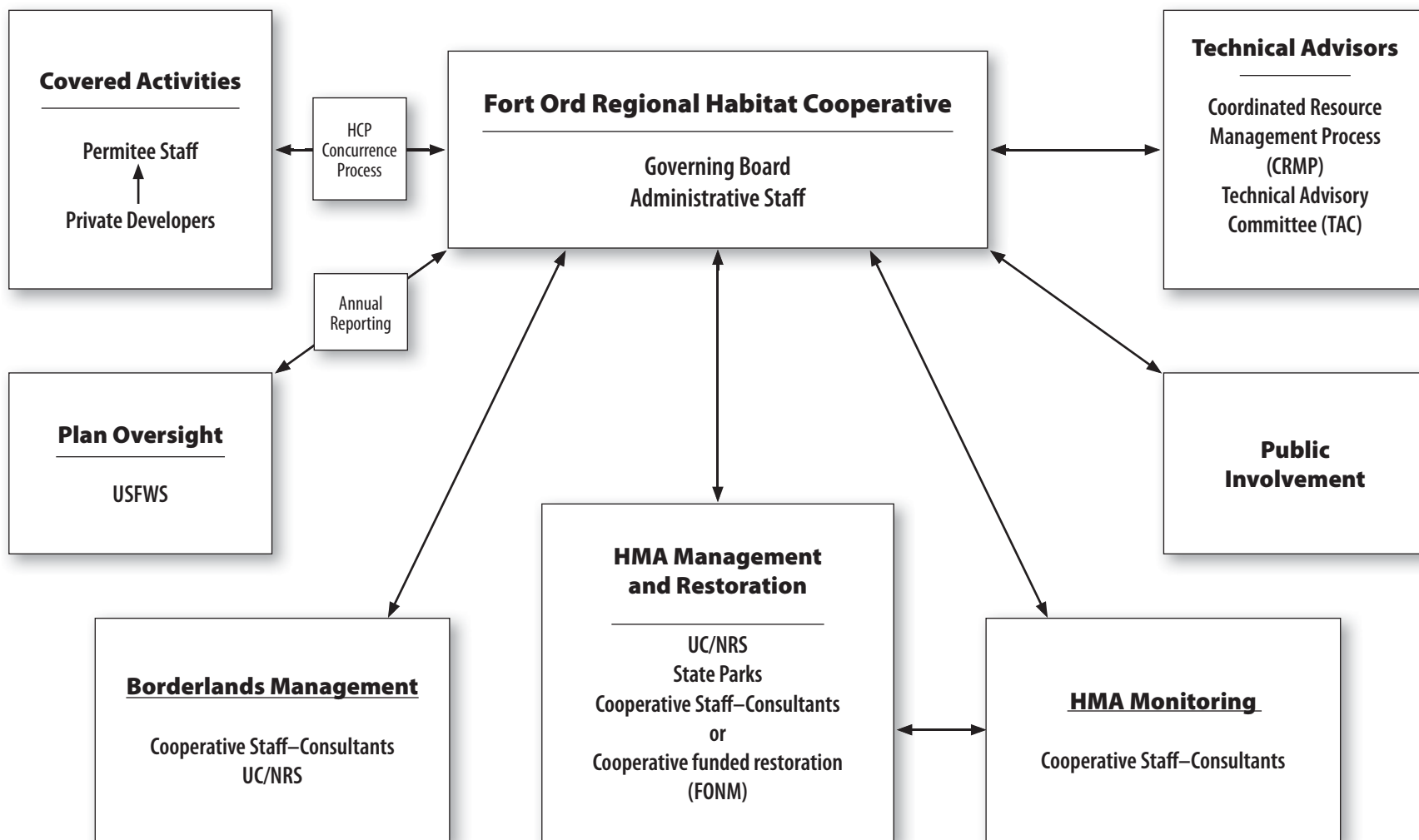
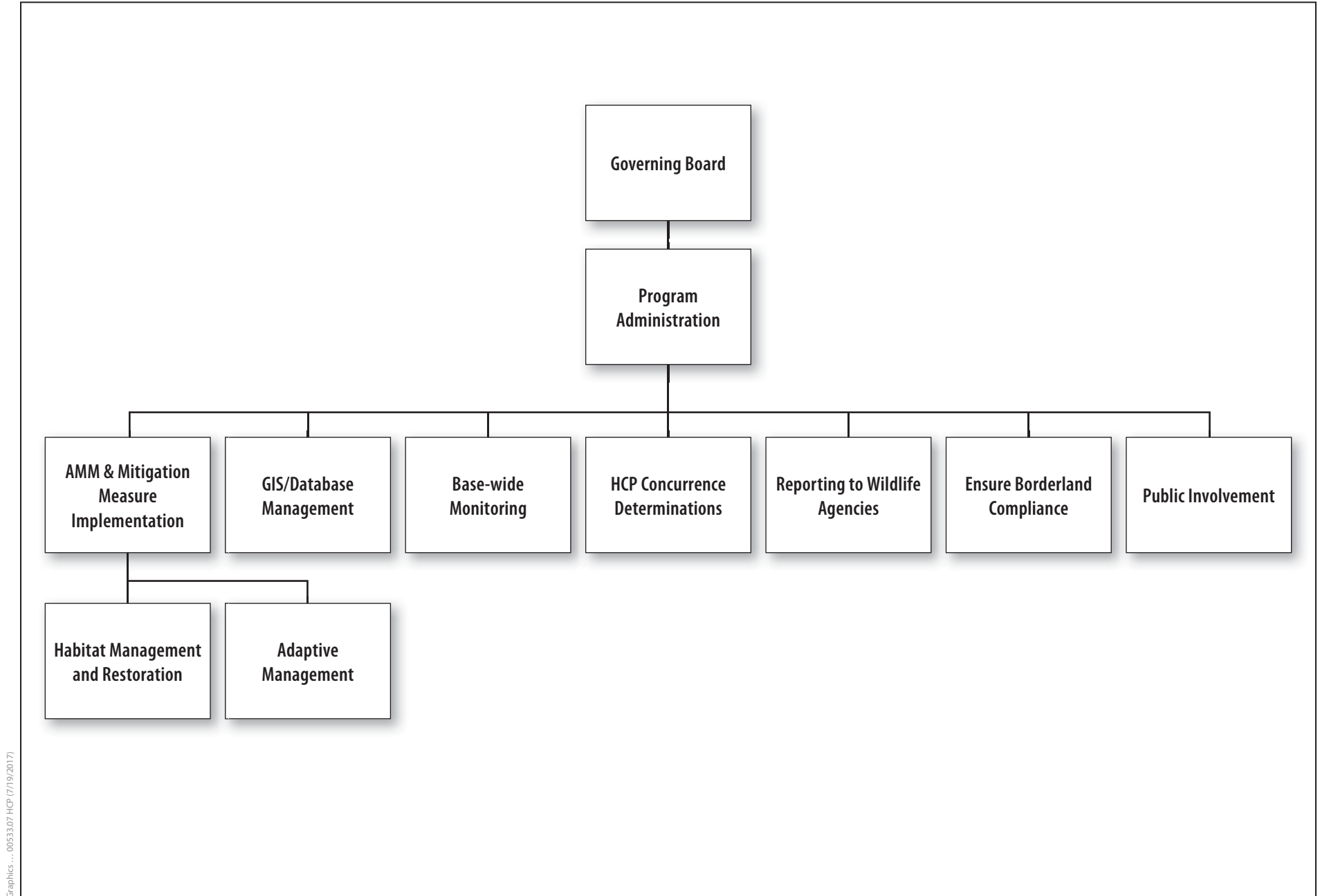


Figure 7-1b
Relationship of Fort Ord Regional Habitat Cooperative to External Parties for Federal Permit



Graphics ... 00533.07 HCP (7/19/2017)

Figure 7-2
Roles of Fort Ord Regional Habitat Cooperative

7.3.1.1 Fort Ord Reuse Authority

The Fort Ord Reuse Authority has a special role in implementing the HCP. FORA is the only agency currently collecting Community Facilities District (CFD) special tax to fund the HCP (see Chapter 9, *Cost and Funding*).

FORA is expected to sunset during the permit term in 2020. When FORA sunsets, State law requires the Local Agency Formation Commission (LAFCO) to parcel out FORA's assets and liabilities to the appropriate successor agency or jurisdiction. As an implementing act within 120 days after issuance of permits, Permittees will adopt the HCP Implementing Ordinance or Policy. Those Ordinances or Policies rely on FORA's collection of the CFD special tax or equivalent replacement funding mechanism created by County of Monterey, Cities of Del Rey Oaks, Marina, Monterey, and Seaside. The details of this transfer of assets and obligations as it relates to the HCP will be developed with the Cooperative and other successor agencies as appropriate, to ensure full compliance with the HCP.

7.3.1.1.1 Fort Ord Regional Habitat Cooperative

The Cooperative will ensure HCP permit compliance is maintained. The Cooperative will review Permittee's projects and monitor that HCP required actions are met. This includes implementing the HCP concurrence determination process and reviewing the HCP stay-ahead provision (described in Section 7.6). The Cooperative will coordinate HCP implementation by directing the Cooperative Program Administrator, Cooperative staff or contractors. The Cooperative may contract with a Permittee, BLM, other local organization, or consultants to perform one or more of their responsibilities (Table 7-1, at the end of the chapter, and Table 7-2). Although most CEQA documentation will be performed by Permittees or third party applicants, the Cooperative can be a state lead agency in CEQA because its members can be state lead agencies. The Cooperative will be responsible for implementation of the following.

- HCP required AMMs on the behalf of Monterey County, City of Marina, Monterey Peninsula College, CSUMB, UC, City of Seaside, City of Del Rey Oaks, City of Monterey, and Monterey Peninsula Regional Park District within Borderland parcels, as indicated in Table 5-3.
- HCP required mitigation measures on the behalf of Monterey County, City of Marina, Monterey Peninsula College, and Monterey Peninsula Regional Park District within HMA parcels EG, PF, OO, TC, LS, LF, R45, AR, SR, NWC, and NAE (Table 5-6).
- HCP required monitoring measures on the behalf of all Permittees and BLM (Table 6-2).
- HCP required program administration actions as indicated in Table 7-1 (at the end of the chapter).
- HCP required reporting actions as indicated in Table 7-2.

The Cooperative will include, as part of staff or contract resources, a network of scientists, administrators, and other specialists who oversee and carry out planning and design, habitat restoration, monitoring, adaptive management programs, and periodic coordination with, and reporting to, the CDFW and to USFWS (Figure 7-2). These positions may be hired by the Cooperative or their functions contracted out to existing local agencies, nonprofit organizations, or private consultants. Permanent and seasonal administrative and technical staff will be responsible for overseeing and ensuring the day-to-day tasks of implementing the HCP "on the ground." Some or all of the activities of day-to-day implementation may be delegated to and carried out by contract

agencies (including Permittees or BLM), nonprofit organizations, or contractors that specialize in the necessary functions and duties. The Cooperative will coordinate and contract with outside consultants and other land management agencies to ensure adequate and coordinated HCP implementation. State Parks, UC, and BLM contractors already at work on mitigation measures in their respective HMAs may be the clear choice for the Cooperative to authorize, if doing so ensures proper HCP implementation. Additional specialists will be utilized as needed, in collaboration with these agencies.

Table 7-2. Required Reporting Actions by Entity Responsible

Entity Responsible	HCP Required Reporting Actions
All Permittees and BLM ⁴	Reporting-1. Report any non-compliance issues. Reporting-2. Report compliance monitoring results for the current year to the Cooperative by December 1 of that year, annually.
Cooperative Program Administrator	Reporting-3. Incorporate results of HCP compliance monitoring into the annual report submitted to Wildlife Agencies by May 15 for the prior year. Reporting-4. Determine compliance with the stay-ahead requirement for HCP species habitat preservation and overall HCP permit compliance. Reporting-5. Report results of baseline monitoring (Section 6.3.1, <i>Baseline Studies</i>). Reporting-6. Report results of base-wide status and trends monitoring including natural community and species monitoring (Section 6.3.2, <i>Status and Trends Monitoring</i>). Reporting-7. Evaluate results of status and trends monitoring and determine compliance with HCP biological goal and objectives. Reporting-8. Submit a single HCP Implementation Summary Report to the Wildlife Agencies and fulfill all reporting requirements identified in Section 7.9.3, <i>Reporting</i> .
HMA Managers	Reporting-9. Prepare annual reports documenting HCP required activities for submittal to the TAC and Cooperative administrative staff for the Cooperative's annual report preparation.
BLM ⁴	Reporting-10. Notify the Cooperative if a California tiger salamander is discovered killed due to incidental take on the FONM in any given year. Additionally, follow the reporting requirements outlined in the HCP and/or the biological opinion.

7.3.1.1.2 Governing Board

Each Permittee will provide staff to participate on the Board to advise on HCP implementation, for a total of 14 voting members⁵ (City of Del Rey Oaks [1], City of Monterey [1], City of Marina [2], City of Seaside [2], County of Monterey [2], MPC [1], UC [1], CSUMB [1], Monterey Peninsula Regional Park District [1], State Parks [1], and MCWD [1]) and 2 non-voting members (BLM and FORA). Each Permittee's legislative body or designated administrator will appoint its representative and may also appoint one alternate representative. A Board term shall consist of four years. The term of each

⁴ BLM lands, which make up a large area of the HMAs in the HMP, are subject to continuing management under federal land laws which may result in change in habitat protection and management over time. BLM provides periodic reporting to USFWS under its existing Biologic Opinions and the HMP. BLM's participation is expected and would be voluntary.

⁵ Upon the sunset of FORA, the Board will be reduced from 2 non-voting members to 1.

Board member and alternate ends when the member or alternate is replaced by his/her appointing body or when the member or alternate ceases to be an elected official of the appointing body, whichever occurs first. Each Permittee's governing city council or board or delegated officer will appoint a new representative to the Board whenever the Permittee's seat on the Board becomes vacant within 60 days. A new member shall be appointed to complete the unserved term of his or her predecessor and may be reappointed by his or her Party's legislative body or administrator for a subsequent term or terms. The Cooperative's decision-making process is outlined in the HCP JPA Agreement (Section 2.5, *Membership and Voting*). Governing Board responsibilities are identified in Table 7-1.

7.3.1.1.3 Cooperative Program Administrator

The ultimate decisions for all day-to-day activities of the Cooperative rest with the Cooperative Program Administrator as directed by the Governing Board. The Governing Board will conduct a selection process and hire the Cooperative Program Administrator. The Cooperative Program Administrator will be a staff person dedicated to the HCP who reports to the Governing Board and directs the activities of the Cooperative under the authority granted by the Governing Board. In the first few years of HCP implementation, the Program Administrator may either be a new staff member or a staff member shared with FORA. The Program Administrator will be responsible for implementing all of the tasks listed above, including periodic reporting to the Governing Board. The program administrator will also oversee periodic reviews of the Permittees to ensure compliance with the terms of the HCP on behalf of all Permittees. Finally, the program administrator will serve as the primary link between Cooperative staff, local jurisdictions, Wildlife Agencies, other decision makers, and the general public.

7.3.1.2 Other Permittees with Habitat Management Responsibilities

UC/NRS and State Parks are HMA managers under the Plan. In addition to the responsibilities of all Permittees, they are responsible for the day-to-day management of the FONR and FODSP, respectively, in accordance with the Plan. They will have the following responsibilities.

- Implement HCP required AMMs and mitigation measures at FONR and FODSP (Table 5-3 and Table 5-6).
- Coordinate with the Cooperative and participate as a Governing Board member (Section 7.3.1.1.2, *Governing Board*).
- Participate in the TAC program (Section 7.3.3, *Technical Advisory Committee and Coordinated Resource Management Planning*).
- Implement HCP required adaptive management measures and changed circumstances measures in response to changed circumstances or monitoring trends.
- Fulfill compliance monitoring and reporting requirements (Section 6.2, *HCP Compliance Monitoring*).
- Provide access for HCP required effectiveness monitoring.

Existing FODSP plans can substitute for HCP plans, but State Parks is responsible for demonstrating that their mitigation measures are consistent with HCP requirements.

7.3.2 Bureau of Land Management

The BLM has a unique role in HCP implementation. Because it is a Federal agency, it is not required to seek take authorization for CESA listed species. However, under the State Permit, the conservation actions that BLM has undertaken and will undertake through its own resource management plans (RMPs) are part of the HCP conservation strategy. Under the Federal Permit, BLM will cooperate with the Cooperative to allow monitoring and mitigation measures on the FONM (see Chapter 5, *Conservation Strategy*).

Consistent with BLM's requirements in the RMP, step-down plans, and the ACEC designation, and in furtherance of its commitments under the MOU and the Letter of Transfer, BLM commits, to the extent allowed under governing law and regulation, including FLMPA and NEPA, 42 USC 4321 et seq. (NEPA), to implement the HCP conservation strategy on the transferred Fort Ord lands. Nothing in the HCP will or shall be in the future interpreted as superseding BLM's obligations under the RMP, ACEC designation, or any requirements of BLM's governing law and regulation, including FLPMA and NEPA. For more information, see Section 1.9.3, *Role of Bureau of Land Management*.

BLM is responsible for the day-to-day management of the FONM in accordance with the Plan. BLM intends to accomplish the following.

- Cooperate with the Cooperative to ensure implementation of all HCP required AMMs and mitigation measures at FONM (Table 5-3 and Table 5-7).
- Participate in the TAC (Section 7.3.3, *Technical Advisory Committee and Coordinated Resource Management Planning*).
- Cooperate with the Cooperative to ensure implementation of HCP required adaptive management measures and changed circumstances measures in response to changed circumstances or monitoring trends.
- Cooperate with the Cooperative to ensure Cooperative-funded compliance monitoring and reporting requirements (Section 6.2, *HCP Compliance Monitoring*).
- Provide access for HCP required effectiveness monitoring.

BLM intends to continue to coordinate the CRMP program, described below. All data collected by BLM for Cooperative use in HCP compliance reporting will meet specific data standards and be available to the Cooperative.

7.3.3 Technical Advisory Committee and Coordinated Resource Management and Planning

Technical guidance for implementing the HCP will be provided through the Technical Advisory Committee (TAC). The TAC grew out of the Coordinated Resource Management and Planning (CRMP) Fort Ord program, which is comprised of technical staff from stakeholder agencies and representatives from planning departments. The TAC provides technical and scientific recommendations such as changes in management and/or monitoring that would be triggered by analysis of monitoring results by way of the adaptive management program. However, the TAC does not form a decision-making body and cannot formally authorize or approve specific actions, methods, standards, or other activities, although they can make informed recommendations to the

Cooperative. The TAC's adaptive management roles and responsibilities are described in Chapter 6, Section 6.8.2, *Structure of the Adaptive Management Process*.

CRMP program members and participants represent the full range of HMA managers, agencies, local jurisdictions, and stakeholders at former Fort Ord. Thus, the CRMP program members can provide input on the adaptive management program. There is no direct cost to participate in the CRMP program (e.g., membership fees), other than the staff time involved in CRMP program meetings.

As a charter member of the CRMP program, FORA's participation (until its sunset), and the Cooperative's future participation, will ensure close coordination between the administrative and technical components of HMP implementation vis à vis HCP implementation.

7.3.4 Wildlife Agencies

The Wildlife Agencies are responsible for providing guidance to Permittees on how to fulfill the terms of the permits. It is the responsibility of the Cooperative to monitor HCP compliance and notify the Wildlife Agencies as soon as possible if the HCP is not being implemented as agreed in the HCP and 2081 ITP. Wildlife Agency staff will play a role in HCP implementation through review and comment on the annual HCP implementation summary report (see Section 7.9.3.4, *Annual HCP Implementation Summary Report from Cooperative*). The annual HCP implementation summary report will summarize monitoring results and suggest changes to management and monitoring, as identified through the adaptive management program.

The Wildlife Agencies will inform the Cooperative of State and Federal funding for HCP implementation when funding opportunities are available (Section 9.3.3, *Other Funding Sources*). These funds would be used to supplement funding early in the permit term during the initial growth of the endowment and the Plan does not rely on this uncertain source of funding. It is expected that the Wildlife Agencies will periodically attend Governing Board meetings to assist the Cooperative in its efforts to ensure that the Permittees remain in compliance. Representatives of these agencies will serve as advisory members to the Governing Board, TAC, and the CRMP program.

To ensure regular communication between the Cooperative and the Wildlife Agencies, the Cooperative will convene regular coordination meetings with Wildlife Agency staff to keep them apprised of progress towards conservation goals and objectives, HCP compliance, funding, monitoring and adaptive management, and other relevant topics. It is at these meetings that Cooperative staff and Wildlife Agencies review and approve borderland planning/design. Meeting frequency will vary but will be at least twice annually during the first several years of implementation to ensure close communication. This frequency may be adjusted by the Wildlife Agencies or the Cooperative but must be approved by the Wildlife Agencies. The meetings will serve as a forum to troubleshoot issues that arise before they influence permit compliance, as well as to review and approve items through the adaptive management process.

The Cooperative and Wildlife Agencies will strive at all times to work in good faith with one another to reach mutual agreement on key implementation tasks such as adaptive management, monitoring, and conservation actions. If disagreements arise that cannot be resolved easily, the Cooperative and Wildlife Agencies may follow the "meet and confer" dispute resolution process identified in the HCP JPA Agreement (Section 6.3).

The Wildlife Agencies will not be involved in the concurrence process approving take authorization for Permittees after completion of this HCP or for private development projects within the

jurisdiction of the Permittees and covered by this HCP, except in limited circumstances (e.g., where Section 7 consultations are still required see Section 1.9.6, Federal Section 7 Consultations). The Permittees will be responsible for enforcing the terms and conditions of their permits and ensuring their third party applicants are in compliance with the State and Federal permits. The Cooperative is responsible for ensuring that all Permittees are in compliance with the Stay-Ahead provision (Section 7.6, *Stay-Ahead Provision*). Reviewing and commenting on the annual HCP implementation summary report will be a key means for the Wildlife Agencies to monitor compliance with the permits. The Permittees and Cooperative are not required to transmit copies of application materials to the Wildlife Agencies each time an application is approved. The Permittees and Cooperative will provide summaries of such information to the Cooperative for incorporation into the annual HCP implementation summary report.

Permittees and Cooperative will provide draft RMPs to the Wildlife Agencies as part of the HCP implementation process. Permittees and Cooperative will submit final draft RMPs to USFWS 60 days before taking a final action to approve the RMP. USFWS will either approve the RMP within those 60 days or submit comments noting mandatory changes for the RMP to be deemed approved by USFWS. If the Permittees and Cooperative make USFWS's listed changes, the RMP shall be deemed approved. If the Permittees and Cooperative choose to make alternative changes, they must begin the 60-day USFWS review period again. Wildlife Agencies may conduct inspections and monitoring in connection with the permits in accordance with their respective authorities (i.e., for the Federal Permit see 50 Code of Federal Regulations Sections 13.47, 220.47; for the State Permit see California Fish and Game Code Section 2081(b)).

7.4 Local Implementing Ordinances and Policies

To implement the HCP at the local, agency, or institutional level, each Permittee will adopt an implementing ordinance or policy that incorporates the relevant components of the HCP for private applicants and clearly identifies the requirements for development on former Fort Ord. The ordinance or policy will include the following actions.

- Describe the information requirements for the take authorization application (see Section 7.5, *Providing Take Authorization under the HCP*). This includes the responsibilities of private applicants subject to the HCP, including AMMs (see Section 5.4, *Measures to Avoid and Minimize Impacts*).
- Include the approval requirements for which take authorization may be granted (see Section 7.5, *Providing Take Authorization under the HCP*).
- Establish that CFD fees imposed on applicable sites by FORA (and that may be reassigned to the Cooperative once FORA sunsets) or equivalent replacement funding mechanism will serve as the mitigation fee for the HCP, as described in Section 9.3, *Funding Sources and Assurances*.

Ordinances or policies will be finalized and adopted by each Permittee within 120 days after permit issuance by the Wildlife Agencies. Draft implementing ordinance and policy templates are provided in Appendix J.

7.5 Providing Take Authorization under the HCP

Take authorization is contingent on the Wildlife Agencies' permits issuance. Take authorization will be provided by the permits, if permits are issued, to two broad categories of covered activities: projects funded or implemented by Permittees and projects for which there are third party (i.e., non-signatory, private participating special entities (PSE)) applicants, which require entitlements from a Permittee. The submittal of a complete Certificate of Inclusion (Appendix K) application package (or equivalent documentation by Permittees) and HCP concurrence determination will be required for projects seeking take authorization under the HCP. The following sections detail this process.

The Cooperative will be responsible for review and a determination of concurrence for projects seeking coverage under the HCP. The HCP concurrence determination by the Cooperative avoids potential conflicts of interest among or between the Permittees. It is meant to be complementary to and concurrent with any required CEQA/NEPA environmental actions. All fees refer to the existing CFD fees in effect and are not duplicative. The Cooperative will make baseline or other studies available to jurisdictions and their applicants that might facilitate application package completion and HCP concurrence determination.

7.5.1 Evaluation Process for Projects Funded or Implemented by Permittees

The HCP permits provide the Permittees with take authorization along with the authority to approve covered activities complying with the terms of the Plan. If a Permittee undertakes a covered activity (Section 3.3, *Covered Activities*), the Permittee must document compliance with the Plan using a Certificate of Determination application package. The Certificate of Determination application package will consist of at least the following:

- Item 1: An application form⁶ for coverage under the Plan.
- Item 2: A brief description and map of the project.
- Item 3: Documentation of HCP land cover types, potential HCP species' habitat, and known HCP species occurrences on site based on the most recent information provided by the Cooperative. Species surveys may be required if species-specific AMMs are triggered (see Chapter 5, *Conservation Strategy*).
- Item 4: Results of species surveys which report the amount of proposed "take" of each species in acres, if applicable.
- Item 5: Documentation of AMMs to be implemented and AMM compliance.

If the covered activity is ongoing such as road or trail maintenance in a specified area, one application package is sufficient during the permit term. First, a Permittee makes an HCP concurrence determination. (All proposed projects must be posted and given public hearing by the Permittee applicant, as per the Ralph M. Brown Act, Government Code § 54950-54963. The Permittee's HCP concurrence determination may be part of a project's approval package to the appropriate decision makers, or it may be a separate vote preceding or following the project

⁶ The Certificate of Determination application package form will be developed during the first 6 months of Plan implementation and must be approved by USFWS before it is used.

approval vote.) After the Permittee approves its HCP concurrence determination, it then provides the Certificate of Determination application package to the Cooperative Executive Director or his or her designee. The Cooperative will circulate the Certificate of Determination application package to its members and post the same information on its website. Such Permittee determinations are final unless appealed to the Cooperative within thirty (30) days of the Permittee's determination. The Cooperative will use the Certificate of Determination application package to review and track the amount of take coverage requested. The Cooperative will use this information to update its stay-ahead provision compliance measurements. The Permittee may complete documentation for take coverage and submit it to the Cooperative at any point during or after any required CEQA/NEPA environmental actions. If the project passes HCP compliance/concurrence procedures during a CEQA/NEPA process and is later modified at the completion of the CEQA/NEPA process, the Permittee must resubmit the Certificate of Determination application package. If the documentation is deemed incomplete, it shall be returned to the Permittee with a request for the missing information. As part of the application package, the Permittee will calculate the required fees to pay for mitigations related to the "take" on the basis of the CFD requirements described in Section 9.3.1, *CFD Special Tax* and consistent with the local ordinance implementing the Plan. If a Permittee's funding requirements are not related to the FORA CFD, the Permittee's application package shall state how they are in compliance with their HCP funding requirements.

There will be a 30-day period during which a project proposed for coverage can be appealed by any Permittee or member of the public. If coverage of an activity is appealed, the Cooperative must issue an HCP concurrence determination before take authorization may be used (also publicly noticed and reviewed in public meeting). Take authorization would be in effect if no appeal is filed within 30 days of the Permittee's project approval or, if appealed, once the HCP concurrence determination is made in writing and transmitted to the Permittee. A project will be deemed concurrent with the HCP if it meets the following criteria.

- Is conducted by, or is subject to, the jurisdiction or land use authority of one of the Permittees.
- Is a type of impact evaluated in Chapter 4, *Impact Assessment and Levels of Take*.
- Is consistent with the amount of take coverage assumed by the Plan, including the stay-ahead provision, and sufficient take coverage under the permits remains available for other covered activities as described further in the stay-ahead provision (see Section 7.6, *Stay-Ahead Provision*).
- Does not preclude achieving the HCP biological goals and objectives (see Chapter 5, *Conservation Strategy*).

7.5.2 Evaluation Process for Third Party Applicants

Permittees with land use authority may extend their take authorization to third party applicants through their land use development process. Third party applicants include private landowners and other private applicants. The participating cities and Monterey County routinely authorize development within their jurisdictions to private project proponents. The other Permittees with land use authority are FORA, UC/NRS, CSUMB, MPC, and MCWD. Permittees will ensure third party applicant covered activities under their jurisdiction comply with the HCP through review of a Certificate of Inclusion application package and HCP concurrence determination.

Third party applicants must submit a complete Certificate of Inclusion application package and receive an HCP concurrence determination to be eligible for take authorization under the HCP. Third

party applicants will submit an application to the Permittee with land use authority over that project. The Permittee will confirm the project is eligible for coverage and determine Certificate of Inclusion application package completeness. Local agencies reviewing the Certificate of Inclusion application package will be subject to the processing time and other requirements of the Permit Streamlining Act (Section 65920 et seq.) which requires public agencies to follow standardized time limits and procedures when making specific types of land use decisions. If the project is not eligible or the Certificate of Inclusion application package is incomplete, it will be returned to the third party applicant with an explanation. The Permittee will calculate the required fees on the basis of the CFD requirements described in Section 9.3.1, *CFD Special Tax* and consistent with the local ordinance implementing the Plan. If a Permittee's funding requirements are not related to the FORA CFD, the Permittee's application package shall state how they are in compliance with their HCP funding requirements. An HCP concurrence determination will be made by the Permittee unless it is appealed to the Cooperative. The appeal period and HCP concurrence determination will be the same as identified in Section 7.5.1, *Evaluation Process for Projects Funded or Implemented by Permittees*.

A Certificate of Inclusion will serve as the mechanism to record the agreement to follow the HCP terms and conditions between the third party applicant and Permittee. HCP terms and conditions include, but are not limited to, those listed below.

- Compliance with all HCP required actions determined by the Permittee to apply to the project as required by the Plan.
- The right for the Permittee to monitor the applicant's compliance with HCP required actions as required by the Plan.
- The right for the Wildlife Agencies to monitor the applicant's compliance with HCP required actions as required by the Plan.
- Imposition of a fee as described in Chapter 9, *Cost and Funding*, and in the local implementing ordinance.

Similar to the application process for a Permittee described in Section 7.5.1, a Permittees makes an HCP concurrence determination on a third party applicant's Certificate of Inclusion application package. Such determinations are final unless appealed to the Cooperative within thirty (30) days of the Permittee's determination. The Permittee will issue a Certificate of Inclusion once HCP concurrence is determined and the required fees paid. The third party applicant will be allowed to proceed with the project consistent with other applicable local, state, and Federal laws and local entitlements. The Permittee will be responsible for providing the complete Certificate of Inclusion application package, HCP concurrence determination, and copy of Certificate of Inclusion to the Cooperative. After the Permittee approves the third party HCP concurrence determination, it then provides the Certificate of Inclusion application package to the Cooperative Executive Director or his or her designee. The Cooperative will circulate the Certificate of Inclusion application package to its members and post the same information on its website. The Cooperative will use the Certificate of Inclusion application package to review and track the amount of take coverage requested. The Cooperative will use this information to update its Stay-Ahead provision compliance measurements. In the case of an appeal, the same steps occur as described in Section 7.5.1.

Permittees must enforce HCP compliance for conditions they impose on project approvals. They shall track proposed plans, land use status changes, development phasing and other conditions in

allowable development areas, including in Borderlands, and coordinate regularly with the Cooperative regarding HCP compliance.

7.5.2.1 Certification of Inclusion Application Package

Third party applicants seeking HCP coverage must submit a Certification of Inclusion application package to the Permittee with land use authority for review and approval in order to receive coverage under the HCP and receive a Certification of Inclusion. The third party applicant is responsible for preparing the application package and paying for any necessary field surveys. The application package must contain the following items, if applicable, each of which is described in detail in this section.

- Item 1: An application form for coverage under the Plan.
- Item 2: A brief description and map of the project.
- Item 3: Documentation of HCP land cover types, potential HCP species' habitat, and known HCP species occurrences on site based on the most recent information provided by the Cooperative. Species surveys may be required if species-specific AMMs are triggered (see Chapter 5, *Conservation Strategy*).
- Item 4: Results of species surveys reporting the amount of proposed "take" of each species in acres, if applicable.
- Item 5: Documentation of AMMs to be implemented and AMM compliance.

No later than sixty (60) days after receiving the application, the point of contact for the relevant Permittee will provide one of the following in writing: (a) an approval of the application, plan, or report; (b) a conditional approval of the application, plan, or report subject to specifically identified additional information; or (c) a denial of the application, plan, or report with a written explanation of what changes can be made to receive approval if the application, plan, or report is resubmitted. Each of the required application components is described below.

7.5.2.1.1 Item 1: Project Application Form

The project application form will contain basic information about the applicant and the project. Required forms will be available through the Permittees. The application form will include impact acreages, applicant contact information, and impacts on HCP wildlife species, and impacts on waters of the United States and State. The application form will include a section stating how much allowable take acres are available for each HCP species. The applicant will contact Cooperative staff to obtain this current information. Applications must demonstrate compliance with the HCP Stay-Ahead provision (See Section 7.6 for more information).

7.5.2.1.2 Item 2: Project Description and Map

A project description and map will be submitted to demonstrate the proposed project is eligible for coverage under the Plan (see Section 3.3, *Covered Activities*). The project description will include project location, construction activity and/or maintenance methods, and timing of the project or activity. A legible project site vicinity map will document that the project is within the Plan Area. The map will include any water bodies that exist within the mapped area. A project detail map will document relevant landforms, roads, water bodies, and existing and proposed structures.

7.5.2.1.3 Item 3: Land Cover Types and Species' Habitat on Site

Project site land cover (Table 2-1) and species' habitat must be documented and quantified to demonstrate the proposed project is within the total allowable impacts estimated in the take assessment (Chapter 4, *Impact Assessment and Levels of Take*). Third party applicants will specify the amount and type of land cover and HCP species' habitat that occurs within the project site. The application package must include a map(s) showing all land cover and HCP species' habitat on the project parcel(s) or project site and a table showing the amount of land cover and species' habitat type to the nearest 0.1 acre (blank tables will be provided in the template application package). This exercise can be performed using land cover and species' habitat maps available from the Permittee. Third party applicants may request assistance from local planning staff in this analysis.

All land cover and species' habitat determinations provided by third party applicants will be verified by the Permittee. The Permittee may retain Cooperative staff (at third party applicant's cost) to conduct the land cover and species' habitat determinations.

Species surveys are required for all HCP species with habitat present. The Cooperative will provide a list of biologists qualified to conduct these surveys. This list will be updated regularly and made available to the Permittees. Biologists conducting certain surveys must also be pre-approved by USFWS (see Section 7.5.2.1.4 below). Any survey that would result in salvage and relocation would need to have appropriate permits from CDFW. If a project is exempt from CEQA, the project applicant may rely on the Cooperative's most recent baseline studies in lieu of these surveys.

7.5.2.1.4 Item 4: Results of Surveys and Monitoring

As described in Item 3, the presence of certain land cover types and species' habitat on the project site may trigger focused surveys for State-listed species (see Chapter 5, Section 5.4.1 *Avoidance and Minimization Measures (AMM) for all Covered Activities*). Species-specific requirements are detailed in AMM-3 through AMM-13 for California tiger salamander (*Ambystoma californiense*) (Section 5.4.1.3), Smith's blue butterfly (*Euphilotes enoptes smithi*) (Section 5.4.1.4), Yadon's piperia (*Piperia yadonii*) (Section 5.4.1.5), and State-listed plants (Section 5.4.1.6). Survey requirements and avoidance measures are designed to avoid or minimize take of individuals (as required by the permit). Survey and monitoring requirements are meant to avoid take of individual species.

7.5.2.1.5 Item 5: Documentation of AMMs to be implemented and AMM compliance

AMM implementation and compliance is required under the permits. Required AMMs are identified in Section 5.4, *Measures to Avoid and Minimize Impacts*. Verification of AMM compliance is the responsibility of the Permittee extending take authorization through the Certificate of Inclusion. The Cooperative may contact the Permittee to verify and ensure AMMs are appropriately implemented. The project applicant will provide a map showing survey results and avoidance mechanisms to document compliance.

7.5.3 Review and California Environmental Quality Act Compliance

Many covered activities are expected to be subject to CEQA⁷. When Permittees or third party applicants initiate projects that are subject to CEQA, HCP compliance documentation should generally be undertaken concurrently with the CEQA environmental review process. To facilitate CEQA coordination, the Permittee or third party applicant should begin preparation of the Certification of Inclusion application package (or equivalent HCP compliance documentation for Permittees) when conceptual options for the project are developed. The completed HCP documentation should be evaluated and approved by the appropriate Permittee CEQA lead agency concurrently with the lead agency's review of the associated CEQA documents. Projects exempt from CEQA may still be covered activities under this Plan and require HCP concurrence determination as described in Section 7.5, *Providing Take Authorization under the HCP*.

7.5.4 Bureau of Land Management

BLM is not receiving take authorization via the HCP.

7.6 Stay-Ahead Provision

The conservation strategy must be implemented at the rate—or faster than the rate—at which impacts occur so that conservation always stays ahead of impacts. The “stay-ahead provision” requires that HMA establishment, habitat management funding, and protection of each HCP species' habitat stays ahead of impacts on those species' habitat allowed under the permits. Stay-ahead means the percentage of species conservation in terms of actively managed and commensurately funded acres in HMAs will always stay ahead of the percent of allowable “take” acres.

This stay-ahead provision applies at the time of permit issuance and throughout the term of the permits. Impacts on each HCP species' habitat will be tracked (in acres) by the Cooperative against the total allowable impact on those habitats estimated in the take assessment (i.e., the baseline described in Chapter 4, *Impact Assessment and Levels of Take*) and authorized in the permits. This shall be known as “take” percentage. HMA land owners and/or Permittees are not required to fully fund habitat management upon transfer of their HMA lands. For the stay-ahead provision, the Cooperative will track HMA acreage actively managed and commensurately funded as a percentage of the total amount of protected acreage for each species' habitat required by the HCP. This shall be known as conservation percentage. For the area of an HMA to be counted, an HMA manager must have sufficient funding to implement the conservation strategy. Species' preservation: impact ratios differ depending on the permit (State or Federal). Under the State permit, habitat protected on FONM is fully counted as contributing to mitigation for impacts to covered species. Under the Federal permit, habitat protected on FONM is not counted as contributing to mitigation for impacts to covered species. For the stay-ahead provision, the Cooperative will ensure that the conservation percentage remains at least 5% higher than “take” percentage for both State and Federal permits.⁸

⁷ Covered activities that may not be subject to CEQA include operations and maintenance activities and projects that only require ministerial approval within local jurisdictions such as single family home construction.

⁸ Upland habitat for California tiger salamander will be counted when calculating stay-ahead compliance; no impacts to breeding habitat or potential breeding habitat will occur as covered activities in this HCP.

The Cooperative will use the Certificate of Determination/Inclusion application package to review and track the amount of take coverage requested. The Cooperative will use this information to update its stay-ahead provision compliance measurements, tallied at the time that each certificate is approved. If there are multiple pending Certificates of Determination/Inclusion that would exceed the stay-ahead allowable acres for HCP species, the first complete application that is processed will be approved. The Cooperative staff will appeal a Permittee's Certificate of Determination/Inclusion during the appeal period if it is not in conformance with the HCP stay-ahead provision.

To illustrate the stay-ahead provision, the following examples are provided. To track stay-ahead under the Federal permit, if 50% of the allowable impact on sand gilia (*Gilia tenuiflora* ssp. *arenaria*) habitat on non-Federal land (i.e., non-Federal development parcels and non-Federal HMAs) is planned to occur (756 of 1,511 acres; see Table 4-8a), then at least 55% of the required preservation on non-Federal HMAs must occur prior to "take" of that habitat. In this example, 55% of the 1,525-acre sand gilia habitat total in non-Federal HMAs would mean that 839 of those acres would be required for the conservation percentage. This example assumes restoration and seeding for sand gilia is successfully completed on HMAs, as described below. In another example, if 71% of the allowable impact on Smith's blue butterfly is planned to occur (i.e., 5 of 7 acres), then 76% of the conservation percentage would be required (78 acres; see Table 4-8b).

Lands already transferred from the Army to certain HMA managers (e.g., BLM, UC/NRS, and State Parks) represent a "jump start" to this requirement at the time of permit issuance and will be counted toward the stay-ahead provision. To date, the Army has transferred for preservation a total of 10,901 acres (Table 7-3). It is anticipated that all lands will be transferred by 2023 (Table 7-4). In addition, some of the land managers, most notably State Parks and BLM, have been implementing a conservation program consistent with the HCP since the time of land transfer in 1996 under the HMP. State Parks has restored 210 acres of coastal dune habitat and installed 2.8 miles of fencing to protect the areas at the time of this writing. All conservation accomplishments (e.g., restoration) conducted by land managers prior to the HCP count towards the goals of the HCP. Table 7-5 shows the amount of species' habitat in acres currently transferred to HMA managers as compared to HMA acres currently under Army ownership and pending transfer to others.

In the case of California tiger salamander or California red-legged frog (*Rana draytonii*), restoration of aquatic features is qualitative mitigation for impacts. For example, MM-19 targets restoration of East Garrison pond and 1 acre of aquatic breeding habitat for California tiger salamander or California red-legged frog within the first 15 years of the permit term. As part of the stay-ahead provision for California tiger salamander or California red-legged frog, until this restoration is completed, Permittees will follow a stay-ahead provision of 20% instead of the targeted 5%. Once restoration is completed and confirmed through meeting success criteria for the aquatic habitat restoration, the stay-ahead provision for these species will follow a 5% application. Any impacts to HCP species during aquatic feature restoration actions would be compensated by the overall improvement to the affected species at the successful completion of the restoration.

Mitigation actions for HCP plants include seeding within future and existing restoration areas, which include grassland and maritime chaparral (see Section 5.5.3, *Habitat Restoration, Enhancement, and Management* for MM-5, MM-6, and MM-17). As part of the stay-ahead provision for HCP plant species (sand gilia, Monterey spineflower (*Chorizanthe pungens* var. *pungens*), and seaside bird's beak (*Cordylanthus rigidus* ssp. *littoralis*)), until this restoration and seeding is completed, Permittees will follow a stay-ahead provision of 20% instead of the targeted 5%. The Permittees will implement the restoration and seeding as early as possible during the permit term. Any impacts to

HCP species during mitigation actions would be compensated by the overall improvement to the affected species at the successful completion of the restoration.

If the restoration activities fail to commence or meet a reasonable restoration timeline, the Cooperative will contact the Wildlife Agencies to discuss alternative strategies such as alternative locations for restoration. (See Section 8.1.1.2.8, *FONM Management Changes*). Although BLM is highly unlikely to bar Permittees from completing restoration in FONM, if the situation arises, the Cooperative, TAC, and Wildlife Agencies will work closely to develop acceptable substitute mitigations.

Table 7-3. Habitat Management Areas Currently Transferred and under Army Jurisdiction

Recipient/Habitat Management Area	Land Ownership ^a		
	Owned by Recipient	Under Army Jurisdiction	Total Ownership once Army Transfers are Completed
BLM			
FONM	7,199	7,446	14,645
State Parks			
FODSP	979	–	979
UC/NRS			
FONR	560	46	606
Monterey County			
East Garrison Reserve	423	–	423
Habitat Corridor/Travel Camp	398	–	398
Parker Flats Reserve	372	–	372
Oak Oval Reserve	73	–	73
Landfill Parcel	161	147	308
Laguna Seca Recreation Expansion Area	275	–	275
City of Marina			
Salinas River Habitat Area	43	–	43
Marina Airport Habitat Reserve	130	–	130
Marina Northwest Corner	63	–	63
Monterey Peninsula College			
Range 45 Reserve	206	–	206
Monterey Peninsula Regional Park District			
NAE	19	–	19
Total (Habitat Management Area)	10,901	7,639	18,540
Percentage of total	59%	41%	100%

^a HMAs include Army parcels identified in the HMP as Development with Reserve or Restrictions, Habitat Reserve, Habitat Corridor, Habitat Corridor with Development with the following exceptions. Development with Reserve or Restrictions parcels transferred to Caltrans (parcels S4.1.1, S4.1.2.1, S4.1.2.2, and S4.1.5) and for the Del Rey Oaks Office Park (parcels E311, E31b, and E31c) are not considered HMAs and are excluded from the totals. Recipient designated development areas are also excluded from totals.

Table 7-4. Anticipated Date of Transfers of Habitat Reserve Acreages Pending Transfer

Recipient—Habitat Management Area	Habitat Management Areas	
	Under Army Jurisdiction (acres)	Anticipated Transfer Date (year)
BLM—FONM		
Parcel L20.4	66	January 2020
Parcel F1.3	807	June 2023
Parcel F1.13	6,202	June 2023
Parcel F1.13.1	358	June 2023
Parcel F1.7.4	14	June 2023
Subtotal	7,446	
UC/NRS—FONR		
Parcel S2.1.2	46	January 2020
Monterey County—Landfill Parcel		
Parcel E8a.1.1.1	143	June 2023
Parcel E8a.2	4	June 2023
Subtotal	147	
Total	7,639	

Table 7-5. Stay-Ahead Status by HCP Species

HCP Species	Currently Protected in Transferred HMAs		Currently Under Army Jurisdiction to be Transferred to HMAs	
	Federal	Non-Federal	Federal	Non-Federal
Plants				
Sand Gilia	1,056	1,565	4,997	174
Yadon's Piperia	94	10	2,117	0
Monterey Spineflower	2,447	734	6,532	140
Seaside Bird's Beak	1,641	433	4,307	13
Wildlife				
Smith's Blue Butterfly	110	0	0	0
Western Snowy Plover	71	0	0	0
California Tiger Salamander	Upland	7,127	2,399	6,753
	Breeding	53	0	36
California Red-legged Frog	Upland	6,878	1,657	5,990
	Breeding	53	0	36

7.7 Assurances for Perpetual Mitigation

The conservation easements, deed restrictions, and MOUs will be used to ensure mitigation land is protected and managed in perpetuity. The deeds and MOUs that transferred the former Fort Ord parcels from the Army to land recipients contain deed restrictions that include land management in accordance with the Chapter 4 HMP requirements. The HCP conservation strategy is based on these same requirements. All Permittees will sign the HCP JPA Agreement that will be recorded with the County to provide a public record of commitments made by the Permittees. All HMAs will be

protected via a conservation easement, held by the Cooperative with the Wildlife Agencies named as third-party beneficiaries, except for State Parks and BLM.⁹ A standard conservation easement template is provided as Appendix L. State Parks will attach the HCP and 2081 Incidental Take Permit, to the FODSP deed¹⁰ and record these attachments. BLM will consider signing the HCP JPA Agreement. It is expected that BLM will cooperate with the Permittees as they implement the HCP and it is assumed that BLM's continuing management of the FONM is considered suitable long-term mitigation for the purposes of the State Permit. Collectively, the conservation easements, deed restrictions, and HCP JPA Agreement will provide the assurances for perpetual mitigation required for the State and Federal permits.

7.7.1 BLM and Perpetuity

The FONM HMA is protected because BLM, as owner and manager, is responsible for compliance with the terms of the HMP, to the extent allowed under governing Federal law, through transfer agreements between the Secretary of the Army and Secretary of the Interior. The HCP is based on the HMP; accordingly, BLM's participation in the HMP in perpetuity also helps to ensure compliance with the terms of the HCP.

As mentioned in Section 7.6, *Stay-Ahead Provision*, although BLM is highly unlikely to bar Permittees from completing restoration in FONM, if the situation arises, the Cooperative, TAC, and Wildlife Agencies will work closely to develop acceptable alternate mitigations. Therefore, if Permittees are barred from completing mitigation actions or dissuaded from completing required restoration site monitoring, the scenario will be considered a changed circumstance. (See Section 8.1.1.2.7, *FONM Management Changes*).

7.7.2 Non-federal HMAs and Perpetuity

The non-Federal HMAs have specific land use covenants for compliance with the HMP. If they are sold, the land use covenants are permanently part of the deeds. Any owner must participate in the HMP in perpetuity. Additionally, the non-Federal HMA owners (with the exception of State Parks) will record conservation easements in the form of Appendix L to the HCP on their HMAs. The conservation easements will grant and convey the following rights to the Cooperative as the Grantee:

- (a) To preserve and protect the Conservation Values of the Property.
- (b) To enter upon the Property at reasonable times in order to monitor compliance with and otherwise enforce the terms of this Conservation Easement, the Permit, and the Management Plan and to implement at Grantee's sole discretion Permit and Management

⁹ State Parks and BLM have policies of not allowing conservation easements to be placed on existing parks or lands.

¹⁰ The existing deeds require State Parks and any possible future successors to comply with the conservation of the lands as prescribed in the HMP. Protection against possible future successors of the State Park lands is covered in the deed, which states that the property cannot be "sold, leased, assigned or otherwise disposed of except to another eligible governmental agency that the Secretary of the Interior approves in writing." Additionally, the deed requires that any such disposal approved by the Secretary "shall assure the continued use and maintenance of the property for public park or recreation purposes subject to the same terms and conditions in the original instrument of conveyance."

Plan activities that have not been implemented, provided that Grantee shall not unreasonably interfere with Grantor's authorized use and quiet enjoyment of the Property.

- (c) To prevent any activity on or use of the Property that is inconsistent with the purposes of this Conservation Easement and to require the restoration of such areas or features of the Property that may be damaged by any act, failure to act, or any use or activity that is inconsistent with the purposes of this Conservation Easement.
- (d) To require that all mineral, air and water rights as Grantee deems necessary to preserve and protect the biological resources and Conservation Values of the Property shall remain a part of and be put to beneficial use upon the Property, consistent with the purposes of this Conservation Easement.
- (e) All present and future development rights appurtenant to, allocated, implied, reserved or inherent in the Property; such rights are hereby terminated and extinguished, and may not be used on or transferred to any portion of the Property, nor any other property adjacent or otherwise.

CDFW will be a third-party beneficiary to the conservation easements. If non-Federal HMAs are sold, the deed restrictions and conservation easements described above will ensure the continuance of mitigation and adaptive management under any ownership.

7.7.3 Other Deed Restrictions in Perpetuity

There are existing deed restrictions on properties having to do with protecting the health and safety of persons utilizing the land. Land transferred from the Army to Monterey County as the Habitat Corridor HMA, for example, has contaminated groundwater, asbestos and lead-based paint, and possible Munitions and Explosives of Concern (MEC), so it is restricted by the following terms: no groundwater use, no digging or drilling as per Monterey County Code Chapter 16.10, no development in future of residences, hospitals, day care centers, or public or private school for persons under the age of 21, except for post-secondary schools. Monterey County must notify the California Department of Toxic Substance Control within thirty days of any change in land use from Habitat.

The specifications for the event that any person finds MEC include securing the area and contacting the jurisdictional law enforcement agency. Law enforcement initiates a response: they contact the Base Realignment and Closure (BRAC) office, who start a report and may call the 60th Civil Engineer Squadron (EOD) at Travis Air Force Base to respond. Site security shall only be released after the experts have either removed the item or have assessed the item and determined that the item is not dangerous.

7.8 Interim Projects

All base reuse projects within the Plan Area that have occurred during HCP development¹¹ but prior to its completion (termed *interim projects*) have been included in the analysis of take under this HCP (see Chapter 4, *Impact Assessment and Levels of Take*). However, separate arrangements have been

¹¹ This HCP has been under development since 1997.

made by both USFWS and CDFW to provide incidental take authorizations for some interim projects in advance of HCP completion, as explained below.

7.8.1 Federally Authorized Projects

USFWS provided coverage for incidental take of one animal species (California tiger salamander) in two designated development areas of the former base (East Garrison [244 acres] and Del Rey Oaks [321 acres]) under a Section 7 biological opinion issued to the Army on March 14, 2005. Conditions associated with that extended coverage were consistent with the conservation strategy of this HCP and no additional mitigation or funding beyond that anticipated by the HCP was required. Upon issuance of the 10(a)(1)(B) permit and biological opinion for this HCP, incidental take coverage under the earlier Section 7 authorization will terminate and be replaced by coverage under this HCP.

7.8.2 State Authorized Projects

CDFW has issued individual, project-specific Section 2081 permits authorizing incidental take of two plant species—sand gilia and seaside bird’s beak—for several interim projects in designated development areas of the former base including the UC MBEST Center, the Marina Heights project, the East Garrison project, two FORA road projects and an MCWD project. In each of these cases, CDFW required mitigation measures which did not rely on implementation of the HCP and, in some cases, required financial assurances that adequate funding would be available to implement the mitigation. In addition, CDFW has issued an individual, project-specific Section 2081 permit authorizing the incidental take of one wildlife species – California tiger salamander – for the UCP East Garrison, LLC project. Of these permits, the UCP East Garrison, LLC permit is structured such that if CDFW issues a base-wide Section 2081 permit for this HCP, the approved HCP would supersede the project-specific permit. The project-specific permit and its conditions would then be incorporated into the HCP permit in the manner described in Section 1.9.7.1, *Existing Permits*, if the permit holder is in compliance with the previous permit at the time of the request.

Future individual, project-specific Section 2081 permits may be eligible for incorporation under the HCP but would be subject to approval by CDFW.

7.9 Implementation Process

7.9.1 Implementation Obligation

By signing the HCP JPA Agreement and adopting the HCP, Permittees ensure that each party understands its obligations under the HCP, the ESA Section 10 permit, and the CESA Section 2081 permit, and to provide remedies should any party fail to fulfill its obligations.

The responsibility of each Permittee to fully mitigate the impacts of its Authorized Take shall be met through (a) the Permittees’ collective participation in the Cooperative (allowing cooperative implementation of HCP-required activities); (b) the Permittee’s adoption of the Model HCP Ordinance (Appendix J, Exhibit A), the Model HCP Policy (Appendix J, Exhibit B), or the substantial equivalent of model ordinance or policy within 120 days after Permit Issuance; (c) each Permittee’s contribution of all required funds from the funding sources described in the Chapter 9, *Cost and*

Funding and Appendix M; and (d) meeting any Permittee-specific responsibilities described in this HCP.

7.9.1.1 Property Transfer and Land Acquisition

Permittees have the right to acquire additional lands. Any lands that may be acquired will not be covered by the permits except upon amendment of the permits (see Section 8.4, *Minor and Major Amendments*).

The Permittees' transfer of ownership or control of Covered Land will not require prior approval by Wildlife Agencies and an amendment of the permits if: (a) a Permittee transfers ownership or control of Covered Land to another Permittee or (b) a Permittee transfers ownership or control of non-HMA Covered Land to a third-party that will be subject to that Permittee's adopted HCP ordinance/policy or that of another Permittee. If a Permittee's transfer of ownership or control of Covered Land does not meet requirements (a) or (b), such transfer of ownership or control will require prior approval by Wildlife Agencies and an amendment of the permits may be processed as minor modifications if:

- (a) the land will be transferred to an agency of the federal government and, prior to transfer, Wildlife Agencies have determined that transfer will not compromise the effectiveness of the HCP based on adequate commitments by that agency regarding management of such land;
- (b) the land will be transferred to a non-federal entity that has entered into an agreement acceptable to Wildlife Agencies (e.g., an easement held by CDFW with USFWS as third-party beneficiary or a deed restriction requiring implementation of the HCP) to ensure that the lands will be managed in such a manner and for such duration so as not to compromise the effectiveness of the HCP; or
- (c) Wildlife Agencies determine that the amount of land to be transferred will not have a material impact on the ability of the Permittee to comply with the requirements of the HCP and the terms and conditions of the permits.

7.9.1.2 Changes in Boundaries

The adoption and amendment of general plans, specific plans, community plans, zoning ordinances, and similar land use ordinances or adopted plans, and the granting of land use entitlements by BLM, State Parks, MPRPD, County, Cities, or other land use jurisdictions are matters within the sole discretion of BLM, State Parks, MPRPD, County, Cities, or other land use jurisdictions and shall not require amendments to this HCP. However, no such action by State Parks, MPRPD, County, Cities, or other land use jurisdictions shall alter or diminish their obligations under this HCP, or the permits.

7.9.2 Data Tracking, Management and Sharing

The Cooperative will work with Wildlife Agencies to develop a data management and sharing plan. The plan will describe the types of data to be authored, data standards such as format and metadata content, access policies and provisions, re-use and distribution policies and provisions, standards for archiving and preservation, and plans for transition or termination of data collection post-

Permit. To facilitate easy reporting, the Cooperative will utilize a digital information sharing platform. The platform will allow the Wildlife Agencies to conveniently view maps and analyses that have been developed.

A key component of the data management and sharing plan is a comprehensive and systematic data repository (i.e., database) to track HCP compliance and all other aspects of Plan implementation. The Cooperative will structure the data repository to be user friendly, such that a trained HCP staff member would be able to enter data. It will be designed to allow for future expansion and integration with an external database (e.g., GIS map libraries). The data repository will be designed to track and maintain information required to fulfill the HCP compliance monitoring requirements (Section 6.2, *HCP Compliance Monitoring*) and reporting requirements (Section 7.9.3, *Reporting*). Data tracking will include effectiveness monitoring data and analyses, along with HCP compliance and plan implementation progress.

7.9.3 Reporting

Permit Applicants and BLM all have specific reporting requirements to fulfill their permit and land management obligations (Table 7-2).

7.9.3.1 Annual Reports from Permittees and HMA Managers

All Permittees will submit annual HCP compliance monitoring results to the Cooperative (see Section 6.2, *HCP Compliance Monitoring*). HCP compliance monitoring results will include documentation of HCP compliance and remedial action completion, if required. Permittees will report HCP compliance monitoring results for lands for which they are the recipient. This will include a summary of property transfers, covered activity implementation impacts (exclusive of mitigation measures), and AMM implementation (Table 5-3). HMA managers (State Parks, UC/NRS, and the Cooperative) will generate reports on HCP compliance monitoring results for lands which they have management responsibility. Documentation will include AMMs, mitigation measures, and adaptive management measures implemented (see Table 5-3, Table 5-6, and Table 6-2). HCP compliance monitoring results will be compiled by the Cooperative for inclusion in the annual report submitted to the Wildlife Agencies. This will allow one annual report to be prepared and filed with the Wildlife Agencies rather than many separate reports. Permittees will provide data and information in compatible electronic formats. The Permittees will be notified immediately of any non-compliance issues as soon as possible and agreed upon remedial actions shall be put into place (i.e., this process is not dependent upon completion of the annual report). BLM's reporting is expected through the USFWS reporting for BLM's Biological Opinions and HMP requirements.

7.9.3.2 Adjusted Baseline and Resource Management Plans

The adjusted baseline report will summarize adjusted baseline survey results in conformance with the monitoring program (see Chapter 6, *Monitoring and Adaptive Management*). The Cooperative will be responsible for adjusted baseline report preparation. The report will be submitted to TAC members no later than 5 years following property transfer or issuance of permits (an exception for this is Yadon's piperia, for which reconnaissance surveys will be conducted over a 10-year period). The report will be distributed to HMA managers for their reference and use for mitigation measure implementation. A copy will be submitted to the Wildlife Agencies with the annual report following baseline report completion.

HMA managers will prepare RMPs (Chapter 5, *Conservation Strategy*, Mitigation Measure-3). Preparation of RMPs is most effectively done after completion of baseline surveys, so that HMA managers can understand the status of their resources and plan for management. Consequently, baseline work will precede the development of the RMPs. All draft RMPs will be reviewed by the Cooperative in consultation with the TAC to ensure consistency with the HCP and submitted to the Wildlife Agencies for review and approval (see section 7.3.4 *Wildlife Agencies*). RMPs may be subject to periodic review and revision through the TAC. A copy will be submitted to the Wildlife Agencies with the annual report, following TAC member review and Cooperative Governing Board approval.

7.9.3.3 HCP Species Monitoring Reports or Data

The Cooperative's monitoring contractor(s) will submit annual progress reports to the Cooperative to document HCP species monitoring program implementation and results (see Section 6.3, *HCP Effectiveness Monitoring*). Reports will document status of the adjusted baseline studies, results of pilot studies, progress on implementing plant and animal species monitoring protocols, on an HMA by HMA basis, and monitoring results, as they are available. Once the base-wide monitoring program is underway, the substance and frequency of these reports may vary, depending on species monitoring requirements. For example, appropriately formatted data and maps with limited narrative text may be a more effective means of providing HCP species monitoring results over time. In addition, such data may not need to be provided on an annual basis over the term of the permits once the monitoring program becomes established. Any change in the content and frequency of the reporting requires approval from USFWS and CDFW before the changes can be implemented.

7.9.3.4 Annual HCP Implementation Summary Report from Cooperative

An annual report will be prepared by the Cooperative to document permit compliance (see Section 7.9.3, *Reporting*). The report will document the previous calendar year's HCP permit required activities. It will be completed by May 15 following the reporting year. No annual report will be required for the first partial calendar year. Annual reports will require synthesis of data and reporting on important trends such as land acquisition, fee collection, and habitat restoration. A due date of May 15 will allow time for the data from the previous year to be assembled, analyzed, and presented in a clear and concise format.

Annual reports will be submitted or made available to multiple parties. They will be submitted to and approved by the Cooperative Governing Board prior to submittal to designated Wildlife Agency representatives. After approval by the Governing Board, each will be made available to the public. The Cooperative may distribute the reports to the TAC and CRMP program members, as appropriate, for review. These advisory bodies will use annual report results, as well as other available information and any additional monitoring reports produced through the adaptive management program, to assess success of the HCP in meeting the biological goals and objectives and to formulate recommendations to the Governing Board and Cooperative for HCP implementation in subsequent years. The goals of the annual report are listed below.

- Providing the information and data necessary for the Permittees and BLM to demonstrate to the Wildlife Agencies and the public that the HCP is being implemented properly and as anticipated.
- Disclosing any problems with HCP implementation so they can be corrected.
- Documenting issues with HCP implementation that may require consultation with the Wildlife Agencies.

- Summarizing minor or major amendments requests, and those granted by the Wildlife Agencies from a cumulative standpoint (see Section 8.4, *Minor and Major Amendments*).

At a minimum, annual reports will include the following information.

- A reporting period summary of all covered activities implemented and acreage impacted.
- A reporting period summary and cumulative summary of land cover types impacted by covered activity implementation.
- A cumulative summary of impacts and conservation for all land cover types.
- A reporting period and cumulative summary of HCP species impacted by covered activity implementation and species habitat preserved.
- A reporting period summary of all avoidance and minimization measures applied to covered activities.
- A reporting period summary of mitigation measures implemented.
- A cumulative summary of the extent of property transfers and mitigation measures implemented.
- An assessment of compliance with the stay-ahead provision (Section 7.6, *Stay-Ahead Provision*) and a forecast of expected take and land preservation (i.e., amount of land managed as HMAs) needs for the next 2 years.
- An accounting of all revenues received, by type (e.g., CDF fees, grants) and an assessment of progress towards total revenue goals. Funding from local, State, and Federal sources must be tracked separately.
- An evaluation of the economic assumptions on which the HCP was based (e.g., HCP costs, revenue rates) (see Section 9.3.4, *Funding Adequacy*).
- A description of the natural community–and species-level monitoring undertaken during the reporting period and a summary of monitoring results, including species status and trends.
- A description of the adaptive management process utilized during the reporting period (e.g., consultation with science advisors, convening of the TAC).
- A summary of the recommendations or advice provided by the Wildlife Agencies, the TAC, science advisors, and CRMP program members (if applicable) regarding adaptive management and monitoring.
- An assessment of the efficacy of the monitoring recommended changes to the program based on interpretation of monitoring results.
- An assessment of the efficacy of habitat restoration methods in achieving performance objectives and recommended changes to improve the efficacy of the methods.
- A description of all HCP directed studies undertaken during the reporting period; a summary of study results; and a description of integration with monitoring, assessment, and compliance elements.
- An assessment of the appropriateness of performance indicators and objectives based on the results of effectiveness monitoring, and recommended changes to performance indicators and objectives.

- A description of any actions taken or expected regarding changed circumstances, including remedial actions.
- A description of any unforeseen circumstances that arose and responses taken.
- A summary of any administrative changes, minor modifications, or major amendments proposed or approved during the reporting year (see Section 8.4, *Minor and Major Amendments*).

Electronic copies of the following data will be provided to the Wildlife Agencies and, upon request, to the public.

- Copies of databases that track covered activities and compliance monitoring of the Cooperative in its current state.
- Copies of all relevant GIS data in possession and control of the Cooperative in its current state, including land cover, the location of covered activities, and the boundaries of the HMAs.
- Copies of all financial data in possession and control of the Cooperative in its current state.

7.9.4 Schedule

To ensure a successful HCP, the Cooperative will make progress on a variety of tasks simultaneously. Tasks during the first several years of implementation will be particularly important to ensure positive momentum and early compliance with HCP terms and conditions. Major milestones for HCP implementation are presented in Table 7-6 (located at the end of the chapter). Tasks are divided among the Permittees, cities and the County, the Governing Board, and the Cooperative. This schedule does not preclude the Permittees from initiating and accomplishing these milestones earlier than anticipated.

During the time before permits are issued, the HCP Working Group (Permittees and BLM) will set the groundwork for HCP implementation by establishing the Cooperative based on the structure identified in this chapter. (BLM's participation in the HCP Working Group and Cooperative would be voluntary.) Grant writing and training of local jurisdiction staff will also begin. During the first 6 months of the permit term, emphasis will be placed on hiring key administrative staff for the Cooperative (or contracting out their functions), establishment of local ordinances required to fund and implement the HCP, and development of implementation tools. At the initiation of the permit term, the tasks of grant writing, land acquisition, and HCP implementation training will transfer from the Permittees to the Cooperative or its agent (e.g., consultant, contractor). During the permit term, the Cooperative will be responsible for these tasks. Both the local jurisdictions and the Cooperative will be responsible for collecting CFD special tax, or an equivalent replacement funding mechanism, until HCP funding targets are met. Within the first year, the Cooperative will secure necessary staff, identify scientific advisors, create a HCP implementation web site, establish the required databases, and investigate restoration opportunities.

Over the next 5 years, additional resource and HMA management staff will be hired or contracted, and more specific management plans will be created and initiated to manage and monitor the HMAs. Environmental compliance and design for restoration and creation will be initiated. Beginning during this period and extending throughout the remaining permit term, fees will be updated and adjusted on a regular basis, and conservation assessments will be conducted. Fee funding will be used to fund day-to-day tasks and build the endowment. In addition, the hiring and contracting of staff

will be completed to manage the Reserve System and implement the HCP. Habitat restoration and design will continue, as will the adaptive management and monitoring of biological resources.

Between years 6 and 50, the Cooperative will continue to implement the conservation strategy, implement monitoring and adaptive management, and refine these programs as monitoring and other data are collected. All restoration actions must be initiated by year 45 of the permit term. Therefore, no post-permit term restoration will be required. Beyond the 50-year permit term, the Cooperative, or a successor agency, will continue adaptive management and limited monitoring of biological resources to ensure management actions are working.

The Cooperative will continue to implement mitigation measures beyond the permit term to ensure that biological values are maintained. The Cooperative will continue to perform monitoring beyond the permit term to ensure that management actions are effective. It is assumed that the biological goals and objectives (Section 5.3) would have been reached, and it will take less effort, to maintain habitats and species populations. The number of staff needed for mitigation measure implementation, program administration, and reporting is expected to be reduced from 24 to 12 staff positions because of reduced program administration and restoration costs. The Cooperative will no longer need to support the HCP concurrence process as “take” coverage will not be extended beyond the fifty year permit term.

7.10 Public Input

Public input is fundamental to ensuring the success of and continuing support for the HCP throughout implementation. Public outreach is required as part of the conservation strategy (see Section 5.4.4, *Avoidance and Minimization Measures for Public Use in HMAs and Property Ownership of Borderlands*). Meetings of the Governing Board will be open to the public, and public comments will be solicited and heard at each meeting¹². In addition, the public can contact the staff of the Cooperative to comment on various aspects of HCP implementation. All data and reports associated with the management, monitoring, and adaptive management programs for this HCP will be available to the public.

At least once annually, the Cooperative will convene a public meeting to report on the progress of implementation directly to the public. The meeting will be scheduled after the Cooperative has provided the annual report to the Wildlife Agencies; and may be scheduled after the Cooperative has met with the Wildlife Agencies to address any comments on the annual report and changes that may be warranted by way of the adaptive management program. The Cooperative will summarize habitat losses and gains, habitat restoration and creation, and management and monitoring accomplishments for the previous year. The meeting will provide an informal forum for the public to pose questions and provide comments directly to the Cooperative on the overall progress of HCP implementation. The annual public meeting may coincide with one of the regular Governing Board meetings. Periodic formal review of HCP progress in a public forum may also be appropriate.

¹² The Governing Board may need to hold periodic closed-door sessions to discuss confidential items such as land transaction negotiations or legal matters.

Table 7-6. Schedule for Major Implementation Tasks

Time Period	Tasks and Milestones	Responsible Party
Pre-Permit	Establish HCP implementation organizational structure.	Permittees
	Apply for state/federal grants for habitat management activities (after publication of Draft HCP).	Permittees
	Train local jurisdiction staff to review and process HCP applications. This task will also be ongoing.	Permittees
Post-Permit		
0–6 months	Finalize local ordinances or policies with final fee structure no more than 120 days after permit issuance by the Wildlife Agencies.	Permittees, with assistance from Cooperative
	Pass local ordinances or policies to implement HCP.	Permittees
	Hire Cooperative Program Administrator and key staff.	Cooperative
	Develop checklists and other materials for local planners to ensure compliance by each project receiving coverage under the Plan. The checklist must include a statement of certification that Permittees meet the relevant terms of the HCP.	Cooperative
	Develop template survey report that may be used by project proponents as a guide and by local jurisdictions to evaluate the completeness of survey reports they review.	Cooperative
	Train local jurisdiction staff to prepare, review, and process HCP applications. This task will also be ongoing.	Cooperative
	Begin receiving and reviewing applications for coverage under the HCP.	Cities, County, and Cooperative
	Apply for state/federal grants. This task will also be ongoing.	Cooperative
	Collect CFD Special Tax and disperse 30% to the Cooperative.	FORA and Cooperative
6 months–1 year	Hire key administrative staff of Cooperative or secure agreements or contracts with other organizations to fulfill these roles.	Cooperative
	Investigate restoration opportunities. Develop a list of approved plant species for landscaping within the Borderlands.	Cooperative
	Establish databases to track permit compliance (e.g., HCP impacts; databases to track Plan effectiveness will be developed later).	Cooperative
1–5 years	Update fees annually according to formulas described in Chapter 9, <i>Cost and Funding</i> . Provide new fees to local jurisdictions. This task will also be ongoing.	FORA
	At intervals specified in Chapter 9, <i>Cost and Funding</i> , perform financial audit and adjust endowment to match actual costs.	Cooperative

Time Period	Tasks and Milestones	Responsible Party
	Prepare RMPs and base-wide management strategies as described in Chapter 5, <i>Conservation Strategy</i> .	Habitat managers or their Contract Agency or Consultant
	Develop monitoring and adaptive management plans for HMAs, including work plans.	Habitat managers or their Contract Agency or Consultant
	Initiate management and monitoring on all HMAs.	Cooperative or their Contract Agency or Consultant
	Begin restoration design and additional environmental compliance for restoration.	Habitat managers or their Contract Agency or Consultant
	Implement restoration projects.	Habitat managers or their Contract Agency or Consultant
	Develop an Invasive Plant Control Program to address invasive plants on all HMAs.	Habitat managers or their Contract Agency or Consultant
6–50 years	Continue to plan, design, and implement habitat restoration. All habitat restoration and creation must be initiated by Year 45.	Habitat managers or their Contract Agency or Consultant
	Continue automatic CFD Special Tax updates and periodic audits.	Cooperative
	Continue periodic Independent Assessments.	Cooperative
	Finalize post-permit implementation structure.	Cooperative
	Prepare and revise system-wide and HMA-specific management plans.	Cooperative or their Contract Agency or Consultant
	Continue adaptive management and monitoring of biological resources.	Cooperative or their Contract Agency or Consultant
More than 50 years	Continue adaptive management and limited monitoring of biological resources to ensure management actions are working.	Cooperative or their Contract Agency or Consultant

Table 7-1. HCP Required Actions – Program Administration Measures by Entity Responsible

Responsible Entity	Program Administration Measures
Cooperative Program Administrator	<p>Admin-1. Account for HCP financial transactions. This includes receiving, managing, tracking, reporting, and expending funds, including fee revenues collected by FORA (or the local jurisdictions once FORA sunsets), funds dispersed for habitat management, restoration.</p> <p>Admin-2. Address and accommodate changes in management per the adaptive management program. The Cooperative will work with the TAC to provide technical input on major and minor revisions to the HCP, changed circumstances, and other issues that relate to Plan compliance.</p> <p>Admin-3. Conduct public outreach to neighbors, potential funding partners, potential research partners, and volunteers. Actions will include the following.</p> <ul style="list-style-type: none"> • Conduct outreach to landowners, local community groups and agencies, and the general public regarding the HCP and its goals. • Develop a volunteer program to provide an opportunity for the public to contribute to the successful implementation of the HCP. • Develop partnerships with local academic institutions to help direct research towards management and monitoring needs of the HCP. • Monitor and track HCP required actions within and adjacent to the Plan Area performed by others to ensure coordination and compatibility with HCP actions. • Ensure involvement of the public, scientists, interested agencies, and others in HCP implementation. <p>Admin-4. Conduct the HCP concurrence determination. Actions will include the following.</p> <ul style="list-style-type: none"> • Review development-related covered activities for consistency with the HCP. If necessary, the Wildlife Agencies will be consulted on decisions where application of the HCP is questionable. • Train staff in local jurisdictions to review Certificate of Inclusion applications for submittal to the Cooperative for HCP concurrence determination. • Receive staff reports on Certificates of Inclusion (Appendix K)¹³ to third party participants once HCP concurrence is determined (see Section 7.5 Take Authorization). • Assist Permittees to ensure third party participants comply with the provisions of the HCP (e.g., performance of required AMMs and mitigation measures) and providing tools to support the application review process.

¹³ Certificates of Inclusion will not be issued by the Cooperative, but tracked by them for record keeping. Take authorization would be issued through the HCP permits to each of the Permittees. Take coverage would be extended to covered activities implemented by Permittees upon HCP concurrence determination. Covered activities implemented by the Cooperative would include HCP required activities such as monitoring and mitigation measure implementation. Permittees with land use authority would have the authority to extend the take authorization to third party applicants. Because the Cooperative does not have direct jurisdiction over the other Permittees or private developers, it cannot extend its take permit to these entities.

Responsible Entity	Program Administration Measures
	<p>Admin-5. Coordinate among Permittees, BLM, Wildlife Agencies, the TAC, and public especially in regard to the adaptive management program. Actions will include the following.</p> <ul style="list-style-type: none"> Promote coordination among the Permittees and BLM to ensure that the HCP is implemented consistently and effectively. Coordinate and communicate with local land management agencies (i.e., state, federal, private, non-profit) with open space lands adjacent to the Plan Area. Oversee land management activities in an adaptive management framework, either independently or in partnership with other organizations. Monitoring changes suggested by the adaptive management program, or changed circumstances that might arise. If changed circumstances occur remedial measures and procedures outlined in Chapter 8 shall be followed, including amending RMPs for consistency and processing minor or major amendments to the HCP, if required. Amendments to RMPs and/or minor or major amendments may also be required to document and implement changes identified by the monitoring program or adaptive management efforts. <p>Admin-6. Develop and maintain annual budgets and work plans for approval by the Governing Board within the framework of the budget funding needs and allocation procedures.</p> <p>Admin-7. Develop funding base in accordance with Chapter 9, <i>Cost and Funding</i>.</p> <p>Admin-8. Ensure compliance with all HCP terms and conditions.</p> <p>Admin-9. Implement the compliance monitoring program including (a) land transfer tracking and the stay-ahead provision compliance, (b) implementation of required activities, and (c) biological monitoring of status and trends. Actions will include the following.</p> <ul style="list-style-type: none"> Conduct effects monitoring on all HMAs. Implement Monitoring Measure-1 for HMAs under the jurisdictions of Monterey County, City of Marina, City of Seaside, MPC, and MPRPD. <p>Admin-10. Manage HMAs under the ownership of Monterey County, City of Marina, City of Seaside, MPC, and MPRPD. And coordinate overall management throughout all HMAs.</p> <p>Admin-11. Coordinate among Permittees, BLM, the Wildlife Agencies, the TAC, and the public to ensure compliance with all terms and conditions of the HCP.</p> <ul style="list-style-type: none"> Work cooperatively with BLM to ensure that their activities are consistent with the HCP. Monitor landowner compliance with Borderlands requirements. Develop enforcement procedures (e.g., public and pet access controls), in cooperation with the local jurisdictions, that will be incorporated into individual HMA RMPs. Develop partnerships with local academic institutions to help direct research towards management and monitoring needs of the HCP. Monitor and track non-HCP required actions, in cooperation with the local jurisdictions, within and adjacent to the Plan Area performed by others to ensure coordination and compatibility with HCP actions.

Responsible Entity	Program Administration Measures
	<ul style="list-style-type: none"> • Ensure involvement of the public, scientists, interested agencies, and others in HCP implementation. <p>Admin-12. Prepare and process HCP minor and major amendments.</p> <p>Admin-13. Prepare annual reports and schedule and host annual meetings.</p> <p>Admin-14. Provide administrative support to the compliance monitoring program. This includes creating and maintaining data standards, databases, models and a repository to track the following.</p> <ul style="list-style-type: none"> • Base-wide land use and compliance with the stay-ahead provision. • Implementation of required activities. • Biological monitoring of status and trends. • Permit compliance through HCP compliance monitoring (see Section 6.2, <i>HCP Compliance Monitoring</i>) and enact remedial measures to prevent permit suspension or revocation (see Chapter 6, <i>Monitoring and Adaptive Management</i>). <p>Admin-15. Implement contingency and remedial measures.</p>
Cooperative Governing Board	<p>Admin-16. Resolve dispute among Permittees and BLM regarding HCP implementation.</p> <p>Admin-17. Review and approve annual reports prior to submittal to the Wildlife Agencies.</p> <p>Admin-18. Review and approve contracts or other agreements with local agencies, non-profit organizations, consultants, or contractors to perform tasks on behalf of the Cooperative to meet the HCP obligations.</p> <p>Admin-19. Review and approve fund dispersal from the Implementation Assurances Fund.</p> <p>Admin-20. Review and approve the Cooperative's annual operating and capital budgets.</p> <p>Admin-21. Review and provide a determination of consistency of development-related covered activities (described in Section 3.3, <i>Covered Activities</i>) with the HCP if an appeal is filed within 30 days of a Permittee's project approval.</p> <p>Admin-22. Review annual operating and capital budget of UC/NRS for costs borne by the Fort Ord Natural Reserve Endowment. The Governing Board will review the budget for consistency against HCP required expenditures.</p>
State Parks	<p>Admin-23. Prepare an annual western snowy plover management plan prior to the breeding and nesting season.</p>
HMA Managers	<p>Admin-24. Review woodland thinning and clearing programs through the TAC prior to implementation.</p> <p>Admin-25. Maintain comparable databases, based on standardized data methodology, individually or in cooperation with other managers, for reporting to the Cooperative on HCP required activities.</p>

Chapter 8

Assurances and HCP Amendments

This chapter discusses the assurances required of the Permittees to meet issuance criteria for the Federal ESA Section 10(a)(1)(B) and the CESA Section 2081 permit applications. This chapter also outlines the process for changing or amending the HCP.

8.1 Assurances Requested by Permittees

The Permittees are requesting the following assurances as from the Wildlife Agencies.

8.1.1 Assurances from U.S. Fish and Wildlife Service

Assurances from USFWS include those concerning changed circumstances, unforeseen circumstances, the No Surprises Rule, and Federal critical habitat designations, all of which are discussed below.

8.1.1.1 No Surprises Rule

As provided under the Federal “No Surprises” rule (50 CFR 17.3, 17.22(b)(5) and (6) and 17.32(b)(5) and (6); 63 FR 8859), regulation published in 69 CFR 71723, December 10, 2004, non-Federal landowners participating in habitat conservation planning under the ESA will receive assurances that no additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources with regard to the HCP species or habitats beyond the levels and/or amounts provided for under this HCP—including the HCP’s planned responses to changed circumstances (see below), or protected within the HMAs—will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of the Permittee(s).

8.1.1.2 Changed Circumstances

Changed circumstances are defined in the Federal No Surprises Rule¹ (Section 8.1.1.1, *No Surprises Rule*) as those circumstances affecting a species or geographic area covered by a conservation plan or agreement that can be reasonably anticipated by the applicant(s) and the USFWS and for which the parties can plan a response (50 CFR 17.3). Accordingly, 50 CFR 17.22(b)(2) and 17.32(b)(2) require that potential changed circumstances be identified in the conservation plan along with remedial measures that would be taken to address these changes. The changed circumstances recognized and funded by this HCP that could arise in the permit area during the requested permit term are listed and described below.

- Earthquakes.
- Listing of a new species within the Plan Area.

¹ 69 *Federal Register* 71723, December 10, 2004 as codified in 50 CFR Sections 17.22(b)(2) and 17.32(b)(2).

- Global climate change.
- Catastrophic fire.
- Coastal erosion.
- Invasion by new non-native invasive species or disease.

8.1.1.2.1 Earthquakes

Earthquakes are a rare but expected occurrence in the Plan Area. The location, magnitude, and effects of an earthquake with the potential to adversely affect the Plan Area are highly speculative and not reasonably anticipated. Although unlikely, a strong earthquake may damage structures such as HMA fences. The following HCP required action will be required if an earthquake occurs.

Changed Circumstance-1. Repair earthquake damage to structures required for conservation strategy implementation (e.g., fences, gates, ponds) within HMAs.

8.1.1.2.2 Listing of a New Species within the Plan Area

Over the course of Plan implementation (50 years), the status of non-listed species occurring within the Plan Area may change due to one or more threats. As a result, USFWS or CDFW may list as threatened or endangered under the ESA or the CESA, respectively, species that are not covered under the Plan. If a non-covered species is listed, the following HCP required actions will be taken.

Changed Circumstance-2. Evaluate the potential impacts of covered activities on the newly listed species, in coordination with the Wildlife Agencies, including an assessment of the presence of suitable habitat in impact areas.

Changed Circumstance-3. Develop measures to avoid impacts on the newly listed species until the HCP is amended to cover the species.

Should a species not covered by the HCP be listed, proposed for listing, or petitioned for listing, the Permittees may request that the Wildlife Agencies add the species to the Section 10(a)(1)(B) permit, 2081(b) permit, or both. In determining whether or not to seek incidental take coverage for the species, the Permittees will consider, among other things, whether the species is present in the Plan Area and if otherwise lawful activities could result in incidental take of the species. If incidental take coverage is desired, the HCP and permits could be modified or amended. Alternatively, the Permittees could apply for new and separate permits.

HCP covered activities may be modified, as necessary, to ensure that they are not likely to jeopardize the newly listed species, result in take of the newly listed species, or result in adverse modification of any newly designated critical habitat. Such modifications will be identified by USFWS and CDFW and implemented by the Permittees, who will continue to implement these modifications until both of the following conditions are met.

- Permittees have applied for, and the USFWS has approved, an amendment of the Section 10(a)(1)(B) permit to cover the newly listed species (if the species is Federally listed).
- Permittees have applied for, and the CDFW has approved, an amendment of the Section 2081(b) permit to cover the newly listed species (if the species is State listed).
- USFWS or CDFW notifies the Permittees in writing that such modifications are no longer required to avoid the likelihood of covered activities causing jeopardy to the newly listed

species, take of the newly listed species, or adverse modification of newly designated critical habitat.

Procedures for amendments to the HCP are outlined in Section 8.4, *Minor and Major Amendments*.

8.1.1.2.3 Global Climate Change

Global climate change is the observed increase in mean global temperature due to an increase in greenhouse gas emissions, primarily carbon dioxide, as a result of human industrialization (Intergovernmental Panel on Climate Change 2007). Global climate change is also predicted to include secondary global effects such as sea level rise and changing weather patterns.

Current global and regional trends suggest that climate change is likely to have an effect on the Plan Area. However, it is difficult to forecast changes in climate at the regional or county scale. Most global climate models predict temperature increases² (Intergovernmental Panel on Climate Change 2007); average annual mean temperature in California is projected to rise from about 1°C to 3°C by mid-century and about 2°C to 5°C by the end of the century (Cayan et al. 2012). There is considerable uncertainty regarding whether precipitation will increase or decrease over the next half century as a result of climate change. Some models predict for California a range from a 6-millimeter decrease in precipitation to a 70-millimeter increase (Hayhoe et al. 2004), whereas other projections suggest a 10- to 20-percent decrease in total annual precipitation by mid-century in California (Luers et al. 2006). Accordingly, it is likely that the climate in the Plan Area would shift to be either warmer and wetter or warmer and dryer.

Global climate change will indirectly affect sea levels as global temperatures increase. Sea levels rise as sea water temperatures increase (a process known as thermal expansion) and arctic ice melts (U.S. Fish and Wildlife Service 2012). Estimates project that sea levels will rise in California by 3.3 to 4.6 feet by 2100 (Heberger et al. 2009). If sea levels were to increase at a constant rate, during the course of the 50-year permit term, they would increase by 2.5 feet; however, this rate is not expected to be constant because of tidal fluctuations and storm events. The FODSP 4-mile coastline ranges in width from approximately 0.3 to 0.4 mile wide. The narrow beach is backed by steep dunes, which will impound wave action and severely affect beach habitat. The approximate 100-year flood extent for the Marina U.S. Geological Survey 7.5-minute quadrangle estimates sea level will reach the dune bluff edge, covering the entire Fort Ord Dunes State Park (FODSP) (Pacific Institute 2009). However, these steep dune bluffs may effectively protect the back dune areas, as well as the State Park campground and other facilities, from flooding. It is also possible that dune bluff erosion will be accelerated as a result of global climate change and sea level rise and that the dunes may erode into the beach. For the purposes of assessing changed circumstances, we assume that sea levels will rise by an average of 0.05 feet each year.³ In such a case, sea levels would rise slightly each year but could occupy the entire existing FODSP by the end of the permit term.

For the purposes of assessing unforeseen circumstances, sea level rise that exceeds 0.1 foot (which is approximately twice the average) will be defined as an unforeseen circumstance. As such, sea

² The change in temperature over the past century is a global average of 0.6°C. A temperature increase as high as 6°C is predicted under climate change scenarios.

³ This is based proportionally on 1.1 feet (assuming a worst-case scenario of 4.6 feet) in the 91 years between 2009 (when the paper was written) and the projected date of 2100, which allows for a rate of 0.05 feet in sea level rise per year.

level rise exceeding 5 feet along the 4 miles of coastline within the Plan Area will be considered an unforeseen circumstance (see Section 8.1.1.3, *Unforeseen Circumstances*).

A number of ecological responses to climate change and sea level could occur in the Plan Area. First, the timing of seasonal events, such as migration, flowering, and egg laying may shift earlier or later (Walther et al. 2002; Forister and Shapiro 2003; Root et al. 2003; Root et al. 2005). Such shifts may affect the timing and synchrony of events that must occur together, such as butterfly emergence and nectar availability. Second, range and distribution of species and natural communities may shift (Parmesan et al. 1999; Pimm 2001; Walther et al. 2002; Easterling et al. 2003). Range is the area over which a species occurs or potentially occurs, whereas distribution refers to where a species is located within its range. This is of particular concern for narrowly distributed species that already have restricted ranges due to urban growth or altitudinal gradients. Historically, some species could shift their ranges across the landscape. Today, urban and rural development prevents the movement of many species across the landscape. Also, increases in disturbance events, such as fire, could increase the distribution of disturbance-dependent land cover types, such as chaparral and annual grassland, within the Plan Area (Brown and Hebda 1998; Lenihan et al. 2003; Fried et al. 2004; Parmesan and Matthews 2005; California Climate Change Center 2006; Rogers and Westfall 2007). Third, the number or density of individuals found in a particular location may change. This may be triggered by changes in resource availability associated with an increase or decrease in precipitation (Martin 1998; Dukes and Mooney 1999; Walther et al. 2002; Lenihan et al. 2003; Millar et al. 2006; Pounds et al. 2006). Changes such as these may benefit one species at the expense of another. Fourth, over a longer time period, species may change in outward appearance and behavior. Changes in climate may favor different adaptive strategies or appearances that may lead to genetic shifts (Davis and Shaw 2001). An example of this would be a shift to smaller average body size of certain mammals to use limited food sources for maintenance rather than growth.

The primary HCP species that would be affected by global climate change and subsequent sea level rise is the western snowy plover. A direct loss of all habitat for the western snowy plover on FODSP beaches is possible as a result of sea level rise. Sea level rise may result in a landscape that is no longer suitable for western snowy plover nesting. For the purposes of this HCP, this is regarded a changed circumstance. As described in Chapter 6 (Section 6.8.1, *Adaptive Management Measures*), if sea level rise modifies western snowy plover habitat at FODSP so that the demographic thresholds (Chapter 5) (based on a 3-year rolling average) have not been realized, Changed Circumstance 6 (below) would be implemented. If all foredune habitat at FODSP is lost, western snowy plover habitat will be qualitatively assessed four times yearly to determine if it may recover naturally. However, if any suitable habitat remains at Ford Ort, low-level monitoring (twice weekly) for western snowy plovers and nests will occur simultaneously at FODSP and another beach(es) for 3 years. After 3 years, USFWS, State Parks, and the Cooperative will coordinate to determine if it is advantageous to continue monitoring at all locations or if FODSP beach should be abandoned.

Together, the conservation strategy, monitoring program, and adaptive management program can anticipate and respond to some of the possible effects of climate change using a multi-scale approach: landscape-level, natural community-level, and species-level. This approach focuses on protecting and enhancing a range of natural communities and habitat types, as well as other features that are important as global climate change changes the availability of resources and habitat types in the Plan Area.

Implementing conservation actions that protect a variety of landscapes over a large scale provides flexibility for shifts in range and distribution of species and natural communities due to climate

change. The design of HMAs provides a large contiguous area across which natural communities and species can move over time. As such, some species and natural communities in the Plan Area would continue to be able to move in response to climate change, allowing for shifts in range and distribution. However, by developing inland areas at FODSP, the project will limit the ability for beach and foredune habitat to shift inland and could result in a landscape that is no longer suitable for western snowy plovers.

At the natural community-level, conservation actions were developed to enhance, restore, and manage vegetation types (i.e., land cover types). Habitats will be managed to ensure natural community and species persistence in the face of abundance shifts driven by climate change. Enhancement, restoration, and management actions will likely increase the resilience of natural communities by improving habitat quality overall and controlling invasive plants and non-native predators.

At the species-level, the increase in population size and density of HCP species that will be ensured by conservation actions increases the odds of species adaptability in the face of global climate change. The focused minimization of competitive pressures on HCP plant species through measures such as invasive non-native plant removal and improved ecological resilience through habitat restoration will help ensure their survival. Focused removal of non-native predators and invasive non-native species and habitat restoration will improve the adaptability of HCP wildlife species. Shifts of range, distribution and abundance driven by climate change are buffered by protection and enhancement of individuals, populations, and groups of populations across the Plan Area.

In addition to the conservation actions, the monitoring actions will allow for the early detection of trends driven by climate change over multiple scales. Community-level monitoring will detect changes in the composition and function of natural communities, populations of key predator or prey populations, invasive species, and other important habitat factors for covered species. Species-level monitoring will measure the effects of management actions on covered species and the status and trends of covered species in the HMAs. Based on monitoring results, adaptive management will be used to respond to any detected effects of climate change. Together, the conservation strategy, monitoring program, and adaptive management program will help buffer against the effects of climate change in the Plan Area.

Limits on the variation in other parameters (e.g., rainfall) are much more difficult to determine. Given the seasonality of rainfall in the Plan Area, an increase in winter precipitation may be offset by increased evapotranspiration during the summer months (Intergovernmental Panel on Climate Change 2007). A decrease in winter precipitation could be exacerbated by increased summer temperatures, which could lead to an increase in the occurrence of fire. Therefore, it is not possible at this time to define limits of rainfall patterns that would qualify as changed circumstances. Regardless of increases or decreases in precipitation, it is anticipated that the number of strong storm events would increase during the winter season (Kim 2005). These events are more likely to result in increased levels of storm-related erosion/landsliding than in increased soil percolation or water storage recharge. Increased frequencies of fire and storm-related erosion/landsliding are taken into account in the sections below addressing these changed circumstances.

The Cooperative's responses to the changed circumstance of global climate change will vary by the character and magnitude of the physical and biological changes observed, but they will include the HCP required actions listed below.

Changed Circumstance-4. Alter mitigation measures to facilitate shifts in species distribution.

For example, the timing, location, and size of controlled burns may change in response to changing climate conditions to minimize uncontrolled outbreaks and effectively restore habitat.

Changed Circumstance-5. Implement more aggressive non-native invasive species control mitigation measures if climate change increases spread of non-native invasive species.

Changed Circumstance-6. Relocate western snowy plover management resources to another beach(es) within Recovery Unit 4 (see Figure 6-4 and Section 6.8.1, *Adaptive Management Measures*, Adaptive Management Measure-12).

8.1.1.2.4 Catastrophic Fire

Catastrophic wildfire is a distinct possibility in the Plan Area. Fire could start naturally (e.g., lightning strike), escape from a controlled burn, or be caused by human error or arson. The likelihood of wildfire increases as surrounding development and human populations increase. Most of the habitat types in the Plan Area (with the likely exceptions of coastal dune, beach, and strand and possibly some wetland and riparian habitats) would be susceptible to a large-scale wildfire. In a reasonably foreseeable scenario, thousands of acres of predominantly maritime chaparral and oak woodland could be burned by a large and uncontrolled wildfire.

The California Department of Forestry and Fire Protection has rated the fire probability in the undeveloped areas of the Plan Area from medium to high. Climate change must also be taken into account when predicting fire frequency in the Plan Area. Throughout California, fire occurrence can be correlated with drought, moisture availability and biomass (fuel) accumulation (Lenihan et al. 2003). Both 1) wetter and warmer and 2) dryer and warmer scenarios are predicted for the Plan Area (Hayhoe et al. 2004). The warmer, dryer scenario would increase the occurrence of drought, while increased biomass production would result from the warmer, wetter scenario—both of these scenarios have the potential to increase fire frequency. For the purposes of quantifying this changed circumstance, it is assumed that fire frequency and intensity will increase in the Plan Area due to climate change.

Plan Area fire frequency and size was used to estimate fire frequency and size within the HMAs. Within the Plan Area, 7 wildfires have occurred between 1997 and 2016,⁴ ranging in size from 7 acres to 820 acres (California Department of Forestry and Fire Protection 2007). Three of these fires were over 100 acres in size. These data show that on average, 0.37 wildfire occurs per year in the area—or about one fire every 3 years, each with an average size of 181 acres. Accordingly, it is assumed that during the 50-year life of the HCP, approximately 18 wildfires would occur across the Plan Area. In addition, four large wildfires of a maximum of 820 acres could be expected. If it is assumed that four of the 18 fires are 820 acres and 14 are an average of 181 acres, then 18 wildfires would occur, burning 3,258 acres in the Plan Area under present conditions.

Taking climate change into account, fire frequency and size are assumed to increase. Recent literature analyzing the relationship between climate change and fire frequency in California identified a median fire occurrence and burned area increase of 30% by 2050 (Westerling et al 2009). This is a statewide estimate, with fire occurrence increases ranging from 11% to 55% and burned area increases ranging from 11% to 70%. By 2085, the range of increase becomes very large,

⁴ Fires that occurred under Army ownership and management were not reported to CAL FIRE.

with fire occurrence increases ranging from 25% to 128% and burned area increases from 23% to 169%. The largest increases for both fire occurrence and burned area are expected to occur in the Sierra Nevada, Northern California Coast, and south Cascade Ranges. These increases are expected to occur by 2050.

The potential effects of climate change on fire frequency are anticipated to increase over the course of the permit term. At the beginning of the permit term, limited change from historic fire occurrences and burned area may be acceptable as a changed circumstance; however, the potential effects of climate change will grow over the permit term. In addition, at the beginning of the permit term, fire risks in the Reserve System will be low because it will be smaller. As such, and because of the large range of possible outcomes, a 25% increase in fire frequency and burned area in the Plan Area because of climate change represents a conservative estimate because it is the minimum increase in burned area by 2085 (Westerling et al 2009).

According to these estimates, it is then predicted that 23 wildfires will occur at a frequency of once every 2 years, of which 22 will burn approximately 226 acres each, plus one fire of 1,025 acres. This would result in 23 wildfires totaling 5,997 acres over the permit term in the Plan Area.

The Plan Area estimates must be downscaled to the HMAs. The Plan Area is 27,832 acres, of which 18,540 acres (67%) is within the HMAs. For the purposes of changed circumstances, it is assumed 67% of the fires will occur in the HMAs. As such, it is assumed a total of 15 fires will occur, of which 14 will have an average size of 151 acres, plus a single fire of 687 acres, for a total of 2,801 acres burned over the course of the permit term.

A single wildfire greater than 566 acres (i.e., three times the average size, increased by 25% to take into account climate change) would be considered an unforeseen event (Section 8.1.1.3, *Unforeseen Circumstances*). If the total area burned within the HMAs over the permit term exceeds 23 fires and/or 4,201 acres, or approximately one and one-half the expected amount, the event would also be considered unforeseen. Prescribed fires would not be included in the calculation of this changed or unforeseen circumstance.

Fires that occur too frequently in the same area may result in type conversion of natural communities and an increased abundance of non-native herbaceous species (Keeley 2005). Additionally, frequent burning results in volatilization of nitrogen and sulfur (Menke 1992). The historic fire frequency for any given site in the Plan Area has been estimated at 1–100 years, varying substantially among land cover types and topography (California Department of Forestry and Fire Protection 2008). Fires in consecutive years in the same area would be unlikely because of the time needed to develop fuels. The historic fire frequency for any given site in the study area varies substantially among land cover types, location, and topography (Davis and Borchert 2006; Stuart and Stephens 2006; Willis 2006). Because of the varying fire return intervals, return intervals are broadly defined for the fire-prone natural community types within the study area. For the purposes of changed circumstances, repeated fires in grassland, coastal scrub, and wetland natural communities in the same area in less than 3 years are considered unforeseen because of the time required to develop fuels (Keely 2005). Additionally, this is the time required for the composition of alien annual species to return to a pre-fire status (Menke 1992). For oak woodland and chaparral, repeated fires in the same area in less than 10 years (Keeley 2005), which is also consistent with Objective 2.1 (Section 5.3.2.1, *Maritime Chaparral*), are considered unforeseen.

Maritime chaparral, in particular, is a fire-adapted vegetation type whose long-term viability depends on periodic fire (i.e., the seed of many of its species germinate after a fire; other species are

stump-sprouters following a burn). The HCP identifies fire as an important management tool for maintaining a healthy, mixed successional ecosystem in the larger conservation areas in the Plan Area. Many—if not most—of the HCP species that are not associated with coastal dunes and beaches occur in maritime chaparral. Of these, the majority of the plant species would be expected to survive a fire as a seed bank in the soil. The animal species would also be expected to draw on innate fire survival adaptations because they have co-evolved with this fire-prone vegetation. In short, while a widespread fire would certainly cause considerable damage, the effects would be expected to be relatively short-term.

Initially, large areas would be charred and virtually denuded of vegetation. New fire lines and fire-fighting mobilization areas also would presumably remove habitat. Habitat diversity could change with the regeneration of a large, even-aged stand of early successional species, and some species could be reduced in number or even lost on certain parts of the base. Aggressive, non-native, invasive plant species such as pampas grass, French broom, and iceplant would likely colonize burned and disturbed areas quickly and would compete with the regenerating natives. However, through the ongoing conservation, monitoring, and adaptive management actions required by the HCP, these effects would be identified and rectified to reduce the long-term threat to HCP species and their habitats in the Plan Area as a result of a catastrophic fire.

Additionally, resource management plans (Mitigation Measure-3) will include fire management and protection measures that will minimize the risk of damage to habitats and natural communities from catastrophic fire. Preventative actions include those listed below.

- Create or redesign fuel breaks to limit fire spread.
- Use targeted, low-intensity prescribed fires to encourage fire-adapted plants and discourage non-fire-adapted invasive plants.
- Work with local fire agencies to improve fire suppression preparedness and develop strategies to protect habitat during fire response.
- Incorporate public awareness programs into recreational plans and resource management plans.

The Permittees will implement the following HCP permit required actions, as appropriate, in the event of catastrophic fire.

Changed Circumstance-7. Modify the location, extent, frequency, and other parameters involved in the use of fire, mechanical clearing, or other measures as management tools to achieve balance in successional stages of vegetation in designated conservation areas.

Changed Circumstance-8. Accelerate non-native species eradication, restoration, and replanting or reseedling of selected HCP species in areas substantially altered or disturbed as a result of the fire, including areas used for emergency firebreaks.

Changed Circumstance-9. Replace fences and signs damaged by fire.

Changed Circumstance-10. Alter or replace trails in areas affected by fire to aid recovery of HCP species.

Changed Circumstance-11. Restrict public access into areas recovering from fire.

Changed Circumstance-12. Increase monitoring (e.g., water quality monitoring) to identify the effects of fire suppressants, if they are used.

Changed Circumstance-13. Implement remedial measures (e.g., habitat restoration, erosion control) in affected HMAs to ensure the reestablishment of native vegetation through active or passive means, as appropriate.

Changed Circumstance-14. Restore aquatic habitat damaged by fire or by siltation caused by post-fire runoff.

Any such measures would be tied to monitoring results and would only be implemented in consultation with USFWS and CDFW. Remedial measure implementation is ensured through the HCP Implementation Assurances Fund (see Section 9.3.1.1.4, *Implementation Assurances Fund*).

8.1.1.2.5 Coastal Erosion

Coastal erosion has been and continues to be a major concern along the beaches and dune bluffs within the Plan Area. Some buildings (notably, the former Stilwell Hall) and facilities (primarily drainage outfall structures) erected in the coastal zone during the military tenure of the former base provide dramatic examples of the effects of wave action along the FODSP shoreline. Estimates project the rate of coastal erosion into the dunes to range between 1.5 and 7 feet per year (California Department of Parks and Recreation 2004). This means that during the course of the permit term, 75–350 feet of coastal erosion will occur along the 4 miles of coastline within the Plan Area (36–170 acres total). State Parks' general plan estimated a 700-foot erosion setback (i.e., the anticipated erosion line), which, at the maximum rate, is 100 times the annual erosion rate (Figure 8-1).

For the purposes of assessing changed circumstances, we assume that that an average of 4.5 feet of coastline will erode each year (i.e., the approximate midpoint of the projected range of annual coastal erosion). As such, during the course of the permit term we can expect 225 feet of coastal erosion will occur along the 4 miles of coastline within the Plan Area (109 acres total). In such a case, existing dune fronts would erode into beach and strand zones, and the extent of the dunes themselves would be reduced.

For the purposes of assessing unforeseen circumstances, coastal erosion that exceeds an average of 9 feet per year (twice the average) will be defined as an unforeseen circumstance. As such, erosion exceeding 450 feet of coastal erosion along the 4 miles of coastline (218 acres total) within the Plan Area will be considered an unforeseen circumstance (see Section 8.1.1.3, *Unforeseen Circumstances*).

The primary HCP species that would be affected by this coastal erosion would be the western snowy plover and the various dune species, especially the Smith's blue butterfly (*Euphilotes enoptes smithi*), that are the target of HCP-directed restoration efforts in the coastal zone conservation area. The overall extent of habitat for the western snowy plover on Fort Ord beaches may not decrease as a result of coastal erosion but its location and character could gradually change as the beach zone moves eastward. Improved nesting conditions for western snowy plovers beyond those currently available in the Plan Area could result in some years when steep dune bluffs and narrow beaches give way to wider beaches and gentler foredune areas. However, the indirect effects on western snowy plovers could increase as a result of increased proximity to State Park facilities (e.g., lodging facilities, campgrounds, parking lots, trailheads). An adaptive management strategy was developed and can be implemented if western snowy plover monitoring data indicate that this species' BGO's

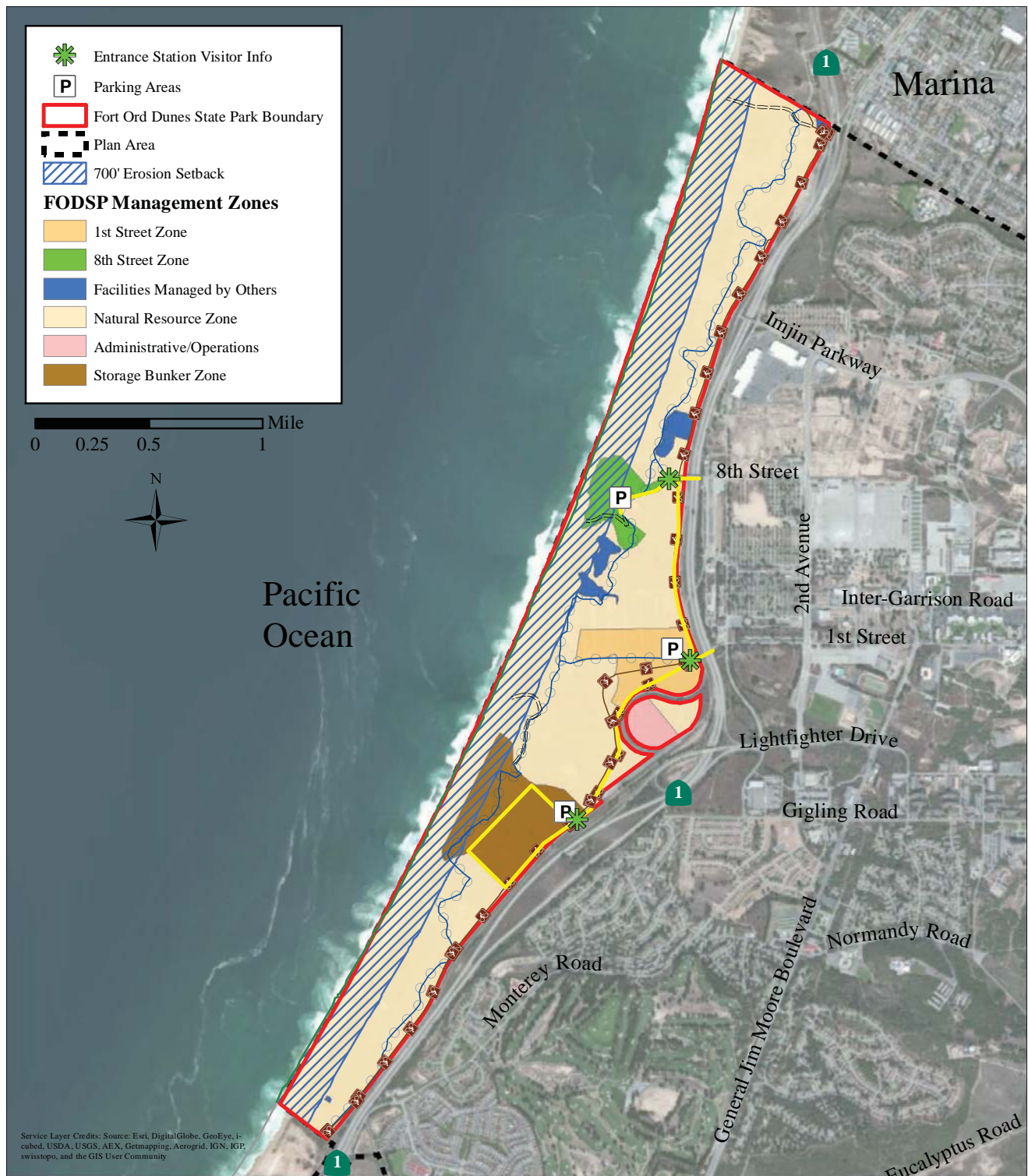
are not being met as a result of recreational use of State Park facilities (see Chapter 6, *Adaptive Management*).

A direct loss of actual or potential habitat for the Smith's blue butterfly, sand gilia (*Gilia tenuiflora* ssp. *arenaria*), and Monterey spineflower (*Chorizanthe pungens* var. *pungens*) could occur under this scenario. With State Parks' HCP required obligation to restore 420 acres of coastal dune habitat within the total 700 acres of multi-habitat restoration, the loss of the predicted maximum amount of 350 feet of habitat per year (i.e., at 7 feet per year, resulting in 170 acres for the permit term)—as estimated by State Parks (California Department of Parks and Recreation 2004)—could result in dune restoration occurring in areas previously identified for other uses.

The habitat-related effects of coastal erosion will become evident gradually, primarily through the ongoing monitoring requirements associated with the HCP. As State Parks implements its general plan for the coastal portion of the Plan Area, active and passive recreational use areas, access points, specific conservation area boundaries, and visitor management prescriptions will be refined. The coastal erosion setback will play a prominent role in State Park planning and development so that accommodations can be made for additional habitat restoration areas as the monitoring results confirm (or disconfirm) the loss of actual or potential beach, coastal strand, and dune habitat over time. Implementation of State Parks general plan for specific activities and uses within the coastal zone in the Plan Area will be conducted in full consultation with USFWS and CDFW and must comply with this HCP.

Accordingly, the preventative measures listed below are designed to combat and plan for coastal erosion and subsequent habitat loss. These actions are required as part of the conservation strategy (Chapter 5) and monitoring program (Chapter 6) and would be implemented regardless of the occurrence of changed circumstances. Any remedial actions will be consistent with the scope and extent of the conservation strategy and monitoring program as summarized below. Funding to address remedial action is described in Section 9.2.1.6.1, *Climate Change Coastal Erosion Adaptation Program*.

- Restore at least 420 acres of disturbed or degraded land to coastal dune scrub habitat within the permit term (Mitigation Measure-1). If coastal erosion results in the loss of 420 acres, State Parks would work with the USFWS to identify other coastal dune areas to restore to meet their obligation of restoring 420 acres of coastal dune habitat within Monterey County.
- Stabilize drifting sand on barren sand dunes where temporary erosion control is necessary until native vegetation can become established (Mitigation Measure-32).
- Treat and/or hand remove iceplant mats and other dominant non-native invasive plants at restoration sites (Mitigation Measure-10).
- Manage at least 50% of restored lands to support annual species including sand gilia and Monterey spineflower (Mitigation Measure-12).
- Restrict public access to dune habitat areas including all restored coastal dune scrub habitat to designated routes identified by signs, boardwalks, paving and/or fences (AMM-27).
- Plant native plant seedlings, and/or introduce native seed on restoration sites where appropriate to expedite the recovery of native vegetation (AMM-13).
- Develop strategies for control of noxious weed species, categories of weed infestation and/or infestations within coastal dune scrub habitat (Mitigation Measure-29).



Source: Denise Duffy and Associates

Figure 8-1
Coastal Erosion within FODSP

8.1.1.2.6 Invasion by New Non-Native Invasive Species or Disease

Non-native invasive species currently inhabit the Plan Area and will be present in the HMAs. Additionally, there are non-native species and diseases that exist in areas outside the Plan Area that have the potential to spread into the Plan Area and adversely affect the HCP species and natural communities within the HMAs. The conservation strategy includes measures to reduce existing and prevent future infestations of non-native invasive species and diseases (see Chapter 5, *Conservation Strategy*). The monitoring program will identify and map existing diseases, large continuous patches of non-native species, and new noxious weed species in the HMAs so that control or eradication plans can be implemented (see Chapter 6, *Monitoring and Adaptive Management*). Despite these efforts, problematic circumstances could still arise.

- New and aggressive non-native species could invade the HMAs.
- Infestations of a new disease that affects covered or dominant species in the Plan Area (e.g., Sudden Oak Death) could have dramatic effects on the HMAs.
- Existing non-native species or diseases could expand to unprecedented levels in the HMAs, perhaps due to changing climate.

For the purposes of the HCP, new and existing infestations of diseases and non-native invasive species were evaluated. Because of the nature of diseases and non-native invasive species, it is foreseeable for at least one new disease or non-native invasive species to affect an entire natural community or dominant species in the Plan Area and the HMAs during the permit term.

Based on current knowledge of likely diseases and non-native species, disease spread at catastrophic levels is only possible in the Plan Area for Sudden Oak Death.

Although not currently in the Plan Area, Sudden Oak Death has been confirmed in Monterey County outside the Plan Area; consequently, it is highly likely to spread into the Plan Area during the permit term. Spread of this disease into the Plan Area could lead to changes in species composition, type conversion, and an increased risk of fire as a result of standing dead trees. This disease spreads rapidly and could spread into the Reserve System and affect the oak woodlands despite implementation of the conservation strategy, adaptive management, and remedial measures. If this occurs, the spread of the disease would not be limited to the HMAs and would affect the natural community at the landscape level, including outside the Plan Area. If Sudden Oak Death spreads extensively, it would be considered a catastrophic event. In contrast, in the case of bullfrogs, it is not reasonably foreseeable that the species would spread extensively within wetland and riparian communities (from baseline levels) in the HMAs, particularly with the implementation of mitigation and monitoring measures. Bullfrogs are expected to be controlled in the HMAs through proper implementation of the conservation strategy and adaptive management program and proper implementation of remedial measures, if needed.

There are a number of diseases and non-native species that may affect or threaten covered species and the natural communities on which they depend. Diseases that may threaten covered species in the Plan Area include chytrid fungus, which could affect both California red-legged frog and California tiger salamander (U.S. Fish and Wildlife Service 2002, 69 Federal Register 48570–48649), and possibly rana viruses, which could affect California tiger salamander (69 Federal Register 48570–48649). Due to a lack of surveys, it is unknown whether these diseases are a problem for populations in the Plan Area. The method of measurement of the extent of new diseases will be

different for each disease (e.g., number of trees affected, proportion of species' range, number of populations).

Compared to known disease threats, the list of non-native plants and animals is much more extensive. They include but are not limited to invasive bullfrogs, crayfish, and introduced predatory fish. These species currently occur in the Plan Area, and conservation and monitoring actions to reduce or contain their occurrence within the Plan Area have been developed (see Chapter 5, *Conservation Strategy*, and Chapter 6, *Monitoring and Adaptive Management*).

Resource management plans will include non-native invasive species and disease control and reduction measures that will minimize the risk of their spread. This will prevent and minimize potential damage to habitats and natural communities. Actions include those listed below.

- Identify, characterize, and map the areal extent of suitable habitat and determine presence or absence of HCP animal species within the HMAs following species-specific protocols for each (Monitoring Measure-7).
- Develop strategies for eradication of target noxious weed species, categories of weed infestation and/or infestations within certain habitat types (Mitigation Measure-29).
- Address actual and potential adverse effects from introduced wildlife species, feral animals, and pests on HCP species and their habitats (Mitigation Measure-26).

When a new disease or non-native species is detected or an existing disease or non-native species begins aggressively to spread, the Cooperative will contact the Wildlife Agencies to collaborate on determining the best method of measuring, monitoring, and eradicating or controlling the disease before it spreads.

It is impossible to predict the number, identity, or rate of spread of a future non-native species invasion or disease. Any threshold between a changed circumstance and unforeseen circumstance would similarly be arbitrary. Therefore, there is no unforeseen circumstance, only an upper limit to which remedial actions will be required by the Cooperative and the Permittees.

Under the HCP, the following are considered changed circumstances for which remedial measures will be funded.

- Infestations of new diseases or new non-native invasive species affecting up to 25% of the area of all HMAs.
- The spread of existing non-native species or disease up to 25% beyond baseline conditions in the Plan Area at the time of HCP approval.

Diseases and non-native species could spread into the Plan Area from lands adjacent to the Plan Area. It is foreseeable that a single disease or invasive species would spread across the HMAs even if the mitigation measures and remedial measures are properly implemented. Such an event would be catastrophic, and likely no effort by the Cooperative alone would be able to stop its spread. Therefore, if implementation of remedial measures does not prevent the spread of the non-native species or disease beyond the established thresholds, it would be considered a catastrophic event and therefore unforeseen.

To ensure that remedial actions are implemented aggressively before the thresholds are reached, the Cooperative must demonstrate in writing to the Wildlife Agencies the following in order to justify cessation or reduction of remedial actions once a threshold is crossed:

- The threat of changed circumstance was detected as soon as feasible and the Wildlife Agencies were notified.
- The Cooperative coordinated and worked actively with the Wildlife Agencies and other land managers to assess the changed circumstance and determine the best course of action.
- The Cooperative implemented remedial measures for the changed circumstance according to the Plan, but these measures failed to stop the spread of the disease or invasive species.
- The disease or invasive species is a serious problem outside the Plan Area, and similar control measures implemented by others also failed to control their spread.

Changed Circumstance-15. Respond immediately to the spread of new and existing infestations of diseases and non-native invasive species through adaptive management in ways consistent with existing HCP permit obligations.

The HMA manager will evaluate the significance of the occurrence and report its findings to the TAC. This will include damage-assessment report preparation to establish and track the extent of invasion by a new non-native species or disease. The HMA manager will take appropriate action in coordination with the TAC. Actions should be designed to avoid take of and/or adverse effects on HCP species if possible; actions causing take will be considered if necessary and with concurrence of the USFWS. If the disease or non-native invasive species results in substantial impacts on natural communities that cannot be addressed under the existing operating budget, the Cooperative will prepare a report identifying the problem and will include a cost analysis for funding a control program. Remedial measure implementation is assured through the HCP Implementation Assurances Fund (see Section 9.3.1.1.4, *Implementation Assurances Fund*). Remedial action funding for this changed circumstance assumes 20 acres of treatment will need to be conducted annually or a total of 1,000 acres during the permit term.

8.1.1.2.7 FONM Management Changes

- BLM redirection of management priorities which impact Cooperative access to complete monitoring of restoration or directly limit ability to restore grasslands, maritime chaparral, and aquatic features.

Although BLM intends to manage FONM consistent with the conservation of biological resources, it is possible that management decisions during the permit term and beyond could limit the ability of HCP mitigations to be completed on the FONM. The Cooperative will notify the Wildlife Agencies within 45 days of this change, and work with the TAC and Wildlife Agencies to assess the changed circumstance and determine the best course of action.

8.1.1.2.8 Notification Procedure for Changed Circumstances

If a changed circumstance occurs within the Plan Area as defined by these sections, the Cooperative will notify USFWS of this changed circumstance within 7 days of learning of it. As soon as practicable thereafter, but no later than 30 days after learning of the changed circumstances, the Permittees will modify their activities to the extent necessary to mitigate the effects of the changed circumstances on HCP Species and will report to Wildlife Agencies on their actions. In the event of a changed circumstance, the USFWS may determine that additional conservation or mitigation, known as remedial measures, are necessary. Pursuant to the No Surprises Regulation, if additional

conservation and mitigation measures are deemed necessary to respond to changed circumstances and these additional measures were already provided for in the plan's operating conservation program (e.g., the conservation management activities or mitigation measures expressly agreed to in the HCP), then the permittee will implement those measures as specified in the plan. However, if additional conservation management and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan's operating conservation program, USFWS will not require these additional measures absent the consent of the permittee, provided that the HCP is being *properly implemented*—that is, properly implemented means the commitments and the provisions of the HCP have been or are fully implemented.

In the case coastal erosion exceeds the gradual process described in Section 8.1.1.2.5, *Coastal Erosion*, a series of responsive actions will be implemented. State Parks and the Cooperative, in consultation with USFWS, will determine within 90 days what measures will be implemented to address the problem. The Cooperative will be responsible for developing a Climate Change Coastal Erosion Adaptation Program and will use contingency funds identified in Section 9.2.1.6.1, *Climate Change Coastal Erosion Adaptation Program* for this purpose.

8.1.1.3 Unforeseen Circumstances

Unforeseen circumstances are defined by Federal regulation (50 CFR 17.3) as:

changes in circumstances affecting a species or geographic area covered by a conservation plan or agreement that could not reasonably have been anticipated by plan or agreement developers and the Service at the time of the conservation plan's or agreement's negotiation and development, and that result in a substantial and adverse change in the status of the covered species.

In the event of unforeseen circumstances during the permit term, amendments to the HCP may be proposed by either the Cooperative or the USFWS to address these circumstances. The USFWS and the Cooperative would work together to identify opportunities to redirect resources to address unforeseen circumstances. However, the Permittees request assurances consistent with the Federal No Surprises Rule that the USFWS will not require the commitment of additional land, water, or financial compensation by the Permittees in response to unforeseen circumstances other than those agreed to elsewhere in the HCP or without the consent of the Permittees.

As described in the No Surprises Rule, it is the USFWS's responsibility to demonstrate the existence of unforeseen circumstances using the best scientific and commercial data available. The Federal No Surprises Rule does not limit or constrain the USFWS, or any Federal, State, local, or tribal government agency or private entity from taking additional actions at its own expense to protect or conserve covered species. The Federal No Surprises Rule also does not prevent USFWS from asking the Permittees to voluntarily undertake additional mitigation on behalf of the affected species.

8.1.2 Assurances from California Department of Fish and Wildlife

Authorization for take under the CESA is required for all State-listed species and cannot be extended to species which are not listed under the CESA. Within the Plan Area, species for which take authorization is required are sand gilia, seaside bird's beak, and California tiger salamander. A significant amount of the habitat conservation which would be affected to offset impacts to the CESA HCP species will take place on Federal lands, while most of the impacts will take place on State and private lands. As neither FORA nor CDFW have authority over land use and management of Federal

lands, Conditions for permitting by CDFW may include a Memorandum of Agreement in addition to the financial assurances that ensure a stream of income to fund an endowment for management and monitoring.

8.1.2.1 Permit Suspension and Revocation Dialogue

For so long as the parties implement and adhere to this HCP and State incidental permit (ITP), CDFW shall dialogue with the Permittees regarding State permit suspension or revocation in advance of actions. Potential conditions warranting dialogue may include changed circumstances such as: earthquakes, listing of a new species within the Plan Area, global climate change, catastrophic fire, coastal erosion, and invasion by new non-native invasive species or disease, as well as jeopardy of species, unforeseen circumstances, and severe habitat fragmentation.

It is recognized that all Permittees are jointly and severally liable for performance of all terms, conditions and obligations of the ITP. A failure to comply by one or more Permittees shall be deemed a failure to comply by all Permittees.

These dialogues may include, development of additional mitigation, commitments of additional land, or financial compensation for impacts on HCP species. If CDFW determines that such conditions warrant dialogue, it shall communicate through the Cooperative the possibility of ITP suspension or revocation.

8.1.2.2 Future Listings

CDFW cannot provide take coverage, or guarantee take coverage in the future, for non-listed species. With regard to future listings of non-listed species, CDFW will need to review the information when it is submitted as an application and make an independent determination as to completeness. Furthermore, the decision to issue an ITP would rest on whether the application, and all supporting documents and assurances, meet permit issuance criteria of CESA for that species at the time of issuance.

8.1.2.3 Permit Issuance

Following the approval of this HCP and related documents (e.g., CEQA compliance document), CDFW expects to issue a Section 2081 permit to the Permittees authorizing the incidental take of each covered species incidental to covered activities, subject to and in accordance with the HCP. The Section 2081 permit shall become effective as to only those HCP species listed as candidate, threatened, or endangered under the CESA at the time of permit issuance. The HCP is expected to be adequate documentation to support an application for any future Section 2081 permit for an HCP species that may be listed under CESA in the future. However, CDFW may include additional measures and mitigation in order to meet its own permit issuance criteria.

8.1.2.4 Previous Permits

Conditions of previous, project-specific Section 2081 Permits issued within the Plan Area shall remain in full effect to the extent that ground-disturbing activities have occurred within the project areas occupied by State-listed species and to the extent that any other take of State-listed species in the project area has occurred prior to CDFW issuance of a Section 2081 permit for this HCP. Where no take, or limited take, has occurred under previous, project-specific Section 2081 permits, the permittee(s) may elect to obtain take authorization under this HCP and State ITP in lieu of the

project-specific permit. Upon written notice to CDFW, the permittee(s) will have no further obligations to comply with the conditions of the project-specific permit(s), other than to mitigate for take that has occurred under the project-specific permit, and CDFW shall release any security, endowment principal, and contingency funds that it received from Permittee and still holds, other than that which is necessary to mitigate for take that has occurred under the project-specific permit.

8.1.3 Assurances from Both U.S. Fish and Wildlife Service and California Department of Fish and Wildlife

8.1.3.1 Take Authorization Assurances

All covered activities described in the HCP will receive take authorization according to the procedures and requirements described in the HCP. Take authorization is granted under a single non-severable permit issued by USFWS and a second single non-severable permit issued by CDFW. If the Wildlife Agencies suspend or revoke their respective permit, the Permittee's take authorization would also be suspended or revoked. As such, for projects conducted by third party participants under the jurisdiction of one of the Permittees, take authorization for that covered activity will be revoked if the permit issued by the Wildlife Agencies to the Permittee is suspended or revoked. (See Section 9.3.5.4, *Permit Suspension and Funding*, for more information.)

8.1.3.2 Response Times

Wildlife Agencies and the Permittees shall use reasonable efforts to respond to written requests from one another within 45 days. The Wildlife Agencies and the Permittees acknowledge, however, that Cities, County, and MCWD are subject to the Permit Streamlining Act (California Government Code Section 65920 *et seq.*) and that nothing shall be construed to require any Permittee having jurisdiction over a "development project" within the meaning of the Streamlining Act to violate the Act. In addition, Wildlife Agencies will provide timely review of proposals for covered activities to be implemented directly by the Permittees, where such review is required by the HCP or the permits.

8.2 BLM Assurances to Permittees

The BLM is guided by land management decisions prepared under the authority of FLPMA 43 USC 1701, *et seq.* and NEPA 42 USC 4321 *et seq.*, not by habitat conservation plans prepared by other jurisdictions under the authority of the ESA, 16 USC 1531 *et seq.*, to undertake public land management actions on public lands. Usually the BLM follows a three-tiered planning approach that includes resource management plans, activity-level plans, and individual project implementation plans.

The HCP was developed in support of applications for ITPs by several local jurisdictions, UC, FORA, State Parks, County of Monterey, CSUMB, Monterey Peninsula College, Monterey Peninsula Regional Park District, and MCWD. It covers listed species that may potentially occur within the Permittees' jurisdictions and on former Fort Ord lands, including the Fort Ord lands transferred to BLM. Future management, monitoring, and restoration of the Fort Ord lands transferred to BLM is an important element of the conservation strategy of the HCP, including the mitigation strategy which will offset

development impacts by private parties. BLM has been an active participant in HCP development to ensure that the transferred Fort Ord lands component of the HCP is consistent with their RMP and is compatible with BLM's governing statutory and regulatory authorities, including the FLPMA 43 USC 1701 et seq.

BLM is not a Permittee but will still manage the majority of inland habitat on the former base. For a full explanation, Section 1.9.3, *Role of Bureau of Land Management*.

8.3 Permittee Assurances

The Permittees, as members of the Cooperative, will establish long-term funding sources adequate to carry out their obligations under the HCP (see Section 9.3, *Funding Sources and Assurances* for a full description).

Development within the Plan Area that would result in take of HCP species or disturbance to their habitats will proceed in conformance with the HCP "stay ahead provision" to ensure that incidental take of HCP species is roughly proportional to the implementation of the HCP's conservation strategy (see Chapter 5, *Conservation Strategy*, and Chapter 7, *HCP Implementation*).

The Cooperative, its member agencies, and other participating entities shall implement, maintain, adhere to, and enforce the specific land use restrictions and other mitigation requirements and management and monitoring programs necessary and appropriate to implement the HCP. Where appropriate, the Cooperative and member agencies shall exercise their land use authority through the adoption of ordinances, general plan amendments, or zoning designations to ensure that this HCP is fully implemented.

The Permittees will be responsible for implementing remedial measures in response to any changed circumstances, as described above, or in accordance with the adaptive management program (Chapter 6). The Permittees will address unforeseen circumstances in collaboration with USFWS and CDFW as described above, and adaptive management, as described in Chapter 6.

8.4 Minor and Major Amendments

The HCP or Section 2081 permit can be modified in accordance with USFWS and CDFW regulations and the terms and conditions of the permits and any associated documents (e.g., NEPA/CEQA documents). HCP modifications are not anticipated to be made on a regular basis. Modifications can be requested by a Permittee or by USFWS or CDFW. The categories of modification are minor amendments and major amendments.

8.4.1 Minor Amendments

Minor amendments are changes that do not affect the scope of the HCP's impact and conservation strategy, change the amount of take, add new species, and change significantly the Plan Area. Examples of minor amendments include correction of spelling errors or minor corrections in boundary descriptions. Minor amendments do not require an amendment to the permits, but they do require pre-approval by USFWS and CDFW before being implemented. Examples of minor modifications are listed below.

- Corrections of errors in the HCP that do not change the intended meaning or obligations.
- Day-to-day implementation decisions, such as modifying prescribed burn schedules.
- Modifying the design of existing research or implementing new research.
- Conducting additional monitoring surveys using available, budgeted financial resources.
- Modifying HCP monitoring protocols to align with USFWS and CDFW monitoring protocols as they may be modified in the future.
- Adopting new monitoring protocols that may be promulgated by USFWS and CDFW in the future.
- Annual adjustments to the habitat management assessment fee to keep pace with the inflation of land values.
- Changes to the membership of the Governing Board, the TAC, science advisors, or any advisory committees to the Cooperative or TAC without changing the representation of the Permittees, agencies, or organizations.
- Updates to habitat mapping or to species occurrence data that are consistent with the predications and expectations of the HCP.
- Minor changes to survey or monitoring to align with Wildlife Agency monitoring protocols as they may be modified in the future.
- Minor modification of monitoring protocols for HCP effectiveness not in response to changes in standardized monitoring protocols from USFWS or CDFW.
- Minor modification of existing or adoption of additional mitigation measures that improve the likelihood of achieving HCP species objectives.
- Modification of existing or adoption of new performance indicators or standards if results of monitoring and research, or new information developed by others, indicate that the initial performance indicators or standards are inappropriate measures of success of the applicable mitigation measures.
- Minor changes to the reporting protocol.

Any Permittee may propose minor amendments to the HCP by providing notice to all other Permittees and the Cooperative. Such notice shall include a statement of the reason for the proposed modification and an analysis of its environmental effects, including its effects on operations under the HCP and on HCP species. All minor amendments must first be reviewed by the Cooperative and through the TAC in a regular (or special) meeting. Proposed minor amendments will become effective upon all Permittees' and Wildlife Agencies' local field office written approval. The Permittees will use best efforts to respond to proposed minor amendments within 60 days of receipt of such notice. If a Permittee objects to a proposed modification, the modification must be processed as an amendment of the permits. To modify the HCP without amending the permits, the Cooperative will submit to Wildlife Agencies a written description of the proposed change and an explanation of why its effects are not believed to be significantly different from those described in the original HCP. If USFWS and CDFW concur with the proposal, they will authorize the HCP modification in writing, and the modification shall be considered effective on the date of USFWS and CDFW's written authorization.

8.4.2 Major Amendments

Major amendments to the HCP and permit are changes that do affect the scope of the HCP and conservation strategy, increase the amount of take, add new species, or change significantly the Plan Area. Major amendments often require amendments to the Wildlife Agencies' decision documents, including the NEPA and/or CEQA document, permit, the biological opinion, and findings and recommendations document. Major amendments will often require additional public review and comment. The Cooperative Governing Board shall submit a major amendment request to USFWS and CDFW in a report that includes a description of the need for the amendment, an assessment of its impacts, any alternatives by which the objectives of the proposal might be achieved, and certification that the Permittees are currently in permit compliance.

Examples of changes that would require a major amendment include but are not limited to those listed below.

- Revisions of the development area boundaries that do not qualify for a minor modification.
- Addition of species to the HCP covered species list.
- Increasing the allowable take limits as a result of existing covered activities or adding new covered activities to the HCP.
- Modifications of any important action or component of the conservation strategy under the HCP, including funding, that may substantially affect levels of authorized take, effects of the covered activities, or the nature or scope of the conservation program. This includes outcome of the Army's base-wide Comprehensive Environmental Response Compensation and Liability Act (CERCLA) process that could affect the HCP, NEPA compliance, and issuance of ITPs. While this is a Federal process, the outcome of the CERCLA process could result in a conservation strategy or natural resource management scenario which is significantly different from that identified in the HCP.
- A major change in performance standards if monitoring or research indicates that performance standards are not attainable because technologies to attain them are either unavailable or infeasible.

8.4.3 Permit Term Extension

Extending the permit term beyond 50 years may be a minor or major amendment. A permit term extension would be considered a minor amendment if there is no change to the covered activities, scope of conservation strategy, or the take amount. A permit term extension would be considered a major amendment if those criteria were not met. The Permittees would follow the minor or major amendment process, in consultation with the Wildlife Agencies, depending on the circumstances of the permit term extension.

8.4.4 Amending the Section 10(a)(1)(B) and Section 2081 Permits

To amend the Section 10(a)(1)(B) permit, the Permittees, through the Cooperative Governing Board, will submit formal application(s) to USFWS. These applications must include the revised portions of the HCP, a permit application form, any required fees, and the required compliance document under NEPA. The appropriate NEPA compliance process and document will depend on the nature of the

amendment being proposed. Upon submission of a completed application package, USFWS will publish a notice of the proposed application in the Federal Register, initiating the NEPA and HCP review process. After public comment, USFWS may approve or deny the permit amendment application based on permit issuance criteria, as reflected in the Service's regulations then in effect.

To amend the Section 2081 permit, the Permittees, through the Cooperative Governing Board, will submit an application and supporting information to CDFW. Minor permit amendments would be approved and incorporated into the ITP, or denied, by CDFW within 60 days of the submission of an application for amendment. If CDFW approves a minor permit amendment, CDFW would not impose any new permit condition or modify any existing permit condition except when the new or modified condition:

- Relates solely to the minor permit amendment.
- Is required by changes in the law.
- Is needed to make existing permit conditions consistent with the proposed amendment.

Requests for major permit amendments would be reviewed according to the process established for initial permit applications, except that the information and analysis provided in support of an application for a major permit amendment may rely on and supplement the information and analysis used in the initial permit application. CDFW would approve any minor or major permit amendment if the amended permit would continue to meet the standards in section 783.4.

This chapter provides a planning-level cost estimate for HCP implementation and identifies all necessary funds to pay for implementation. The chapter first describes each of the cost categories and the general assumptions used to estimate HCP implementation costs. The chapter then describes HCP funding sources, management, and assurances.

9.1 Cost Overview

The cost analysis was based on a number of assumptions regarding HCP implementation and the unit cost of many cost items. Each of the cost items identified in the cost model and discussed in this chapter are assumed to be needed to meet HCP required actions and maintain permit compliance. As part of the annual report, the Cooperative will provide an evaluation of the economic assumptions described in this chapter (Section 7.9.3, *Reporting*).

Unit cost estimates were based on the best available information and represent average unit costs over the permit term. The costs of individual items will fluctuate above and below these averages. The total cost presented herein is an estimate based on 2007 dollars. The cost presented herein should be regarded as a planning-level estimate of what is believed to be necessary to fully implement the HCP. The Consumer Price Index (CPI) for the San Francisco-Oakland-San Jose Metropolitan Service Area from the U.S. Bureau of Labor Statistics was used to adjust all costs to 2018 dollars.

HCP costs were divided into six major cost categories.

- Program Administration.
- Habitat Restoration.
- HMA Management and Maintenance.
- Monitoring, Research, and Adaptive Management.
- Budget Contingency.
- Contingency and Remedial Measures.

Some cost elements are split between categories or assigned a single category for simplicity; for example, Cooperative staff salaries are summarized in one table, but this cost appears in several categories because staff will perform a variety of functions. All costs are mutually exclusive and are only accounted for once within the cost model.

Each cost category is divided into capital and operational costs. Capital costs are typically one-time costs for equipment or structures. Operational costs are ongoing costs such as staff salaries and contractor fees. In order to provide an overview of HCP costs, a series of summary tables were developed. These tables are based on the cost model for this HCP described in Section 9.2, *Cost Estimate Methodology, Assumptions, and Results*, and found in Appendix M.

Table 9-1a summarizes implementation costs in terms of start-up, implementation period, and post-permit term costs for five categories. Each cost was calculated as an annual value (Appendix M). The start-up costs are those costs expected to occur within the first 2 years of HCP implementation. Implementation period costs are summarized in 10-year periods (except for the first period, which is 8 years). The average annual cost was calculated by summing implementation period costs and taking the average. The total cost over the permit term is the total assumed cost of HCP implementation during the permit term. Annual post-permit term costs are those costs expected to occur in perpetuity for covered species habitat management and monitoring (Section 9.3.4, *Funding Adequacy*, discusses post-permit term funding). Actual costs over the permit and post-permit term may differ from the cost analysis due to variations in estimated labor costs, materials costs, and phased management of HMAs consistent with the stay-ahead provision (Section 7.6, *Stay-Ahead Provision*).

The total cost for the non-Federal area of the HCP plan is estimated at \$119,891,275 over the 50-year permit term. Annual average costs are estimated to be \$2,552,331 over the permit term. Post-permit costs are expected to be \$1,406,238 annually. Additional costs related to BLM management pursuant to the State permit are discussed in Section 9.4, *BLM Cost and Funding*.

Table 9-2 summarizes the average annual cost for State Parks, UC/NRS, and the Cooperative. The cost model splits each cost item among these entities. The table reflects the Cooperative's responsibility to bear the cost of base-wide monitoring. Each management entity reviewed the cost items identified in the cost model and verified their HCP-related costs.

Table 9-3 identifies the average annual costs for HMAs owned by Monterey County, City of Marina, MPC, and MPRPD that will be managed by the Cooperative. These costs were determined by applying the Cooperative's per acre management costs across the HMAs for which the Cooperative is responsible for management. Monitoring costs were excluded as the Cooperative is responsible for funding and implementing monitoring on all HMAs.

Table 9-4 identifies the start-up costs for State Parks, UC/NRS, and the Cooperative. The start-up costs are one-time costs expected to occur within the first 2 years of HCP implementation. Start-up costs are reported as average annual costs during the first 2 years of HCP implementation.

Table 9-5a identifies the post-permit term costs for State Parks, UC/NRS, and the Cooperative (see Section 9.2.2, *HCP Required Action Costs in Perpetuity*). Post-permit term costs are assumed to be lower than costs during the permit term for a number of reasons. Restoration and associated remedial measures will be completed during the permit term. Staffing can be reduced post-permit because restoration and development reviews will no longer be required. In addition, monitoring frequency is decreased post-permit term because the focus will shift from achieving the biological goals and objectives to maintaining the success outcomes.

Table 9-1a. Cost Summary

Cost Category	Start-Up (Years)	Implementation Period (Years)					Average Annual Cost (excludes start-up costs)	% of total costs	Total Cost over Permit Term	Annual Post- Permit Term Costs
	0-2	1-10	11-20 ^a	21-30	31-40	41-50				
Capital Costs										
Program Administration	\$64,999	\$466,397	\$466,397	\$466,397	\$466,397	\$466,397	\$46,640	1.8%	\$2,331,985	\$13,546
Habitat Restoration	\$-	\$2,217,508	\$762,787	\$-	\$-	\$-	\$59,606	2%	\$2,980,295	\$-
HMA Management and Maintenance	\$1,227,465	\$498,350	\$498,350	\$498,350	\$498,350	\$498,350	\$49,835	2%	\$2,491,750	\$35,195
Monitoring, Research, & Adapt. Mgmt.	\$-	\$-	\$-	\$-	\$-	\$-	\$-	0%	\$-	\$-
Restoration Contingency	\$-	\$661,945	\$661,945	\$-	\$-	\$-	\$26,478	1%	\$1,323,890	\$-
Capital Cost Total	\$1,292,464	\$3,844,200	\$2,389,479	\$964,747	\$964,747	\$964,747	\$182,558	7%	\$10,420,383	\$48,741
Operational Costs ^b										
Program Administration	\$110,168	\$5,067,407	\$5,067,407	\$5,161,047	\$5,161,047	\$5,161,047	\$512,359	20%	\$25,617,957	\$271,632
Habitat Restoration	\$-	\$1,390,956	\$400,175	\$-	\$-	\$-	\$35,823	1%	\$1,791,132	\$
HMA Management and Maintenance	\$-	\$8,781,967	\$8,781,967	\$9,572,022	\$9,638,340	\$9,505,092	\$925,588	36%	\$46,279,388	\$915,298
Mon, Research, & Adapt. Mgmt.	\$-	\$4,815,200	\$4,304,871	\$4,304,871	\$4,386,621	\$4,339,405	\$443,019	17%	\$22,150,969	\$160,579
Budget Contingency	\$-	\$945,194	\$945,194	\$945,194	\$945,194	\$945,194	\$94,519	4%	\$4,725,969	\$9,989
Remedial Measures (changed circumstances)	\$-	\$1,759,062	\$1,759,062	\$1,759,062	\$1,759,062	\$1,759,062	\$175,906	7%	\$8,795,309	\$-
Operational Cost Total	\$110,168	\$22,759,786	\$21,258,676	\$21,742,197	\$21,890,265	\$21,709,800	\$2,187,214	86%	\$109,470,892	\$1,357,498

Cost Category	Start-Up (Years)	Implementation Period (Years)					Average Annual Cost (excludes start-up costs)	% of total costs	Total Cost over Permit Term	Annual Post- Permit Term Costs
	0-2	1-10	11-20 ^a	21-30	31-40	41-50				
Total Costs										
Program Administration and Reporting Requirements	\$175,167	\$5,533,804	\$5,533,804	\$5,627,444	\$5,627,444	\$5,627,444	\$558,999	22%	\$27,949,942	\$285,177
Habitat Restoration	\$-	\$3,608,464	\$1,162,963	\$-	\$-	\$-	\$95,429	4%	\$4,771,427	\$-
HMA Management and Maintenance	\$1,227,465	\$9,280,317	\$9,280,317	\$10,070,372	\$10,136,690	\$10,003,442	\$975,423	38%	\$48,771,138	\$950,493
Monitoring, Research, and Adaptive Management	\$-	\$4,815,200	\$4,304,871	\$4,304,871	\$4,386,621	\$4,339,405	\$443,019	17%	\$22,150,969	\$160,579
Budget Contingency	\$-	\$1,607,139	\$1,607,139	\$945,194	\$945,194	\$945,194	\$120,997	5%	\$6,049,858	\$-
Contingency and Remedial Measures [a]	\$-	\$5,603,262	\$4,148,541	\$2,723,809	\$2,723,809	\$2,723,809	\$358,465	14%	\$10,119,199	\$9,989
Grand Total	\$1,402,631	\$26,603,986	\$23,648,155	\$22,706,944	\$22,855,012	\$22,674,547	\$2,552,331	100%	\$119,891,275	\$1,406,238

^a Restoration will be completed within the first 20 years of the permit term. As such, money will be set aside on annual basis in the amount of \$487,590 in the first 20 years of the permit term and \$272,381 during Years 21 through 50 to fund remedial measures.

^b Operational costs increase between Years 10 and 20 and Years 20 and 30 due to the beginning of the prescribed burn management.

Table 9-2. Average Annual Costs by Management Entity (excludes start-up costs)

Cost Category	Average Annual Cost during Permit Term			
	State Parks	UC/NRS	Cooperative	Total
Capital Costs				
Program Administration	\$2,085	\$8,134	\$36,420	\$46,639
Habitat Restoration	\$47,047	\$7,230	\$5,329	\$59,606
HMA Management and Maintenance	\$12,346	\$15,280	\$22,209	\$49,835
Monitoring, Research, and Adaptive Management	\$0	\$0	\$0	\$0
Restoration Contingency (first 20 years only)	\$24,861	\$1,084	\$799	\$26,745
<i>Capital Cost Total</i>	<i>\$86,339</i>	<i>\$31,729</i>	<i>\$64,758</i>	<i>\$182,826</i>
Operational Costs				
Program Administration	\$27,530	\$28,712	\$463,337	\$519,579
Habitat Restoration	\$35,823	\$0	\$0	\$35,823
HMA Management and Maintenance	\$349,882	\$205,652	\$370,053	\$925,588
Monitoring, Research, and Adaptive Management	\$0	\$0	\$443,019	\$443,019
Budget Contingency	\$18,871	\$11,718	\$63,820	\$94,409
Remedial Measures	\$0	\$0	\$175,906	\$175,906
<i>Operational Cost Total</i>	<i>\$432,106</i>	<i>\$246,083</i>	<i>\$1,516,136</i>	<i>\$2,194,325</i>
Total Costs				
Program Administration	\$29,615	\$36,847	\$499,757	\$566,219
Habitat Restoration	\$82,870	\$7,230	\$5,329	\$95,429
HMA Management and Maintenance	\$362,228	\$220,933	\$392,262	\$975,423
Monitoring, Research, and Adaptive Management	\$0	\$0	\$443,019	\$443,019
Budget Contingency	\$18,871	\$11,718	\$63,820	\$94,409
Contingency and Remedial Measures	\$24,861	\$1,084	\$176,706	\$202,651
Total Costs	\$518,445	\$277,812	\$1,580,893	\$2,377,150

Table 9-3. Permit Term Average Annual Costs for Cooperative-Managed HMAs (excludes start-up and monitoring costs)

Cost Category	Average Annual Cost				
	County	Marina	MPC	MPRPD	Total
Capital Costs					
Program Administration	\$29,136	\$3,642	\$3,278	\$364	\$36,420
Habitat Restoration	\$4,263	\$533	\$480	\$53	\$5,329
HMA Management and Maintenance	\$17,767	\$2,221	\$1,999	\$222	\$22,209
Restoration Contingency (first 20 years only)	\$640	\$80	\$72	\$8	\$799
Capital Cost Total	\$51,806	\$6,476	\$5,828	\$648	\$64,758
Operational Costs					
Program Administration	\$370,669	\$46,334	\$41,700	\$4,633	\$463,337
Habitat Restoration	\$0	\$0	\$0	\$0	\$0
HMA Management and Maintenance	\$296,043	\$37,005	\$33,305	\$3,701	\$370,053
Remedial Measures	\$140,725	\$17,591	\$15,832	\$1,759	\$175,906
Operational Cost Total	\$807,437	\$100,930	\$90,837	\$10,093	\$1,009,296
Total Costs					
Program Administration	\$399,805	\$49,976	\$44,978	\$4,998	\$499,757
Habitat Restoration	\$4,263	\$533	\$480	\$53	\$5,329
HMA Management and Maintenance	\$313,809	\$39,226	\$35,304	\$3,923	\$392,262
Contingency and Remedial Measures	\$141,364	\$17,671	\$15,904	\$1,767	\$176,706
Total Costs	\$859,243	\$107,405	\$96,665	\$10,741	\$1,074,054

Table 9-4. Average Annual Start-Up Costs by Management Entity

Cost Category	State Parks	UC/NRS	Cooperative	Total
Capital Costs				
Program Administration	\$0	\$72,298	\$102,869	\$175,167
Habitat Restoration	\$0	\$0	\$0	\$0
HMA Management and Maintenance	\$49,270	\$891,537	\$286,656	\$1,227,464
Monitoring, Research, and Adaptive Management	\$0	\$0	\$0	\$0
Remedial Measures	\$0	\$0	\$0	\$0
<i>Capital Cost Total</i>	<i>\$49,270</i>	<i>\$963,835</i>	<i>\$389,526</i>	<i>\$1,402,631</i>
Operational Costs				
Program Administration	\$0	\$55,084	\$55,084	\$110,168
Habitat Restoration	\$0	\$0	\$0	\$0
HMA Management and Maintenance	\$0	\$0	\$0	\$0
Monitoring, Research, and Adaptive Management	\$0	\$0	\$0	\$0
Contingency Measures	\$0	\$0	\$0	\$0
<i>Operational Cost Total</i>	<i>\$0</i>	<i>\$55,084</i>	<i>\$55,084</i>	<i>\$110,168</i>
Total Costs				
Program Administration	\$0	\$127,382	\$157,953	\$285,335
Habitat Restoration	\$0	\$0	\$0	\$0
HMA Management and Maintenance	\$49,270	\$891,537	\$286,656	\$1,227,464
Monitoring, Research, and Adaptive Management	\$0	\$0	\$0	\$0
Contingency and Remedial Measures	\$0	\$0	\$0	\$0
Total Costs	\$49,270	\$1,018,919	\$444,609	\$1,512,799

Table 9-5. Post-Permit Term Costs by Management Entity

Cost Category	Post-Permit Term Average Annual Costs			
	State Parks ^a	UC/NRS ^b	Cooperative ^c	Total
Capital Costs				
Program Administration	\$350	\$1,790	\$11,405	\$13,546
Habitat Restoration	\$0	\$0	\$0	\$0
HMA Management and Maintenance	\$12,346	\$11,623	\$11,226	\$35,195
Monitoring, Research, and Adaptive Management	\$0	\$0	\$0	\$0
Remedial Measures	\$0	\$0	\$0	\$0
<i>Capital Cost Total</i>	<i>\$12,697</i>	<i>\$13,413</i>	<i>\$22,631</i>	<i>\$48,741</i>
Operational Costs				
Program Administration	\$13,765	\$28,678	\$229,189	\$271,632
Habitat Restoration	\$0	\$0	\$0	\$0
HMA Management and Maintenance	\$349,882	\$190,688	\$374,728	\$915,298
Monitoring, Research, and Adaptive Management	\$0	\$0	\$154,435	\$154,435
Contingency Measures	\$0	\$0	\$9,989	\$9,989
<i>Operational Cost Total</i>	<i>\$363,647</i>	<i>\$219,366</i>	<i>\$768,341</i>	<i>\$1,351,354</i>
Total Costs				
Program Administration	\$14,115	\$30,468	\$240,594	\$285,177
Habitat Restoration	\$0	\$0	\$0	\$0
HMA Management and Maintenance	\$362,228	\$202,311	\$385,954	\$950,493
Monitoring, Research, and Adaptive Management	\$0	\$0	\$154,435	\$154,435
Contingency and Remedial Measures	\$0	\$0	\$9,989	\$9,989
Total Costs	\$376,344	\$232,779	\$790,972	\$1,400,095

^a Funding for State Parks activities will come from annual appropriations; however, the HCP Implementation Assurances Fund will ensure funding for HCP required actions in the event of a budget shortfall for State Parks. Table 9-10 identifies State Parks HCP required action costs. Full funding of the HCP Implementation Assurances Fund is anticipated to occur in Year 7 of the permit term; however, this is dependent on revenues received. The Cooperative will pay the annual HCP costs until the endowment amount is reached.

^b Funding for UC/NRS will come from CDF Special Taxes and be kept in a separate "UC/NRS Endowment." Full funding of the UC/NRS is anticipated to occur in Year 7 of the permit term.

^c Funding for Cooperative activities will come from CFD Special Taxes and be kept in the "Cooperative Endowment Fund." Full funding of the JPA activities is anticipated to occur in Year 7 of the permit term.

9.2 Cost Estimate Methodology, Assumptions, and Results

A cost estimate methodology was established to develop planning-level estimates of HCP implementation costs. The goal was to conservatively estimate all HCP implementation expenses over the permit term so that overall costs are not underestimated. A detailed, custom cost model was constructed using linked spreadsheets that allowed all HCP-required action cost categories to be defined independently (Appendix M). The model structure was refined and expanded from cost

models developed for four large, complex regional HCPs and NCCPs in California¹. The cost model was designed to provide a conservative estimate of the costs of all HCP-required actions to ensure that all predictable costs were accounted for and funded.

9.2.1 Permit Term HCP Required Action Costs

Costs for HCP required actions during the permit term are those costs essential for HCP implementation to remain in compliance with the permits. The following sections explain the assumptions used to develop these costs. See Appendix M for additional assumptions. Assumptions for post-permit term HCP costs are provided in Section 9.2.2, *HCP Required Action Costs in Perpetuity*.

9.2.1.1 Cost Assumptions Shared across Cost Categories

9.2.1.1.1 Staffing

Common assumptions were used to estimate staffing and salaries for implementation of HCP required actions. The number of staff, salaries, benefits, and the time needed to implement HCP required actions were used to determine HCP implementation staffing costs. The estimated staff cost is a portion of the annual salary based on the amount of time the staff is anticipated to spend on HCP required actions. A benefits multiplier was used to account for benefits such as health insurance, payroll taxes, training, and a retirement plan. A 25% benefits multiplier was used for all State Parks² and Cooperative staff. A 35% benefits multiplier was used for UC full-time staff and a 10% benefits multiplier was used for seasonal staff. The current status of the staff position (new hire versus existing staff), the number of personnel needed, and the percent of time dedicated to HCP required actions is identified in each of the HCP required action cost categories.

Insurance costs are an important part of program administration. Insurance costs are addressed in two categories: per employee per year, and per year for the entire HCP program. Employee insurance costs include worker's compensation, disability, life, and automobile insurance for all Cooperative employees. Insurance costs for the entire program include directors' and officers' insurance.

The Cooperative may elect to seek outside legal and financial assistance. Attorneys may be needed to interpret the HCP and Permits, draft or review agreements among the Permittees, or address unexpected legal issues. Outside legal advice on behalf of the Cooperative will enable the many Permittees to properly interpret and implement the Plan throughout the 50-year permit term. An average of 50 hours per year of attorney time is assumed for the HCP. Outside financial analysis assistance will also be periodically required to review the cost/revenue balance and ensure that the Community Facilities District (CFD) Special Tax rates are sufficient to cover HCP costs.

Appendix M provides additional staffing cost assumptions and calculations for each of the HCP required actions.

¹ The Lower Colorado River Multi-Species Conservation Plan (approved), the East Contra Costa County HCP/NCCP (approved), Santa Clara Valley Habitat Plan (approved), and the Placer County Conservation Plan (an in-process HCP/NCCP).

² State Parks staffing assumptions and costs are estimates only, and these numbers can, and in all likelihood will, fluctuate above, but most likely below, the averages represented. Fluctuations in budget allocations, staffing, hiring freezes all come into play and will influence the cost estimate numbers given for State Parks.

9.2.1.1.2 Contingency

Unexpected costs may arise even though conservative cost estimates were used to develop the HCP required action costs. A 5% contingency for HCP required action operational costs is included in the cost model, excluding changed circumstance costs, to address unexpected annual costs. (Changed circumstances are funded separately through other mechanisms.) This approach allows for funds to be available on a short-term basis to offset any HCP required action costs that are higher than predicted. If the 5% for HCP required action operational costs is not fully used in a given year, the remainder will accumulate to next year's Cooperative budget. The 5% assumption is modest because the overall cost estimate is already conservative; costs have been developed, in part, using actual costs by BLM and State Parks for the last several years.

9.2.1.2 Program Administration

Permit applicants developed cost assumptions based on HCP required program administration and reporting requirements. The HCP required program administration and reporting requirements are described in Chapter 7, *HCP Implementation*. Program administration and reporting requirements costs include staff time and overhead costs (e.g., facilities, equipment, vehicles). State Parks, UC/NRS, and FORA provided staff costs. This included the number of employees, percent time, and salary required to fulfill HCP required actions.

Program administration and reporting requirements can realize cost savings in a number of ways. These include sharing program administration costs across Permittees, or by partnering with existing land management agencies. Up to 12 mostly part-time program administration positions will be staffed by the Cooperative, State Parks, and UC/NRS. Collectively, these staff positions will fulfill the roles described in Chapter 7 necessary to administer the HCP. The staffing assumptions are listed below. Position status, number of staff, and percentage time dedicated to HCP permit required actions is indicated in the bulleted list below. Up to four new hires would be required.

- Executive Director-level staffing
 - Cooperative Program Administrator (current FORA staff member or new hire, 1 staff member, 50%).
 - State Parks District Superintendent (current staff, 1 staff member, 2%).
 - State Parks Sector Superintendent (current staff, 1 staff member, 2%).
 - UC/NRS Reserve Director (current staff, 1 staff member, 40%).
- Budget Analyst staffing
 - State Parks Budget Analyst (current staff, 1 staff member, 1%).
 - Cooperative Accounting Manager (current FORA staff member or new hire, 1 staff member, 30%).
- Grant Specialist and Conservation Planning staffing
 - State Parks Senior Park and Recreation Specialist (current staff, 1 staff member, 5%).
 - Senior Grant Specialist/Conservation Planner/GIS/Database Manager (current FORA staff member or new hire, 1 staff member, 100%).

- Assistant Grant Specialist/Conservation Planner/GIS/Database Manager (current FORA staff member or new hire, 1 staff member, 100%).
- IT-GIS/Database Management Support staffing
 - State Parks Database and GIS Specialist (current staff, 1 staff member, 2.5%).
- Administrative Personnel Support staffing
 - State Parks Administrative Assistant (current staff, 1 staff member, 2%).

Overhead costs include several cost components. Office space and utility costs include costs for leased office space, utility costs for owned and leased spaces, and maintenance of those spaces (i.e., janitorial, waste disposal). State Parks will house staff within existing owned facilities (at no cost to the HCP), while UC and the Cooperative will lease office space for HCP dedicated staff. FORA will house the employees of the Cooperative until it sunsets in 2020. Once FORA sunsets, the Cooperative will find its own office space. Office lease costs are estimated for UC/NRS for the entire permit term. Facilities costs are based on the area of office space that would be required to house the office of the Cooperative and UC/NRS and the cost per square foot per year to lease each office.

Office equipment is another overhead cost. General office equipment includes copy machines, an office telephone system, printers/scanners, publications, and digital cameras. GIS and database equipment include GIS/database servers, a digitizing table, a plotter, GIS software, and database software. The cost for employee-specific office equipment is included in this cost category only for the program administration employees. Office equipment purchased on a per-employee basis includes office furniture, office supplies, computers, cell phones, and portable radios.

Vehicle purchase, operation, and maintenance costs were also included as a program administration overhead cost. Vehicles purchased include 1 four-wheel drive sport utility vehicle (SUV) (non-luxury edition [LE]) and 1 four-wheel drive truck. Vehicle and fuel costs are based on the number of each type of vehicle purchased and retired during each 10-year period, the purchase price of each type of vehicle, and fuel and maintenance costs per each type of vehicle per year. Mileage allowance for program administration employees is based on a mileage allowance of an average of 10,000 miles per year and the current Internal Revenue Service (IRS) mileage rate. The mileage estimate is based on mileage covered by monitoring and habitat management distances for all the HMAs. Heavy equipment purchase or leasing is included in mitigation measure costs.

Appendix M provides additional program administration and reporting requirements cost assumptions and calculations for each of the HCP required actions. Based on these assumptions, program administration and reporting requirements implementation is estimated to average \$558,999 annually and \$27,949,942 total for the permit term (Table 9-1a).

9.2.1.3 Habitat Restoration

Mitigation measures require restoration of select natural communities. These include maritime chaparral/coastal scrub, coastal strand/dune, coast live oak woodland/savannah, grassland, riparian woodland/scrub and wetland/open water. For each natural community, restoration costs were developed for two 10-year periods based on the area of each land cover type that is estimated to be restored during that period. Key assumptions for the development of restoration costs include:

- All restoration is assumed to occur within the first 20 years of the permit term.

- HCP staff time and material habitat restoration costs include restoration site identification and prioritization and consultant or contractor oversight.
- State Parks will conduct separate environmental compliance for restoration projects on their land. Therefore, State Parks environmental compliance costs are included in this agencies' staff costs. The cost model accounts for the cost of environmental compliance on HMA lands not owned by State Parks. All environmental compliance costs are expected to be incurred during the permit term because they are associated with restoration projects.
- Consultants or contractors may be hired to construct restoration projects due to the specialized equipment, plant propagation, labor, and planting techniques required. In some cases, in-house restoration staff may be used to fulfill some or all of the consultant or contractor roles; however, consultant and contractor costs were included to provide a conservative estimate.
- Remedial measure costs for habitat restoration include the costs to replant restoration sites in the event that plantings fail. These costs are calculated as a percentage of the cost to construct an acre or linear foot for each land cover type. Remedial measures for restored land cover types are assumed to be unnecessary once the performance standards are met. The long-term management of these areas is accounted for as part of habitat management. The costs related to remedial measures are provided in Section 9.2.1.6, *Contingency and Remedial Measures (Changed Circumstances)*.

The following staff positions are assumed for restoration.

- State Parks Project Manager (current staff, 1 staff member, 75%).
- State Parks Field Staff (current staff, 2 staff members, 100% each).

Consultant or contractor time and materials costs were calculated from habitat-specific per acre restoration costs provided by BLM, State Parks, and through review of other HCPs. Costs are based on the estimated contract value for each type of contract work for each 10-year period.

Approximately 15 consultants/contractors will be hired during each 10-year period. Consultant or contractor time and material habitat restoration costs include the following.

- Restoration project design.
- Plans, specifications, and engineering documents development.
- Environmental compliance and permitting.
- Bid assistance.
- Pre-construction surveys.
- Construction associated with habitat restoration.
- Construction oversight and monitoring.
- Post-construction monitoring and maintenance.
- Remedial measures.

Appendix M provides additional cost assumptions and calculations. Based on these assumptions, restoration-related mitigation measure implementation is estimated to average \$95,429 annually and permit-term costs are estimated at \$4,771,427 (Table 9-1a).

9.2.1.4 HMA Management and Maintenance

HMA management and maintenance captures HCP-required mitigation measures, with the exception of those related to restoration and program administration. BLM, State Parks, and UC/NRS provided detailed input on mitigation measure costs for HMAs under their management. For each of their costs, per-acre estimates were determined and applied to the Cooperative-managed HMAs. FORA reviewed each of the cost items for accuracy.

Staff costs are the largest cost. UC/NRS and State Parks personnel will conduct the majority of mitigation measure implementation in the HMAs under their management. The Cooperative will hire their own staff or hire outside contractors to conduct mitigation measure implementation in the remaining HMAs. Mitigation measure implementation includes natural community restoration and enhancement and onsite assistance to and oversight of contractors. UC/NRS, State Parks, and the Cooperative will staff up to 12 positions to support HCP mitigation measure implementation.

- UC/NRS Reserve Manager (current staff, 1 staff member, 100%).
- UC/NRS Steward (current staff, 1 staff member, 100%).
- State Parks Preserve Manager (current staff, 1 staff member, 15%).
- State Parks Biologist (current staff, 1 staff member, 10%).
- State Parks Laborer (new hire, 1 staff member, 100%).
- State Parks Law Enforcement Ranger (new hire, 2 staff members, 80%).
- State Parks Supervising Law Enforcement Ranger (new hire, 1 staff member, 100%).
- State Parks Lifeguard (new hire, 1 staff member, 100%).
- Cooperative Contract Laborers (contractors, 3 staff members, 100%).

Field facility construction is a mitigation measure cost. For UC/NRS mitigation measure staff, their primary space is assumed to be a field facility. A field facility is a small building that will house workshop space, equipment, a manager's office, a shared office for field staff, a locker room, and restrooms. A field facility also includes secure covered parking for maintenance vehicles. The cost for constructing and maintaining the facility and parking area is included in this cost category.

Capital and operational costs for vehicles purchased or leased by State Parks, UC/NRS, and the Cooperative include the items listed below. The number of each vehicle assumed to be purchased is identified in parenthesis.

- Massey Ferguson tractor (1).
- Mower (1).
- Front loader with bucket (1).
- Tractor trailer (1).

Vehicle and fuel costs are based on the number of each type of vehicle purchased and retired during each 10-year period, the purchase price of each type of vehicle, and fuel and maintenance costs per each type of vehicle per year. Passenger vehicles (4 X 4) are included as HCP required program administration and reporting requirement costs (Section 9.2.1.2, *Program Administration*).

Maintenance equipment and materials costs are based on the estimated cost of equipment and materials in each 10-year period. Maintenance equipment and supplies include firefighting equipment, small tools, safety equipment, rain gear, small pumps, generators, saws, demolition hammers, cargo containers, water pipes, irrigation supplies, landscape plants, and lumber.

Appendix M provides additional cost assumptions and calculations. Based on these assumptions, HMA Management and Maintenance needed to perform mitigation measures is estimated to average \$975,423 annually and \$48,771,138 total for the permit term (Table 9-1a).

9.2.1.5 Monitoring, Research, and Adaptive Management

Cost assumptions were developed for HCP required monitoring measures and adaptive management. The HCP required monitoring measures and adaptive management are described in Chapter 6, *Monitoring and Adaptive Management*. Detailed monitoring protocols are provided in Appendix G and Appendix H. Unlike mitigation measure implementation, monitoring will commence once the permit term begins and when Army owned lands are transferred to the HMA recipient. This will allow for the adjusted baseline to be established as soon as possible. Monitoring measure and adaptive management implementation is only required within HMAs. Monitoring measure and adaptive management costs were developed at a base-wide level rather than for each HMA. For example, it was assumed that a single contractor would be hired to implement monitoring across all the HMAs rather than each HMA manager hiring its own contractor or doing its own monitoring. Proposed monitoring protocols (Appendix G and Appendix H) and the extent of HCP species within the HMAs (Appendix A) were used to estimate HCP required monitoring measure costs. All costs were reviewed by the Fort Ord Working Group for consistency.

Contractors will be hired to implement monitoring measures. Person-hour costs were estimated based on current species habitat baselines. Using the proposed monitoring protocols (Appendix G and Appendix H), personnel time plus reimbursable expenses (i.e., equipment, mileage, per diem) were estimated on a species-by-species basis for status and trends monitoring. Effectiveness monitoring was assumed to require an additional 10% of annual abundance sampling time and expenses. Appendix M provides additional monitoring and adaptive measure cost assumptions and calculations. Based on these assumptions, monitoring measure and adaptive management implementation is estimated to average \$443,019 annually and \$22,150,969 total for the permit term (Table 9-1a).

9.2.1.6 Contingency and Remedial Measures (Changed Circumstances)

The Contingency and Remedial Measures cost category includes funding for changed circumstances and restoration remedial measures. Changed circumstance cost assumptions were developed for the HCP required changed circumstance actions as described in Chapter 8. Changed circumstance costs are based on feasible on-the-ground actions identified for earthquake damage, catastrophic fire, coastal erosion, and invasion by new non-native invasive species or diseases. The cost of each of these items was estimated using costs developed for similar actions that occur during annual mitigation measure implementation. Because of the nature of changed circumstances, these costs are not expected to be incurred annually. Remedial measures for restored natural communities are assumed not to be needed once the performance standards are met. Because restoration projects are anticipated to be completed by Year 20 of the permit term, these costs were calculated as 15% of restoration staff costs plus 15% of restoration costs and were applied in the first three 10-year periods. This allows for performance standards to be met within the first 30 years of the permit

term. Appendix M provides additional cost assumptions and calculations for each of the HCP required actions. Based on these assumptions, changed circumstance action implementation is estimated to average \$358,465 annually and \$10,119,199 total for the permit term (Table 9-1a).

9.2.1.6.1 Climate Change Coastal Erosion Adaptation Program

In the case that coastal erosion removes a substantial amount of the coastal dune area that State Parks had targeted to restore or restored as HCP mitigation, State Parks and the Cooperative, in consultation with USFWS, will determine within 90 days what measures will be used to develop a Climate Change Coastal Erosion Adaptation Program (CCCEAP or similarly named program) to address the problem. The Cooperative will prepare the CCCEAP and will use contingency funds for developing the program and implementing it.

9.2.2 HCP Required Action Costs in Perpetuity

Costs in perpetuity are all Permittees' HCP required action costs that occur beyond the permit term. These costs were developed with input from the HMA managers regarding how costs are expected to change beyond the permit term. For example, HMA managers must continue to implement mitigation measures beyond the permit term to ensure that biological values are maintained. Similarly, monitoring must continue beyond the permit term to ensure that management actions are effective. However, the level of management and monitoring can be reduced after the permit term. It is assumed that the biological goals and objectives would have been reached, and it will take less effort, and thus cost, to maintain habitats and populations of species. For example, all habitat restoration costs will be incurred during the first 20 years of the 50-year permit term, therefore no post-permit term costs are projected. The number of staff needed for mitigation measure implementation, program administration, and reporting is expected to be reduced from 24 to 12 staff positions because of reduced program administration and restoration costs. For example, the Cooperative will no longer need to support the HCP concurrence process as take coverage will not be extended beyond the permit term. Appendix M provides additional cost assumptions and calculations for each of the HCP required actions. Based on these assumptions, HCP required action costs in perpetuity are estimated to average \$1,406,238, annually.

9.3 Funding Sources and Assurances

The cost of HCP required actions will be funded by a number of sources. The Permittees, through the implementation of the HCP and subject to the HCP JPA Agreement and the limitations of the Anti-Deficiency Act (Title 31 USC Sections 1341 and 1517), will commit to adequately funding all HCP required actions. Funding for HCP required actions will be provided from three primary sources: the CFD Special Tax, annual state budget appropriations, and federal budget appropriations. Other funding sources (e.g., grants) would also be available. With the exception of State Parks and MPRPD, no Permittee may be compelled to obligate its General Fund to satisfy its financial obligations under the HCP.

HCP funding sources will be used for HCP required action implementation during the permit term and in perpetuity. The CFD Special Tax will be used to annually fund HCP required actions and two separate endowment funds: the FONR Endowment Fund and the Cooperative Endowment Fund. The

Cooperative Endowment Fund will consist of three accounts: the HCP Fund, the Implementation Assurances Fund (IAF), and the Borderlands Fund.

The Cooperative Endowment Fund will pool its three accounts, accounting for each separately. The Cooperative Endowment Fund holder may reallocate funding between the three accounts as long as the principal necessary to achieve the determined annual payout rates is maintained in each account. Although the Cooperative Endowment Fund will pool its three accounts, the Cooperative shall perform accounting and reporting for each of its three accounts separately. The Cooperative will seek approval from and/or meet requirements of USFWS and CDFW to hold the Cooperative Endowment Fund.

All HCP-required costs, including all costs associated with the Federal and State Permits, will be funded annually by the Cooperative until the endowments are established. Annual budgets will be reviewed and approved by the Cooperative until the endowments are fully funded and paid directly rather than from the endowment. When the endowment is established, moneys disbursed from the endowments will be subject to review and approval by the Cooperative but then paid from the endowment.

Costs attributed to UC/NRS will be funded by the FONR Endowment Fund. HCP required actions, aside from monitoring, on State Parks-managed HMAs will be funded by their annual budget allocations during the permit term and in perpetuity. Costs attributed to the Cooperative will be funded by the HCP Fund. The IAF will provide funding assurances for State Parks, the Cooperative, and UC/NRS in the event of a budget shortfall or to address changed circumstances as identified in Chapter 8, *Assurances and HCP Amendments*. The Borderlands Fund will provide funding for implementation of AMMs on Borderlands associated with personnel, non-native invasive species control, fuelbreak maintenance, access control (e.g., fencing, locks, signs), and erosion control. Each of these endowment funds is described in more detail in the following sections.

A draft agreement between the Cooperative and BLM addressing reimbursement, HCP implementation, and cost sharing is included in Appendix N.

The following sections detail funding sources and how they will be managed to provide HCP funding assurances. Table 9-6 summarizes the costs and funding sources.

Table 9-6. Cost and Funding Sources

HCP Costs	Start-up Costs (Year 0–2)	Permit Term Costs (Year 1–10)	Average Annual Cost	Total Cost over Permit Term
Program Administration	\$285,335	\$5,533,804	\$558,999	\$27,949,942
Habitat Restoration	\$0	\$3,608,464	\$95,429	\$4,771,427
HMA Management and Maintenance	\$1,227,464	\$9,280,317	\$975,423	\$48,771,138
Monitoring, Research, and Adaptive Management	\$0	\$4,815,200	\$443,019	\$22,150,969
Budget Contingency	\$0	\$1,607,139	\$120,997	\$6,049,858
Contingency and Remedial Measures ^a	\$0	\$5,603,262	\$358,465	\$10,119,199
Total Costs (2017 dollars)	\$1,512,799	\$30,448,185	\$2,552,331	\$119,812,533
HCP Revenue	Current Fund Amount	Additional CFD Special Tax Payments	Average Annual Revenue	Total Revenue
<i>CFD Special Tax payments at Startup (Permit Issuance)</i>	\$15,979,149	n/a	n/a	\$15,979,149
CFD Special Tax payments from Years 1-10 ^b	\$0	\$34,931,532	\$1,501,021	\$15,050,212
Cooperative Endowment Fund (Years 11-50)	\$0	n/a	\$1,927,466	\$77,098,653
UC/NRS Endowment Fund (Years 11-50)	\$0	n/a	\$277,812	\$11,112,473
Total CFD Funding from Special Taxes	\$15,979,149	\$34,931,532	\$2,205,278	\$119,240,487
Annual Appropriations				
California Department of Parks and Recreation	n/a	n/a	\$518,445	\$25,922,262
Total Annual Appropriations	n/a	n/a	\$518,445	\$25,922,262
Total Revenue			\$2,723,723	\$145,162,749
<i>Revenue – Cost</i>			\$171,392	\$25,350,215
Notes:				
a This includes the IAF, which funds Changed Circumstances and 10% funding of State Parks core costs if a budget shortfall occurs.				
b The CFD Special Tax will continue to fund the HCP endowments until they reach their target amount; this is estimated to occur by Year 7 of the permit term. The Cooperative will pay the annual HCP costs until the endowment amount is reached.				

9.3.1 CFD Special Tax

On May 22, 2002, FORA recorded the FORA CFD Special Tax on former Fort Ord lands. FORA's Mello-Roos CFD allows FORA to collect special tax payments from development on former Fort Ord. As a CFD, annual special taxes can be collected to finance public improvements. The FORA CFD Special Tax was established on the former Fort Ord with the purpose of paying for certain base-wide improvements, including roadway improvements, transit improvements and vehicles, water and storm drain improvements, habitat management, other public facilities, public safety, and administrative expenses of the CFD. Special taxes are levied by the CFD on new development according to the CFD Special Tax rates in Table 9-7. A portion of the CFD Special Tax will be used to fund the HCP.

Table 9-7. Fort Ord Base-Wide CFD Special Tax and Estimated Funding for HCP

Property Classification	CFD Special Tax Rates Assessed per	Est. Development During Permit Term	CFD Special Tax Rates (as of July 1, 2019)	Est. CFD Special Tax Permit Term Payments	Potential Permit Term HCP Funding (A Portion, now 30.2% of the CFD)
New Residential	New unit	4,854	\$25,362	\$123,107,148	\$37,178,359
Existing Residential	New unit	71	\$7,622	\$541,162	\$163,431
Office	Acre	177	\$3,327	\$588,879	\$177,841
Industrial	Acre	81	\$3,327	\$269,487	\$81,385
Retail	Acre	70	\$68,555	\$4,798,850	\$1,449,253
Hotel	Room	1,342	\$5,655	\$7,589,010	\$2,291,881
Total				\$136,894,536	\$41,342,150

MCWD shall support FORA, Marina, Seaside, Del Rey Oaks, Monterey, and County to ensure that collection of the CFD Special Taxes, or an equivalent amount of replacement revenue, occurs on development located on MCWD's Fort Ord lands.

UC MBEST, MPC, and the Board of Trustees of California State University (on behalf of CSUMB) are state sovereign entities, which are generally not subject to local ordinances. UC MBEST has agreed to pay the CFD Special Tax for development on its property. MPC and CSUMB arrangements are described in Section 9.3.2, *Other Permittee Funding*.

In accordance with state law, a vote of the registered voters within the CFD is required to modify the CFD Special Tax rates; however, the rate structure has an automatic adjustment provision. The CFD Special Tax is revised on July 1 of each year by the FORA Board by either 5%, or by the Engineering News Record's Construction Cost Index (CCI)³ applicable to the area in which the former Fort Ord is located for the immediately preceding fiscal year, whichever is lower. Costs associated with the HCP are expected to increase proportional to the Consumer Price Index (CPI). The CFD Special Tax rates are tied to the CCI, which tends to increase faster than the CPI. Therefore, the increases in rates are

³ The CCI is a weighted aggregate index of the 20-city average prices of construction activities. It is used to adjust the rate up or down depending on construction costs.

expected to at least keep pace with, and more likely exceed, the increase in HCP costs expected due to inflation.

Funds generated by the FORA CFD Special Tax will be used to fund HCP required actions. The CFD Special Tax will be used to establish two separate endowments to ensure HCP implementation: the Cooperative Endowment Fund and the FONR Endowment Fund. CFD Special Tax payments will build these endowments until their target sizes are reached (Table 9-7). Costs borne by each fund are mutually exclusive of the other funds; however, moneys can be transferred from one fund to another to meet the HCP's biological goals and objectives, after approval by the Cooperative Governing Board. Once the HCP endowments have been fully funded, interest from these funds will be sufficient to cover all HCP required actions not funded by State Parks annual appropriations.

FORA will collect the CFD Special Tax to fund the HCP until its sunset. FORA is expected to sunset during the permit term. If the endowments are not fully funded by FORA's sunset, FORA's underlying jurisdictions⁴, County of Monterey, City of Marina, City of Seaside, City of Del Rey Oaks, and City of Monterey will collect the FORA CFD Special Tax or a replacement funding mechanism, meaning an alternative assessment or assessments, after FORA's sunset (June 30, 2020) to complete full funding of the HCP endowments.

The projected payments from the CFD Special Tax and/or a replacement funding mechanism will be sufficient to create the endowments given the expected pace of development (i.e., as development occurs the CFD Special Tax payments are collected). CFD Special Tax and/or a replacement funding mechanism payments will be directed to the endowment funds, plus the amount necessary to fulfill the HCP obligations consistent with the Stay-Ahead Provision. According to this structure, implementation of HCP required actions on the lands already transferred from the Army for habitat management will be funded as development occurs. Mitigation measure implementation will be scheduled as dictated by the results of baseline surveys and in accordance with the stay-ahead provision (Section 7.6, *Stay-Ahead Provision*).

The endowments must be fully funded by the end of the permit term, but they are estimated to be fully funded well before this deadline. Once the endowments are fully funded, only the endowment interest would be needed to fund HCP required actions. At that time, CFD Special Tax payments would no longer be allocated to the HCP.

Appendix O, which contains the memorandum "Habitat Conservation Plan Endowment Cash Flow Strategy," provides a detailed description of expected annual HCP CFD Special Tax payments, costs and cash flow performance by endowment fund based on historic performance.

The HCP JPA Agreement and Implementing Ordinances and Policies associated with this HCP ensures that the Permittees will continue to collect these payments after FORA's sunset.

9.3.1.1 Endowment Funds

The two endowments will be managed in accordance with the policies and regulations of the Wildlife Agencies. The funds are subject to separate management policies and regulations based on

⁴ These jurisdictions are also Permittees.

their function. The endowment funding strategy recognizes there are three primary time periods to be considered, defined as follows.

- Initial Start-Up.
- Permit Term (period of the 50-year permit term).
- Post-Permit Term (annually in perpetuity following expiration of the 50-year permit term).

The funding requirements for implementation of HCP required actions vary during each distinct time period. As a result, the funding strategy reflects the differing annual cash flow requirements for each of the endowment funds during the respective time periods. In general, the funding strategy relies on existing cash on hand and annual pay-as-you-go funding for initial costs and simultaneously builds each required endowment fund to pay for ongoing costs during the permit term and post-permit term (in perpetuity).

During initial start-up, cash on hand and CFD Special Tax payments will be used to fund start-up costs, initial annual costs, and each of the two endowments. Over the long term, the endowment cash flow strategy will be structured to fund annual costs during the permit term and develop an adequate funding reserve to cover annual post-permit costs in perpetuity. This approach will be carried out through two key mechanisms in the cash flow model.

- Endowment capitalization over time as FORA collects CFD Special Tax payments from new development. Within each fund, the inflows and outflows of cash will be managed to ensure that each fund reaches a level to generate sufficient interest earnings to cover annual costs during the post-permit term.
- Principal balance drawdown during the permit term. Because the ongoing costs for the FONR and Cooperative endowments decline during the post-permit phase, a principal drawdown mechanism will use a portion of the endowment principal to fund ongoing costs during later years of the permit term. This drawdown will occur until the ending balances reach the amount required to maintain each endowment fund in perpetuity during the post-permit term.

The Cooperative will select a financial institution to manage the Cooperative Endowment. CDFW will certify the payout rate for the selected financial institution. For planning purposes, an estimated payout rate of 4.5% is used for the Cooperative Endowment Fund in the HCP. After the CDFW certifies the actual payout rate for the selected financial institution, the certified payout rate will be used to set the Cooperative Endowment principal balance target.

The FONR Endowment Fund will be held by the Regents of UC in the General Endowment Pool (GEP). As of this writing, CDFW has certified UC's GEP to hold endowment funds such as the FONR Endowment Fund. The GEP provides diversification and economies of scale with a balanced portfolio containing equities, fixed-income securities, and alternative investments. Within the GEP, each endowment will be assigned a unique funding number to ensure the principal and annual pay-outs are tracked separately. The GEP has had an annualized net total return of 6.54% for the 10 years prior to June 30, 2008. The annual pay-out is based on the 3-year average market value of the GEP. The resulting annual pay-out is 4.2% of the principal. The pay-out is lower than the total return in order to prevent erosion of the principal due to inflation. As a result, this endowment can expect an annual pay-out of 4.2% of the principal.

A detailed description of how the CFD Special Tax will be held (i.e., the endowment holder), how they will be dispersed, and how funds will be prioritized prior to full endowment funding is

described in Appendix O, which contains the memorandum *Habitat Conservation Plan Endowment Cash Flow Strategy*.

9.3.1.1.1 Fort Ord Natural Reserve Endowment

Upon issuance of the HCP permits, FORA will provide funding for UC/NRS to establish the FONR Endowment Fund for HCP implementation on the FONR (Table 9-8). The endowment will fund all HCP-required measures, plus a 5% contingency for annual operating costs and a 15% contingency for HCP-required restoration occurring on FONR. The FONR endowment would be funded at the same relative rate as the HCP endowment.

Once fully funded, CFD Special Tax payments will no longer be used to fund annual FONR Endowment costs. Through the majority of the permit term, only interest from the endowment will be used. The FONR Endowment Fund will have an annual payout rate of 4.2% a year. The interest accumulated above 4.2% will be reinvested into the endowment fund to keep pace with inflation. In the final years of the permit term, interest and a portion of the endowment principal will be used. This principal draw-down is possible because average annual costs during the post-permit term will decline by an estimated 16%.

The UC Regents will be responsible for FONR Endowment Fund management. The UC Regents will be responsible for review and approval of the UC FONR's annual operating and capital budgets. As such, they will authorize expenditures from the FONR Endowment Fund.

9.3.1.1.2 Cooperative Endowment Fund

Upon issuance of the HCP Permits, FORA will establish and begin building the Cooperative Endowment Fund, consisting of three accounts: the HCP Fund, the IAF, and the Borderlands Fund. The HCP Fund will provide annual, capital, and start-up revenues to fully fund habitat management obligations on HMAs transferred to Monterey County, MPRPD, MPC, and the City of Marina (Table 9-8), fund costs associated with HCP reporting, and fund monitoring on all HMAs, regardless of ownership (i.e., including on BLM, State Parks, and UC/NRS lands). The HCP Fund also includes a 5% contingency for annual operating costs, plus a 15% contingency for HCP required restoration occurring on lands under its management. Money generated by the CFD to date (over \$15.9 million) and until the permits are issued will be used to establish the Cooperative Endowment Fund and FONR Endowment Fund.

Once fully funded, CFD Special Tax payments will no longer be used to fund annual Cooperative Endowment Fund costs. Through the majority of the permit term, only interest from the endowment will be used. The Cooperative Endowment Fund will have a target payout rate, or cap rate, of 4.5% a year. The Cooperative Endowment Fund would be invested with a higher cap rate than the FONR Endowment because, in this case, the Cooperative would select an institutional investor with a track record of achieving a cap rate of at least 4.5%, while the FONR Endowment would be invested in UC GEP with an average cap rate of at least 4.2%. The interest accumulated above 4.5% will be reinvested into the endowment fund to keep pace with inflation. In the final years of the permit term, interest and a portion of the endowment principal will be used. This principal draw-down provision is possible because average annual costs during the post-permit term will reduce by an estimated 47%.

Table 9-8. Permit Term and Post-Permit Funding Sources

Years 1–10 or until Endowments Fully Funded						
Capital Account	Annual Revenue (Years 1–2)	Annual Revenue (Years 8–10)	Balance to be maintained	Total over 10 Years		
HCP Funding	\$1,399,836	\$1,621,575		\$15,772,273		
UC/NRS	\$710,386	\$276,696		\$3,634,338		
State Parks Assurances			\$392,989	\$392,989		
Total				\$19,799,601		
	Permit Term			Post-Permit Term		
	Est. Amount to Fund Costs in Permit Term	Assumed Payout Rate	Annual Revenue Generated by Fund	Est. Fund at End of Permit Term	Assumed Payout Rate	Annual Revenue
Endowments/Special Assessment						
UC/NRS Endowment Fund	\$6,614,567	4.2%	\$277,812	\$5,542,353	4.2%	\$232,779
Cooperative Endowment Fund	\$42,832,585	4.5%	\$1,927,466	\$24,626,954	4.5%	\$1,108,213
HCP Endowment Fund	\$31,221,937	4.5%	\$1,404,987	\$17,355,178	4.5%	\$780,983
Borderland Endowment Fund	\$4,938,027	4.5%	\$222,211	\$4,938,027	4.5%	\$222,211
Implementation Assurances Fund	\$6,672,621	4.5%	\$300,268	\$2,333,749	4.5%	\$105,019
Remedial measures	\$3,909,026	4.5%	\$175,906			\$0
Additional FONM mitigations	\$2,095,050	4.5%	\$94,277	\$2,095,050	4.5%	\$94,277
State Parks	\$238,699	4.5%	\$10,741	\$238,699	4.5%	\$10,741
Contingency (5%)	\$429,846	4.5%	\$19,343			\$0
Total	\$49,447,152		\$2,205,278	\$30,169,306		\$1,340,992
Annual Appropriations						
California Department of Parks and Recreation	n/a	n/a	\$518,445	n/a	n/a	\$376,344
Grand Total			\$2,723,723			\$1,717,336

The Cooperative will be responsible for Cooperative Endowment Fund management. The Cooperative may establish cost-sharing and reimbursable agreements with one or more of the jurisdictions benefiting from the Cooperative Endowment Fund if these jurisdictions will be carrying out any of the HCP requirements on behalf of the Cooperative. The Cooperative Governing Board will be responsible for review and approval of the Cooperative annual operating and capital budgets. As such, they will authorize expenditures from the Cooperative Endowment Fund.

9.3.1.1.3 HCP Fund

The HCP Fund provides funding to implement habitat management obligations on HMAs transferred to non-Federal and non-State entities (Monterey County, MPRPD, MPC, and the City of Marina), complete HCP reporting requirements, and implement monitoring on all HMAs within the Plan Area. The HCP Fund will establish a 5% contingency for the Cooperative's annual operating costs, plus a 15% contingency for HCP required restoration occurring on lands under the Cooperative's management. The HCP fund, along with IAF and Borderlands Fund, comprise the Cooperative Endowment Fund, managed by the Cooperative.

9.3.1.1.4 Implementation Assurances Fund

The IAF will be created to fund changed circumstances, provide funding assurances for HCP required actions on State Parks' HMA, and fund additional mitigations on the Fort Ord National Monument (FONM). This includes funding changed circumstances required actions (included under remedial measures in Table 9-8) identified in Chapter 8, *Assurances and HCP Amendments*. A portion of the IAF will fund mitigations primarily on FONM in addition to BLM's regular habitat management activities to benefit HCP species. Such mitigations include aquatic habitat restoration, maritime chaparral habitat restoration, grassland restoration, invasive non-native species control, and other measures (Table 9-9). This fund would also serve to temporarily augment annual revenues for the HCP in the event that state appropriations decline unexpectedly. State Parks depends on annual appropriations and may experience years of funding shortfalls beyond their control. To address these possible and irregular shortfalls, the fund will include an amount equivalent to 10% of State Parks' HCP required actions/core cost (Table 9-10). However, this fund will not replace State Parks' budget entirely (Section 9.3.2, *Annual Appropriations*). The IAF will fund 10% of HCP required actions on State Parks' HMA and all changed circumstance required actions. California State law (Government Code section 65968 (b) (1)) requires that an endowment holder be one of the following: 1) the government agency that required the mitigation; 2) the government entity holding the land or having an interest in the land for conservation purposes; 3) the government entity holding the land after conveying a conservation easement. An exception to these requirements would be that a community-chartered foundation such as the National Fish and Wildlife Foundation (NFWF) could hold the endowment. Since State Parks is a member of the Cooperative governing board, the Cooperative may meet the requirements for an endowment holder. If not, the Cooperative board may need to take an action to transfer IAF funds to the NFWF to provide funding assurances for HCP required actions on State Parks' HMA.

Remedial actions required to meet biological goals and objectives are assumed to be costs related to adaptive management. These costs are funded by the HCP Endowment Fund rather than the IAF.

Table 9-9. Additional Mitigation Measures Primarily on FONM

Mitigation Measure (MM)	MM Description	Unit	Cost per Unit	Number of Units	Permit-Term Cost	Average Annual Cost
MM-5	Restore 15 acres of maritime chaparral	acre	\$24,099	10	\$240,992	\$4,820
MM-6	Augment prior maritime chaparral restoration	acre	\$6,885	30	\$206,565	\$4,131
MM-17	Enhance or restore grasslands	acre	\$9,640	15	\$144,595	\$2,892
MM-18	Restore East Garrison pond and 2 acres of aquatic CTS habitat	acre	\$175,580	3	\$526,740	\$10,535
	Environmental compliance for restoration	document	\$67,478	3	\$202,433	\$4,049
MM-27	Control hybrid CTS at East Garrison pond and 2 acres of aquatic CTS habitat	per hour	\$67	2,667	\$178,667	\$3,573
MM-29	Control noxious weed species	FTE per year	\$75,183	40	\$3,007,306	\$60,146
MM-38	Develop a Yadon's piperia translocation, propagation, and management plan	plan	\$206,565	1	\$206,565	\$4,131
Total					\$4,713,862	\$94,277

Table 9-10. State Parks Costs to be Funded by Implementation Assurances Fund

State Parks		AMM and Mitigation Measure Implementation Personnel		
Staff	Environmental Specialist	\$68,855	50	1-50
Staff	Biologist	\$13,771	50	1-50
Staff	Laborer	\$34,427	50	1-50
<i>Personnel total</i>		<i>\$117,053</i>		
State Parks	AMM and Mitigation Measure Implementation Tools, Materials & Contracts			
Equipment	Coastal strand and dune restoration	\$110,168	10	1-10
Equipment	Coastal Strand and dune maintenance	\$27,542	50	1-50
Equipment	Snowy plover predator control	\$20,656	50	1-50
Equipment	Snowy plover symbolic fencing	\$13,771	50	1-50
<i>Tools total</i>		<i>\$172,137</i>		
State Parks	Total Annual Costs			% of total
<i>Years 1-10</i>	Staff	\$117,053		40%
	Equipment	\$172,137		60%
<i>subtotal Years 1-10</i>		<i>\$289,191</i>	<i>10</i>	
<i>Years 11-50</i>	Staff	\$117,053		65%
	Equipment	\$61,969		35%
<i>subtotal Years 11-50</i>		<i>\$179,023</i>	<i>40</i>	
<i>State Parks total 50-year core cost</i>		<i>\$10,052,813</i>		

The Cooperative Governing Board will decide how funds will be dispersed and under what conditions the funds will be available to State Parks. The Cooperative Governing Board will disperse funds from the IAF in the case of a State Parks budget shortfall to ensure implementation of HCP required actions for permit compliance (Section 9.3.4.2, *Funding Assurances for Uncertain Federal and State Budget Allocations*).

To allow State Parks to receive funds from the IAF, the agency will establish a separate account dedicated to the HCP. Contributions made to the California State Treasury may be deposited in a State Park Contingent Fund for a specific purpose through the provisions of Public Resources Code Section 5009. FORA has provided funds to State Parks using this mechanism. As such, the Cooperative will use this financial mechanism to disperse funds from their capital account or IAF to assure HCP implementation on State Parks lands.

9.3.1.1.5 Borderlands Fund

The Cooperative will be responsible for the implementation of HCP required AMMs on the behalf of Monterey County, City of Marina, Monterey Peninsula College (MPC), the Board of Trustees of California State University (on behalf of CSUMB), UC, City of Seaside, City of Del Rey Oaks, City of Monterey, and Monterey Peninsula Regional Park District (MPRPD) within Borderland parcels as indicated in Table 5-3. A Borderlands Fund will be established to fund the implementation of these HCP required actions. The Borderlands Fund will be funded through the CFD Special Tax and negotiated payments from the Board of Trustees of California State University (on behalf of CSUMB). Annual costs that will be covered by the fund are estimated to be \$222,211 during the permit and

post-permit terms. These costs equate to over 10% of estimated annual costs that will be funded by the CFD Special Tax.

Once fully funded, only the interest from the fund will be used to fund annual costs. Since AMM implementation will be required in perpetuity, costs during the post-permit stage will be equal to those during the HCP permit period. Thus, the Borderlands Fund will be non-wasting. The Borderlands Fund will have a target payout rate of 4.5% a year. The interest accumulated above 4.5% will be reinvested into the fund to keep pace with inflation.

Table 9-11 identifies the total annual AMM costs and assumes that the Borderlands Fund will fund these costs. Flexibility in the program could allow other sources to fund annual AMM costs (e.g., developer funding sources) (see Section 9.3.3.1, *Funding for HCP Required AMMs on Borderlands*).

Table 9-11. Borderlands Costs and Funding

Planning Area/ Jurisdiction	Borderland Category	Borderland Length (miles)	% of Total Length	Annual Management Cost	Funding Mechanism
Monterey County					
Dev. Parcels	1	8.2	26.5%	\$58,969	CFD Special Tax payments will fully fund implementation of AMMs on Borderlands for which the Cooperative is responsible and/or institutional controls on Borderlands parcel(s) will obligate landowner/developer to implement the HCP required AMMs.
Dev. Parcels	2	4	12.9%	\$28,765	
HMA Parcels	2	4.9	15.9%	\$35,237	
County Total		17.1	55.3%	\$122,971	
UC MBEST					
Dev. Parcels	2	1.1	3.6%	\$7,910	CFD Special Tax payments will fully fund implementation of AMMs on Borderlands for which the Cooperative is responsible and/or institutional controls on Borderlands parcel(s) will obligate landowner/developer to implement the HCP required AMMs.
MPC					
Dev. Parcels	1	2.1	6.8%	\$15,102	CFD Special Tax payments will fully fund implementation of AMMs on Borderlands for which the Cooperative is responsible and/or institutional controls on Borderlands parcel(s) will obligate landowner/developer to implement the HCP required AMMs.
MOU	3	1.7	5.5%	\$12,225	
MPC Total		3.8	12.3%	\$27,327	
Board of Trustees of California State University (on behalf of CSUMB)					
Dev. Parcels	1	0.5	1.6%	\$3,596	CSUMB will fund its borderland costs through annual payments in accordance with the Stipulation to Discharge Peremptory Writ of Mandate Order among FORA, Marina, and CSUMB, dated September 14, 2009.
Dev. Parcels	2	1.6	5.2%	\$11,506	
CSUMB Total		2.1	6.8%	\$15,102	
City of Monterey					
Dev. Parcels	1	0.1	0.3%	\$719	CFD Special Tax payments will fully fund implementation of AMMs on Borderlands for which the Cooperative is responsible and/or institutional controls on Borderlands parcel(s) will obligate landowner/developer to implement the HCP required AMMs.
City of Del Rey Oaks					
Dev. Parcels	1	1.2	3.9%	\$8,630	CFD Special Tax payments will fully fund implementation of AMMs on Borderlands for which the Cooperative is responsible and/or institutional controls on Borderlands parcel(s) will obligate landowner/developer to implement the HCP required AMMs.
Dev. Parcels	2	.2	0.6%	\$1,438	
Del Rey Oaks Total		1.4	4.5%	\$10,068	

Planning Area/ Jurisdiction	Borderland Category	Borderland Length (miles)	% of Total Length	Annual Management Cost	Funding Mechanism
City of Marina					
Marina Total	2	2.5	8.1%	\$17,978	CFD Special Tax payments will fully fund implementation of AMMs on Borderlands for which the Cooperative is responsible and/or institutional controls on Borderlands parcel(s) will obligate landowner/developer to implement the HCP required AMMs.
City of Seaside					
Seaside Total	1	2.8	9.1%	\$20,136	CFD Special Tax payments will fully fund implementation of AMMs on Borderlands for which the Cooperative is responsible and/or institutional controls on Borderlands parcel(s) will obligate landowner/developer to implement the HCP required AMMs.
Total		30.9	100.00%	\$222,211	

9.3.2 Other Permittee Funding

Several Permittees are not expected to contribute CFD special taxes. For example, MPC and CSUMB are state sovereign entities, which are not subject to local ordinances. This section describes the funding commitment from MPRPD, MPC, and CSUMB.

MPRPD's one-time contribution of \$20,117 to the Cooperative Endowment Fund satisfies its funding commitment. MPRPD shall satisfy its habitat management funding obligations through this one-time monetary contribution of \$20,117.00 to the Cooperative within thirty (30) days after the final signature on the JPA Agreement.

MPC has agreed to make a negotiated payment to mitigate its regional development impacts. As provided in the Agreement Regarding Public Safety Officer Training Facilities among MPC, County, and FORA, dated October 14, 2003, MPC's share of the costs of infrastructure improvements was set at \$500,000.00, subject to adjustment for any deferred payment in accordance with adopted FORA practice. MPC shall pay its habitat management portion (30%) of its infrastructure improvement payment to FORA within thirty (30) days after the final signature on the JPA Agreement. After making its infrastructure improvement payment to FORA, MPC will have met its habitat management obligations with respect to funding of the Endowments, its Borderlands management obligations, and the Federal and State permits.

The Board of Trustees of California State University (on behalf of CSUMB) has agreed to request money from the State Legislature to make certain negotiated payments to FORA to mitigate regional educational-related development impacts. As provided in the Stipulation to Discharge Peremptory Writ of Mandate Order among FORA, Marina, and CSUMB, dated September 14, 2009, CSUMB shall request legislative funding to pay FORA a one-time payment of \$47,800.00 for HCP preparation costs plus \$4,784.91 annual payment to manage the CSUMB Borderland property. After FORA's dissolution, CSUMB shall make its \$4,784.91 annual payment to the Cooperative. CSUMB shall make its one-time payment of \$47,800 before June 30 of the first full fiscal year (July 1 to June 30) of the fifty (50) year Permit term. CSUMB shall make its annual payment of \$4,784.91 before June 30 of each fiscal year, commencing with the first full fiscal year of the Permit term. If the Legislature denies CSUMB's initial funding request, CSUMB shall: (a) resubmit, and exercise all reasonable efforts to diligently pursue, the request during the following CSUMB budget cycle, and (b) continue to resubmit, and exercise all reasonable efforts to diligently pursue, the request not less frequently than annually until the funding is appropriated or until the obligations of all Parties with respect to the HCP have been fully performed, whichever comes first. If the Legislature has not appropriated the funding at or before the time the HCP is executed by all other Parties, CSUMB shall seek, and exercise all reasonable efforts to diligently pursue, authority from the California State University Board of Trustees to engage in discussions with representatives of FORA and Marina regarding the availability of alternative funding sources, if any, for CSUMB's one-time payment of \$47,800.00 and its annual payments of \$4,784.91. To the extent funding is appropriated from the Legislature or provided through an agreed alternative funding source, FORA, and thereafter its successor agency, if any, shall allocate CSUMB's payments to reimburse HCP preparation costs and for management of CSUMB Borderlands property to the HCP Fund. With respect to the Federal Permit and the State Permit, CSUMB's payments to FORA will fulfill all of CSUMB's HCP funding obligations and Borderlands management obligations, pursuant to this HCP. CSUMB will not be subject to any additional fees including special assessments, taxes, or CFD Special Taxes. If the negotiated payments are not paid, then the take on CSUMB lands will not be allowed.

9.3.3 State Parks' Annual Appropriations

State Parks' HCP implementation costs will be funded by a portion of its annual appropriations, to the extent permissible under state law. State Parks' ability to fund their HMP requirements is documented in their annual reports submitted to the CRMP program and summarized below. HMP required activities are nearly equivalent to HCP required actions. Funds currently requested for HMP implementation would be sufficient for implementation of HCP required AMMs and mitigation measures on the State Park-owned HMA. State Parks has been funding predator controls, exotic plant control, access controls, and habitat restoration since receiving the property in 2007. It is expected that State Parks will receive sufficient annual funding to meet its HCP required actions. Once State Parks has HCP permit requirements, it will request funding to meet those permit requirements.

The State of California works within a July 1 through June 30 fiscal year and only approves budgets on an annual basis. Thus, specific monetary commitments are subject to approval through the annual budget process as defined by law and policy. Multi-year budgets are not usually granted unless there has been outside funding sources identified, such as grants. State Parks must receive authorization from the State of California legislature to apply for and accept grant funds. However, State Parks is committed to successful implementation of this HCP and will guarantee that it will annually request sufficient funding from the legislature to implement the HCP and fulfill the terms and commitments of the ITP.

State Parks employs full-time environmental scientists who are qualified and responsible to plan and perform natural resource management activities to preserve and protect the biological resources within Fort Ord Dunes State Park (FODSP). These environmental scientists will plan and perform the habitat management activities to meet HCP requirements. Additionally, State Parks rangers and maintenance staff will manage recreational use consistent with all rules and regulations. Environmental scientists will consult and/or contract with qualified experts as necessary to meet HCP requirements.

In conjunction with the annual monitoring report, State Parks will prepare an annual budget for the upcoming year's habitat management activities. The budget will account for State Parks' planned activities, including those related to completion of conservation measures anticipated during the upcoming year. The budget will project expenditures and funding for those expenditures. The budget and Annual Report will provide relevant information to show that State Parks is able to fulfill its financial HCP obligations. If State Park's funding for HCP conservation measures implementation is considered inadequate to meet HCP commitments or to implement the HCP, State Parks will consult with the USFWS and CDFW to decide what actions may be needed to meet permit conditions and/or avoid the risk of taking covered species. State Parks recognizes that failure to provide sufficient funding and consequent nonperformance in fulfilling its HCP responsibilities could result in temporary permit suspension or permit revocation.

State Parks' ability to implement HCP required actions depends on their annual appropriations. For State Parks, annual requests will follow a standard methodology involving analysis of budget line items comparing spending in prior years to future management obligations and funding, adjusted for inflation. The IAF will provide funding in years when there is a funding shortfall.

State Parks also has the potential to supplement its annual appropriations through grant funds for habitat restoration projects and work with local partners and volunteers. Since 1994, State Parks has received over \$700,000 for habitat restoration projects on FODSP, including the following.

- State Parks one-time \$100,000 grant from an anonymous donor for restoration projects (1994).
- Army mitigation payment of \$500,000 paid over 5 years for restoration projects (1997–2002).
- FORA one-time \$100,000 mitigation payment for sand dune restoration (2003).

State Parks costs to operate FODSP are estimated to be \$1.1 million per year including visitor services, maintenance, resource management, and interpretative programs. Future recreational facility and infrastructure development and operation of the park for overnight use (i.e., camping) (covered activities under the HCP) will involve additional costs. Of the operating cost, an average of \$518,445 per year will be allocated to fulfill HCP restoration and management requirements (Table 9-2, *Average Annual Costs by Management Entity*).

State Parks' financial or in-kind contributions to HCP implementation will be tracked in accordance with requirements of HCP compliance monitoring (Section 6.2, *HCP Compliance Monitoring*).

9.3.4 Other Funding Sources

9.3.4.1 Funding for HCP Required AMMs on Borderlands

A Borderlands Fund will be established to fund the implementation of select HCP required AMMs. These AMMs include those for which the Cooperative will be responsible for implementing on the behalf of Monterey County, City of Marina, MPC, the Board of Trustees of California State University (on behalf of CSUMB), UC, City of Seaside, City of Del Rey Oaks, City of Monterey, and MPRPD within Borderland parcels as indicated in Table 5-3 (Section 9.3.1.1.5, *Borderlands Fund*). Within Borderland parcels, the Cooperative will be responsible for implementation of AMMs related to invasive species control, erosion control, fuel break maintenance, and access control. The FORA CFD or replacement funding mechanism will be the primary funding source for the Cooperative's Borderland responsibilities. Permittees, or a project proponent, will be responsible for the funding and implementation of the remainder of the AMMs at the time of the implementation of the covered activity with which they are associated. Implementation of these AMMs would be assured during the evaluation process (Section 7.5, *Providing Take Authorization under the HCP*). These include AMMs related to development design elements, access control (through design), and fire-wise planning elements consistent with the HCP, as identified in Chapter 5, *Conservation Strategy*.

Table 9-11 identifies the costs associated with the implementation of AMMs on Borderlands and anticipated funding sources.

9.3.4.2 Revenue Bonds

Revenue bonds were used to fund base-wide HMP required habitat management activities and existing permit obligations (Table 1-3). In April 2002, the FORA Board issued \$1.3 million in revenue bonds to support base-wide habitat management activities. These funds have been fully expended and were used to pay for FORA's contractual obligation with UC Santa Cruz, to pay for UC to manage the FONR, to fund existing mitigation or permit requirements for road and other projects that preceded the HCP, and to fund the cost of preparing the HCP and its environmental document. Similar revenue bonds may be issued in the future to create or build the HCP endowments.

9.3.4.3 Grants

Federal, state, and local grants are expected to be a supplemental source of funding for the Fort Ord HCP, particularly for discrete projects such as habitat restoration. The Cooperative or any of the non-Federal Permittees can apply for local, state, or Federal grants. Although the revenue stream from grants is difficult to predict, State Parks has already demonstrated an ability to obtain grants and to partner with local groups that have received State Park funding. Based on this history of grants, the HCP cost may be supplemented by additional grants available to the Cooperative and its Permittees. Using a conservative assumption, additional grants may total \$50,000 per year for the first 10 years of implementation. However, costs associated with HCP required actions would be assured through CFD Special Tax payments used to fund the Cooperative Endowment Fund and the FONR Endowment Fund, not relying upon potential grant funding.

9.3.4.4 Volunteers

State Parks has made consistent use of volunteers on their lands to conduct focused conservation actions that would be required by the HCP. The following are examples of recent conservation actions that utilized volunteers heavily.

- Return of the Natives Project of CSUMB receives an annual \$5,000 grant from State Parks in return for volunteer labor and plant propagation for restoration projects that far exceed the value of the grant. CSUMB recently received a \$25,000 grant from the Coastal Conservancy to support their on-going restoration projects, which includes work on FODSP.
- Beach Gardens Project of the CNPS, Monterey Chapter received an annual \$5,000 grant from State Parks in return for similar services as provided by CSUMB. Using this grant and other funds, volunteers collect seeds, propagate and install plants, and remove invasive plants as part of ongoing restoration projects that include FODSP.

The use of volunteers is expected to supplement HCP funding because it provides free or low-cost labor. The cost estimate does not assume the use of volunteers, so any volunteer labor would be counted as a cost savings or funding source.

9.3.5 Funding Adequacy

Full funding of the two endowments is anticipated during the permit term (Table 9-12). This section further discusses the adequacy of HCP funding and the contingencies that are in place to ensure that the HCP is fully funded and implemented.

The endowment funding strategy provides funding assurances to CDFW and USFWS for HCP required actions during the HCP permit and post-permit terms. The endowments will be held in conservative fixed-income securities, providing a low-risk investment vehicle to fund HCP required actions in perpetuity. The CFD Special Tax is the primary funding source for the two endowments. Permittees, other than State Parks and MPRPD, will not incur fiscal liabilities to their General Funds. As stated above, MPRPD's one-time contribution of \$20,117 satisfies its funding commitment.

Moreover, the endowment funding strategy is designed to generate the required level of funding needed to cover permit-term and post-permit-term costs. The use of interest earnings and a principal drawdown reduces the CFD Special Tax revenue needed to fund annual endowment costs, as compared to a strategy that does not incorporate a principal drawdown feature.

Table 9-12. Endowment Funding Scenario

	Permit Term Year				
	2	4	6	8	9-10
Projected CFD Special Tax or replacement payments	\$40,707,348	\$45,863,804	\$21,293,368	\$13,842,796	n/a
30.2% to HCP	\$12,293,619	\$13,850,869	\$6,430,597	\$4,180,524	n/a
Annual HCP cost	\$(4,403,899)	\$(3,675,464)	\$(4,410,556)	\$(4,410,556)	n/a
Annual endowment payout at 4.5%	\$1,642,236	\$2,811,449	\$3,787,926	\$4,251,112	n/a
Amount added to Endowment	\$9,531,956	\$12,986,854	\$5,804,967	\$4,021,080	n/a
Total Endowment	\$27,402,528	\$40,389,382	\$46,194,349	\$49,447,152	\$49,447,152
Endowment target	\$49,447,152	\$49,447,152	\$49,447,152	\$49,447,152	\$49,447,152

Notes:

30.2% of the CFD Special Tax, or until funding targets obtained, is used to fund the HCP endowments. The Annual HCP cost in Years 0-2 include start-up costs and annual costs for UC and the Cooperative. The Annual HCP cost in Year 3 is limited to Cooperative and UC costs.

In addition, the endowment funding strategy includes several mechanisms to enable funds to be flexibly allocated to costs when they are needed:

- The allocated share of CFD Special Tax revenue for HCP required actions can be adjusted annually to reflect funding needs. For instance, if developers make nonmonetary commitments to implement HCP required actions, such as the access control AMMs on Borderlands, the share of CFD Special Tax revenue for HCP required actions could be reduced and the required endowment amount could be downsized.
- The proportionate allocation of CFD Special Tax revenue to each endowment fund can also be adjusted.
- The endowment funds can transfer moneys into or out of other endowment funds. This provides another mechanism to balance annual endowment funding and costs.
- Annual HCP required action costs and CFD Special Tax revenues are both triggered by FORA's land use development. If the pace of development slows, annual CFD Special Tax revenues would be generated at a slower rate. However, the timing of HCP required actions would also be delayed, consequently reducing annual HCP required action costs. This relation between annual endowment costs and revenues reduces the possibility of inordinate funding shortfalls being experienced during the permit and post-permit periods. Section 7.6, *Stay-Ahead Provision*, describes in further detail how HMA funding is an integral part of how preserved acres are counted toward the stay-ahead provision.
- The endowment funding strategy takes into account the fact that, although CFD Special Tax or replacement funding mechanism revenue is being collected to fill the HCP endowments, some revenues will be used to fund HCP start-up and ongoing annual costs.

An annual report will also be required as part of the endowment funding strategy. The annual report will include an accounting of all revenues received by type (e.g., CFD Special Tax payments, grants),

an assessment of progress toward total revenue goals, an evaluation of the economic assumptions on which the HCP was based (e.g., HCP costs, revenue rates), and an assessment of progress toward a complete funding strategy for implementation after the permit term. This allows an annual evaluation of funding adequacy of all HCP required actions. This approach will ensure that costs are being met and resources are allocated per HCP specifications.

A thorough economic analysis of the HCP budget will be conducted periodically during the permit term. The first will occur after 5 years of implementation or at the time the three estimated endowments are fully funded, whichever occurs first. At this time, the cost model assumptions will be compared to actual expenditures and predicted future expenditures. All endowments will be evaluated to ensure that the HCP requirements can be funded during the permit term and in perpetuity. If it is found that the level of funding in the IAF is inadequate, the endowment will be increased. This process will occur, at a minimum, two additional times during the permit term, at Year 10 and 5 years after the Army transfer of HMA lands is complete. Additional economic analyses would be conducted if determined necessary by the Cooperative Governing Board. The results of the economic analysis shall be included in the annual report.

Once the IAF reaches its target amount, additional interest earned will be distributed/dispersed into other funds within the Cooperative Endowment Fund only if sufficient principal remains in the IAF to meet its funding needs. Movement of any funds must be approved by the Cooperative Governing Board and will be reported to the Wildlife Agencies in the annual report.

A detailed description of how funds will be prioritized prior to full endowment funding is described in Appendix O, which contains the memorandum *Habitat Conservation Plan Endowment Cash Flow Strategy*. This includes details on how revenues will be diverted into four different funds simultaneously and how funds will be dispersed.

9.3.5.1 Funding Assurances for Early Implementation and Uncertain Timing in CFD Special Tax Payments

CFD Special Tax collection is related to the pace of development within the Plan Area. The pace of development is highly variable because it is subject to the fluctuations in local and regional markets and the interest of private developers to bring forth project proposals. The development projections in Table 9-7 are expected to be reached by the end of the permit term, but the speed with which they are reached and the year-to-year variation in CFD Special Tax payments collected are uncertain. To date, FORA has collected and set aside over \$15.9 million for habitat management within the Plan Area. These funds would be available for HCP required action implementation upon permit issuance.

The funding strategy allocates 67% of these existing funds to the Cooperative Endowment Fund and the remaining 33% to FONR Endowment Fund to fund start-up costs. This allocation provides coverage for the initial costs assumed to be incurred during the first 3 years of the permit term.

The stay-ahead provision requires HCP required action implementation to occur ahead of impacts. By design, the proportion of dedicated reserve land for each HCP species' habitat transferred from the Army to an HMA manager with sufficient habitat management funding to implement the conservation strategy shall be at least 5% higher than the proportion of allowable development-related impacts on each species' habitat (see Section 7.6, *Stay-Ahead Provision*). Land will be transferred from the Army to the future HMA land owners in greater amounts and sooner than the anticipated pace of development. Under the stay-ahead provision, the Permittees would need to implement and fund HCP required actions on HMA land upon the permit issuance decision to meet

the 5% to 20% stay-ahead provision (20% stay-ahead is initially required for California tiger salamander, California red-legged frog, sand gilia, Monterey spineflower, seaside bird's beak, and Yadon's piperia until restoration actions are met). FORA held funding would be sufficient to fund 6 years of HCP required actions on all currently protected HMA lands managed by the Cooperative and UC, as well as all HCP required action for which the Cooperative is the responsible entity (Appendix O). State Parks annual allocations are estimated to be sufficient to provide for management of all acres within their HMA.

Funding is available for management of 3,702 out of 3,895 total non-federal HMA acres, or conservation percentage of 95%, for 8 years without collection of additional taxes. During this time, Permittees' development impacts would be limited to an approximate take percentage of 75% to 90% depending on individual species distribution to maintain stay-ahead provision compliance⁵.

The Permittees are required to maintain compliance with the stay-ahead provision; however, they must also ensure habitat quality is maintained on acreages already preserved within the HMAs. For this reason, funding of basic habitat management (e.g., non-native invasive species control) may be necessary. The following courses of action are available to ensure habitat quality is maintained on preserved HMA acreages that exceed the stay-ahead provision requirements.

- Limit implementation of flexible capital costs such as habitat restoration.
- Use volunteers or other inexpensive labor, as available, to implement HCP required actions.
- Have Permittees pay for HCP required actions on HMAs under their ownership. The Cooperative (or FORA on behalf of the Cooperative) would reimburse Permittees for their costs later, once CFD Special Tax payments are collected, subject to a reimbursement agreement between the Permittee and the Cooperative.
- Utilize staff and other resources from State Parks to temporarily offset management tasks shared among all HMAs.
- Seek additional sources of funding through local, state, or Federal grants (Section 9.3.3, *Other Funding Sources*).
- Continue management that is already occurring on State Parks lands according to the requirements of the HMP. This management is expected to continue and be expanded for the HCP through State Parks annual appropriations.
- Use FORA staff and logistical support (e.g., office space, vehicles) until they sunset in 2020.

When most of the development projects have been accomplished, the funds established by the CFD Special Tax will be large enough to generate interest income sufficient to pay for the annual operating costs of the HCP and reinvest remaining interest income into each endowment fund to keep pace with inflation.

9.3.5.2 Funding Assurances for Uncertain State Budget Allocations

State funding is dependent on annual appropriations. State Parks is not required to expend its appropriated funds until an authorized official of that agency commits these funds in writing. However, State Parks has a more than 20-year track record of providing annual funds sufficient to

⁵ The exact acreage available for development depends on the habitat type affected and preserved. These estimates are provided in Table 7-5.

meet habitat management requirements for the state beaches in the southern Monterey Bay area. These state beaches have habitat characteristics and management requirements similar to those in FODSP. In addition, over the last 10 years, State Parks has been successful in cooperation with local, state, and Federal agencies to secure funding to restore or maintain approximately 210 acres of coastal dune habitat in FODSP. State Parks also has a record of committing sufficient funds for the management of the Fort Ord Dunes State Park, consistent with this HCP.

State Parks will be signing the HCP JPA Agreement for this HCP, which will commit these agencies to using their best available efforts to contribute the funds for the HCP identified in Table 9-10. Given the track record of State Parks funding on HMA lands, and similar State Parks funding in the Monterey Bay region, State Parks is expected to fulfill their funding obligations under the HCP.

In the unlikely event that budget allocations do not provide sufficient funds for State Parks to fulfill their obligations, the Cooperative will authorize expenditures from the HCP IAF. In addition, State Parks could seek other non-appropriated or non-traditional sources of funding available through their agencies.

9.3.5.3 Funding Assurances if Management or Monitoring Costs Exceed Projections

As described in this chapter, HCP costs were thoroughly estimated based on actual costs of implementation on BLM and State Parks' HMAs and projections of future costs on other HMAs and Borderlands. In the unlikely event that actual costs of HCP implementation are higher than projected, the Cooperative has the following courses of action that will assure adequate funding and full implementation of the HCP.

- Offset higher costs through cost savings in other areas through the increased use of volunteers or other inexpensive labor (e.g., prison crews).
- Use the IAF (Section 9.3.1.1.4, *Implementation Assurances Fund*) to temporarily offset costs that are higher than expected. Using this fund for unexpected costs will not deplete the fund beyond the level necessary to pay for remedial measures if changed circumstances occur.
- Consider raising revenue temporarily to offset costs through 1) an increase in the CFD Special Tax rate, 2) an increase in the percentage of CFD Special Tax allocated to the HCP endowments, or 3) other fees or fee appropriations available to the Permittees.

9.3.5.4 Permit Suspension and Funding

HCP compliance monitoring will track permit compliance and ensure HCP required actions are adequately funded. The Permittees will follow the process outlined under HCP compliance monitoring prior to consulting with the Wildlife Agencies. Wildlife Agencies will use the annual report to assess the adequacy of program funding. If Wildlife Agencies determine that the IAF, the HCP Fund, the FONR Endowment, and/or the Borderlands Fund funding is inadequate, the Parties will meet and confer in good faith to cooperatively develop a strategy to address the funding shortfall, and to maintain the level of conservation and take authorization afforded by the Permits until adequate funding is restored. In the unlikely event that funding constraints prevent the Permittees from carrying out their obligations under this HCP, and after the exercise of all available courses of action, USFWS or CDFW may suspend the permits until the Permittees provide assurances satisfactory to USFWS and CDFW that they have or will obtain adequate funding to carry out their obligations under the HCP. The permits could be suspended as a whole or in part to freeze

take authorization on all or some covered species, or all or some covered activities. The nature of the permit suspension will be determined by USFWS and CDFW in close communication and consultation with the Cooperative.

9.3.5.5 Funding Assurances for Post-Permit Management and Monitoring

The costs for post-permit management and monitoring (Section 9.2.1, *Permit Term HCP Required Action Costs*) will be funded through the same four funds (FONR Endowment Fund, HCP Endowment Fund, Borderland Endowment Fund, and IAF) established by the CFD Special Tax, which are designed to have adequate fund balances by the end of the permit term. Post-permit term, the two endowments will generate sufficient interest to assure HCP implementation in perpetuity. This includes implementation of HCP required actions for which the Cooperative is responsible, implementation of HCP required actions for which UC/NRS is responsible, funding assurances for HCP required actions for which State Parks is responsible (Table 9-5), and to reinvest interest income into the endowment funds to keep pace with inflation. After the permit term, the Cooperative will no longer be required to implement remedial measures in the event of changed circumstances. Therefore, any remaining funds for these events in the IAF may be transferred into the Cooperative Endowment Fund to simplify accounting.

State Parks will continue to seek financial support for management and operational costs on FODSP required by the HCP (Table 9-5) through its annual appropriations. Because restoration projects would be completed, management costs will decrease after the permit term, and these annual allocations can be reduced accordingly.

9.4 BLM Cost and Funding

Finally, an important aspect of the Cost and Funding Chapter is BLM's cost and funding as it relates to the State permit. BLM's current management activities and any BLM authorized additional mitigation measures will be credited to Permittees by CDFW for its section 2081 permit. However, under applicable Federal law, those activities and mitigation measures may change and are not permanent restrictions on use or obligations for use. See Section 1.9.3, *Role of Bureau of Land Management*, for additional information.

9.4.1 BLM Cost Overview

Table 9-1b summarizes implementation costs in terms of start-up, implementation period, and post-permit term costs for five categories. Each cost was calculated as an annual value (Appendix M). The start-up costs are those costs expected to occur within the first 2 years of HCP implementation. Implementation period costs are summarized in 10-year periods (except for the first period, which is 8 years). The average annual cost was calculated by summing implementation period costs and taking the average. The total cost over the permit term is the total assumed cost of HCP implementation during the permit term. Annual post-permit term costs are those costs expected to occur in perpetuity for covered species habitat management (Section 9.3.4, *Funding Adequacy*, discusses post-permit term funding).

The total cost of BLM's HCP-related management activities within the Plan Area is estimated at \$139,867,609 over the 50-year permit term. In relation to the State ITP, the total cost of all

Permittees (shown in Table 9-1a) plus the total cost of BLM (shown in Table 9-1b) is \$259,758,884 over the permit term. The second column of Table 9-1b identifies the start-up costs for BLM. Start-up costs are one-time costs expected to occur within the first 2 years of HCP implementation and are reported as average annual costs. Compared to Table 9-4, BLM's average annual startup costs are limited to the Capital Costs of HMA Management and Maintenance, which is a total of \$127,597.

The eighth column of Table 9-1b summarizes the average annual cost for BLM during the permit term. Monitoring costs were excluded because the Cooperative is responsible for funding and implementing monitoring on all HMAs. Annual average costs for BLM are estimated to be \$2,797,352 over the permit term. BLM reviewed the cost items identified in the cost model and verified their HCP-related costs. Approximately 83% of all costs for BLM go toward Management and Maintenance.

Table 9-1b. BLM Cost Summary

Cost Category	Start-Up (Years)	Implementation Period (Years)					Average Annual Cost (excludes start-up costs)	% of total costs	Total Cost over Permit Term	Annual Post- Permit Term Costs
	0-2	1-10	11-20 ^a	21-30	31-40	41-50				
Capital Costs										
Program Administration	\$-	\$82,545	\$82,545	\$82,545	\$82,545	\$82,545	\$8,255	0.3%	\$412,725	\$3,291
Habitat Restoration	\$-	\$1,368,317	\$470,679	\$-	\$-	\$-	\$36,780	1%	\$1,838,996	\$0
HMA Management and Maintenance	\$127,597	\$1,160,504	\$1,160,504	\$1,160,504	\$1,160,504	\$1,160,504	\$116,050	4%	\$5,802,518	\$113,083
Restoration Contingency	\$-	\$243,978	\$243,978	\$-	\$-	\$-	\$ 9,759	0.3%	\$487,956	\$0
Capital Cost Total	\$127,597	\$2,855,343	\$1,957,706	\$1,243,049	\$1,243,049	\$1,243,049	\$173,396	6%	\$8,669,792	\$116,374
Operational Costs ^b										
Program Administration	\$-	\$2,533,916	\$2,533,916	\$2,580,740	\$2,580,740	\$2,580,740	\$256,201	9%	\$12,810,054	\$120,277
Habitat Restoration	\$-	\$1,123,640	\$323,269	\$-	\$-	\$-	\$28,938	1%	\$1,446,908	\$-
HMA Management and Maintenance	\$-	\$21,022,475	\$21,022,475	\$22,913,728	\$23,072,483	\$22,753,509	\$2,215,693	79%	\$110,784,671	\$2,294,933
Budget Contingency	\$-	\$1,231,237	\$1,231,237	\$1,231,237	\$1,231,237	\$1,231,237	\$123,124	4%	\$6,156,184	\$-
Operational Cost Total	\$-	\$25,911,268	\$25,110,897	\$26,725,705	\$26,884,460	\$26,565,486	\$2,623,956	94%	\$131,197,817	\$2,415,209

Cost Category	Start-Up (Years)	Implementation Period (Years)					Average Annual Cost (excludes start-up costs)	% of total costs	Total Cost over Permit Term	Annual Post- Permit Term Costs
	0-2	1-10	11-20 ^a	21-30	31-40	41-50				
Total Costs										
Program Administration and Reporting Requirements	\$-	\$2,616,462	\$2,616,462	\$2,663,285	\$2,663,285	\$2,663,285	\$264,456	9%	\$13,222,779	\$123,568
Habitat Restoration	\$-	\$2,491,956	\$793,948	\$-	\$-	\$-	\$65,718	2%	\$3,285,904	\$-
HMA Management and Maintenance	\$127,597	\$22,182,979	\$22,182,979	\$24,074,232	\$24,232,986	\$23,914,013	\$2,331,744	83%	\$116,587,189	\$2,408,015
Budget Contingency	\$-	\$1,231,237	\$1,231,237	\$1,231,237	\$1,231,237	\$1,231,237	\$123,124	4%	\$6,644,139	\$
Contingency and Remedial Measures [a]	\$-	\$243,978	\$243,978	\$-	\$-	\$-	\$9,759	0.3%	\$487,956	\$-
Grand Total	\$127,597	\$28,766,611	\$27,068,603	\$27,968,754	\$28,127,509	\$27,808,535	\$2,797,352	100%	\$139,867,609	\$2,531,583

^a Restoration will be completed within the first 20 years of the permit term.

^b Operational costs increase between Years 10 and 20 and Years 20 and 30 due to the beginning of the prescribed burn management.

9.4.2 BLM HCP-Related Action Cost Estimate

Costs for HCP actions during the permit term are those costs essential for HCP implementation to remain in compliance with the permits. The following sections explain the assumptions used to develop these costs. See Appendix M for additional assumptions.

Table 9-1b includes a cost estimate for BLM's HMA management and maintenance to complete HCP-related actions. BLM provided detailed input on these costs for HMAs under their management, with per-acre estimates.

Staff costs are the largest cost. BLM personnel will conduct the majority of HCP-related action implementation in the HMAs under their management.

Staffing:

- Executive Director-level staffing
 - BLM Field Manager (current staff, 1 staff member, 25%).
- Budget Analyst staffing
 - BLM Budget Analyst (current staff, 1 staff member, 10%).
- IT-GIS/Database Management Support staffing
 - BLM Database and GIS Specialist (current staff, 1 staff member, 25%).
- Administrative Personnel Support staffing
 - BLM Administrative Assistant (current staff, 1 staff member, 25%).

The following staff positions are assumed for BLM's restoration activities.

- BLM Biologist (current staff, 1 staff member, 12%).
- BLM Administration Staff Officer (current staff, 1 staff member, 0.5%).
- BLM Archeologist (current staff, 1 staff member, 2%).
- BLM Fort Ord Manager (current staff, 1 staff member, 1%).
- BLM Fuel Crew Employee (current staff, 1 staff member, 4%).
- BLM Heavy Equipment Operator (current staff, 1 staff member, 3%).
- BLM Hollister Field Manager (current staff, 1 staff member, 0.5%).
- BLM Implementation Team Lead (current staff, 1 staff member, 5%).
- BLM Munitions Expert (new hire, 1 staff member [Army-funded], 6%).
- BLM Park Ranger (current staff, 1 staff member, 2%).
- BLM Planning and Environmental Coordinator (current staff, 1 staff member, 2%).
- BLM Soil/Air/Water Specialist (current staff, 1 staff member, 2%).
- BLM Watershed Institute Staff (current staff, 1 staff member, 12%).

The following staff positions are assumed for BLM's HMA management and maintenance.

- BLM Fort Ord Natural Area Manager (current staff, 1 staff member, 100%).
- BLM Biologist (new hire, 1 staff member, 100%).
- BLM Natural Resource Specialist (new hire, 1 staff member, 100%).
- BLM Biotech Lead/Weed Crew Supervisor (current staff, 1 staff member, 100%).
- BLM Biotech Field Worker/Weed Crew Member (new hire, 3 staff members [2 of which are Army-funded], 100%).
- BLM Law Enforcement Ranger (new hire, 4 staff members [2 of which are Army-funded], 62.5% each).
- BLM Maintenance Worker (new hire, 1 staff member, 100%).
- BLM Park Ranger/Interpretive Specialist (new hire, 1 staff member, 100%).
- BLM Park Ranger/Tech Specialist (existing staff, 1 staff member, 50%).
- BLM UXO-Qualified Safety Escort (new hire, 2 staff members [Army-funded], 100%).
- BLM Fuels Crew Supervisor (current staff, 1 staff member, 100%).
- BLM Fuels Crew Member (new hire, 2 staff members, 100%).
- BLM Equipment Operator (new hire, 1 staff member, 100%).
- BLM Security Patrol (new hire, 1 staff member, 100%)

Capital and operational costs for vehicles purchased by BLM include the items listed below. The number of each vehicle assumed to be purchased is identified in parenthesis.

- Dump truck (1).
- Grader (1).
- Backhoe (1).
- Loader (1).
- Sweco (1).
- Talbert trailer (1).
- Massey Ferguson tractor (1)
- D6R bulldozer (2).
- 3-axle transport (1).
- 1,600-gallon water truck (1).
- 3,600-gallon water truck (1).
- Excavator (1).
- Mower (1).

Vehicle and fuel costs are based on the number of each type of vehicle purchased and retired during each 10-year period, the purchase price of each type of vehicle, and fuel and maintenance costs per each type of vehicle per year.

Maintenance equipment and materials costs are based on the estimated cost of equipment and materials in each 10-year period. Maintenance equipment and supplies include firefighting equipment, small tools, safety equipment, rain gear, small pumps, generators, saws, demolition hammers, cargo containers, water pipes, irrigation supplies, landscape plants, and lumber.

Appendix M provides additional cost assumptions and calculations. Based on these assumptions, BLM's HCP-related implementation is estimated to average \$2,797,352 annually and \$139,867,609 total for the permit term (Table 9-1b).

9.4.3 BLM's HCP-Related Costs in Perpetuity

Costs in perpetuity for BLM are all HCP-related action costs that occur beyond the permit term. Unlike the Permittees, the level of management and maintenance by BLM will not be reduced very much after the permit term. Appendix M provides additional cost assumptions and calculations for each of the HCP actions. Based on these assumptions, HCP action costs in perpetuity, shown in Table 9-5b, are estimated to average \$2,531,583 annually. Annual post-permit term costs estimated for the Permittees, is a total of \$1,406,238. Therefore, for State ITP understanding, the grand total cost of the HCP in perpetuity is \$3,937,821.

Table 9-5b. Post-Permit Term Average Annual Costs (BLM)

Capital Costs	BLM
Program Administration	\$3,291
Habitat Restoration	\$0
HMA Management and Maintenance	\$113,083
Monitoring, Research, and Adaptive Management	\$0
Remedial Measures	\$0
Capital Cost Total	\$116,374
Operational Costs	
Program Administration	\$120,277
Habitat Restoration	\$0
HMA Management and Maintenance	\$2,294,933
Monitoring, Research, and Adaptive Management	\$0
Contingency Measures	\$0
Operational Cost Total	\$2,415,209
Total Costs	
Program Administration	\$123,568
Habitat Restoration	\$0
HMA Management and Maintenance	\$2,408,015
Monitoring, Research, and Adaptive Management	\$0
Contingency and Remedial Measures	\$0
Total Costs	\$2,531,583

9.4.4 BLM Annual Appropriations

BLM will, within the availability of Federal funds under the Federal Anti-Deficiency Act, include in its annual budget requests sufficient funds to fulfill its obligations to conserve HCP species and manage the 14,645-acre FONM. Funding sources that contribute to BLM's annual budget allocations include those listed below.

- Base funding (Management, Land, and Resources funds, or MLR) for multiple resource programs.
- Habitat restoration funding.
- Fuels and fuelbreak development and maintenance funding.
- Monetary donations to enhance recreation opportunities.
- Deferred maintenance and/or construction funds.
- Recreational fees from special events.
- Funds from the Army to conduct weed abatement, road maintenance, and fence repair.

All FONM funds are directed through BLM's Central Coast Field Office. The Central Coast Field Office manages approximately 284,000 acres of land. Between 1997 and 2013, the average annual budget allocation for Management, Land, and Resources for the Central Coast Field Office (called the

Hollister Field Office at the time) was \$3.6 million. This allocation includes an average of \$780,000 to fund all operations of the FONM. Of this operational budget, an average of \$227,692 (29%) was dedicated to HMP-related activities (which are similar to HCP actions). These estimates were developed based on the BLM's history of budget allocations (Table 9-13) for the FONM.

Included in BLM's annual appropriations, the Army funds BLM to conduct HMP-related land management activities on Army-owned lands (i.e., Impact Area) within former Fort Ord. The Army and BLM work together under a Services Agreement. BLM conducts land management activities such as invasive weed and erosion control.

The Army will eventually transfer the Impact Area lands to BLM as part of FONM and these lands will be mitigation lands under the HCP for the State ITP. This transfer of an additional 7,446 acres will occur once the Army completes removal of Munitions and Explosives of Concern (MEC).

BLM's annual budget requests for management of the Impact Area lands are projected to be an additional \$1,307,785. The Army will provide funding as identified in the Track 3 Impact Area Record of Decision, to allow BLM to implement its HMP requirements safely. This funding includes BLM's HMP requirements that are similar to HCP-related actions. For the purposes of the cost estimate, this cost increase is assumed to occur in 2023 (the anticipated land transfer date, Table 7-4). The transfer of lands is assumed to occur prior to the take for which the lands will be providing mitigation. Thus, the State ITP will be in compliance with the stay-ahead provision (Section 7.6, *Stay-Ahead Provision*).

BLM would seek sufficient funds in their annual budget requests to fully implement their HMP responsibilities, which are similar to HCP-related actions. BLM is expected to maintain a balance of average annual revenue \$2,787,789 during the permit term and \$2,531,583 post permit-term (re. Table 9-8). BLM annual funding is a weighted average of current funding and expected future funding when the remaining lands are transferred from the U.S. Army to BLM. These estimates are average budget requests in 2018 dollars. Yearly budget requests are expected to deviate from the average based on the Department of Interior priorities, changing needs for habitat management, and one-time capital costs.

Table 9-13. BLM Spending to Date

Fiscal Year	Annual Spending for HCP-Related Tasks	
	BLM FONM	Estimated or Actual
1997–1998	\$170,000	Estimated (see note)
1998–1999	\$170,000	Estimated (see note)
1999–2000	\$170,000	Estimated (see note)
2000–2001	\$170,000	Estimated (see note)
2001–2002	\$170,000	Estimated (see note)
2002–2003	\$170,000	Estimated (see note)
2003–2004	\$353,500	
2004–2005	\$428,000	
2005–2006	\$411,750	
2006–2007	\$279,750	
2007–2008	\$245,000	
2008–2009	\$190,000	
2009–2010	\$294,154	
2010–2011	\$135,259	
2011–2012	\$131,254	
2012–2013	\$154,400	
2013–2014	\$194,577	
2014–2015	\$169,000	
2015–2016	\$505,000	
2016–2017	\$313,000	
2017–2018	\$365,000	
Total Spending 1997-2018	\$5,189,644	

Note: Prior to 2003, funding for HCP-related activities was not tracked separately. Before 2003, FONM was estimated as 5% of the Hollister Field Office budget for Management, Land, and Resources (total budget of \$3.4 million annually).

9.4.5 BLM Post-Permit Term Funding

In consideration of the State permit, BLM’s permit-term HCP-related balance of revenue maintained will reduce from \$2,797,352 to \$2,531,583 post-HCP permit. This is primarily due to anticipated completion of restoration on the FONM within the 50-year permit term. Since President Barack Obama designated the FONM in 2012, the FONM status has improved the reliability of federal appropriations for conservation of the native species.

As a national monument, FONM is part of BLM’s National Landscape Conservation System (NLCS) and will be managed in a manner that protects the values for which the site was designated as a national monument. As required under the Omnibus Public Land Management Act of 2009 (OPLMA), the BLM will manage components of the NLCS to “conserve, protect, and restore nationally significant landscapes.” OPLMA also states that the Secretary, through the BLM, will manage the components of the NLCS “in accordance with any applicable law (including regulations) relating to any component of the system ... and in a manner that protects the values for which the components

of the system were designated.” Accordingly, discretionary uses will be managed in a manner consistent with the protection of the component’s values and may be allowed or prohibited when necessary and as documented in the National Environmental Policy Act (NEPA) analysis for the particular activity in question (BLM Manual 6220).

Chapter 10

Alternatives Analyzed

The ESA requires that Section 10 permit applicants specify in an HCP what alternative actions to the take of Federally listed species were considered and the reasons why those alternatives were not selected. The *Endangered Species Consultation Handbook* (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998) identifies two alternatives commonly used in HCPs: (1) an alternative that would reduce take below levels anticipated for the proposed project and (2) an alternative that would avoid take and hence not require a permit from USFWS.

This chapter identifies alternative measures considered that would avoid or minimize the potential for take of Federally listed wildlife species covered in this HCP. The following discussion includes both plant and wildlife species even though take of listed plants is not prohibited by the ESA. USFWS requested that plant species be included in this chapter discussion. In addition, this discussion identifies the amount of take assumed under each alternative within Federal and non-Federal lands (see Table 10-1). If the permit is issued, take would only occur in connection with covered species that are currently listed or those expected to be listed during the permit term. Project alternatives are described in more detail in the draft EIR/EIS that accompanies this draft HCP. This section evaluates alternatives to take for all of the wildlife and plant species covered by the HCP.

10.1 Overview of Proposed Action

In April 1997, the revised HMP was issued by the USACE on behalf of the Army. The HMP established a comprehensive species and habitat conservation program as part of the closure, disposal, and reuse of former Fort Ord lands. While the HMP provides a framework for species and habitat conservation on former Fort Ord, it does not meet USFWS or CDFW standards or requirements for an application soliciting the issuance of incidental take permits (ITP)s. The Draft Fort Ord Multi-Species HCP is intended to fulfill those requirements by combining key components of the HMP with additional elements to assure compliance with the ESA (16 U.S.C. §§ 1531–1544) as amended and the CESA (CFG Code § 2050 et seq.) as amended; thereby serving as a basis for issuance of base-wide ITPs by USFWS and CDFW.

The project addressed in the Draft Fort Ord Multi-Species HCP is the reuse and development of the former Fort Ord military base, with an emphasis on the base-wide preservation and management of habitat. Incidental take of Federal and State listed species is anticipated to occur as the former base is redeveloped consistent with the Reuse Plan. The Reuse Plan and the HMP assume a program of development and redevelopment on former Fort Ord. Under the Draft Fort Ord Multi-Species HCP, base reuse would result in the rehabilitation and construction of roads, utilities, and other infrastructure to support new research/educational, residential, commercial, light industrial, recreational, and other development. As a result, 4,241 acres of existing developed areas on the former base would be redeveloped and about 5,051 acres of existing vegetation and wildlife habitat would be removed for new development. Impacts to HCP species and natural communities resulting in jeopardy from base redevelopment would be avoided through the preservation of habitat on 18,540 acres (67%) of the former base. Incidental take of Federally-listed species would be mitigated through restoration and enhancement of covered species' habitats on non-Federal lands

and as additive activity paid for by Permittees on Federal land, as well as other mitigations, avoidance and adaptive measures on non-Federal habitat areas. Covered activities include development and habitat management activities (please refer to the HCP EIS/EIR Chapter 2, *Description of Proposed Action and Alternatives*, for details). The requested permit term is 50 years.

Four animal species and four plant species that are listed, designated species of special concern, and/or ranked as rare by the CNPS are proposed as HCP species under the Draft Fort Ord Multi-Species HCP:

- Sand gilia (*Gilia tenuiflora* ssp. *arenaria*) (Federal —endangered, State —threatened).
- Yadon's piperia (*Piperia yadonii*) (Federal —endangered).
- Monterey spineflower (*Chorizanthe pungens* var. *pungens*) (Federal —threatened).
- Seaside bird's beak (*Cordylanthus rigidus* ssp. *littoralis*) (State —endangered).
- Smith's blue butterfly (*Euphilotes enoptes smithi*) (Federal —endangered).
- Western snowy plover, Pacific coast population (*Charadrius nivosus* ssp. *nivosus*) (Federal —threatened, State —species of special concern).
- California tiger salamander (*Ambystoma californiense*) (Federal and State —threatened).
- California red-legged frog (*Rana draytonii*) (Federal —threatened, State —species of special concern).

Table 10-1 shows the expected impacts to these species on non-Federal and Federal lands in the Plan Area. Direct impacts from the proposed HCP on non-Federal lands range from 6-27% of the total Plan Area. Many qualitative measures, such as reseeding Maritime Chaparral restoration areas in the FONM, and restoration of aquatic features, improve the acre-to-acre ratios of impacted to preserved.

10.2 Alternative 1: Redevelopment of Existing Developed Areas and HMA Management Activities

This alternative would limit development activities to redevelopment of existing developed areas within the designated development areas and HMAs and include implementation of required HMP habitat management in HMAs (see Chapter 3, *Covered Activities* for a description of the locations of these activities). This alternative would result in a decrease in the extent of HCP covered activities implementation, as it assumes no take would occur in existing developed areas within the designated development areas and HMAs associated with redevelopment activities, and very little take in HMAs as a result of HMA management activities and conservation strategy implementation. This alternative would reduce direct impacts to HCP species habitat by 93–99% on non-Federal lands (see Table 10-1).

Development activities are expected to occur on approximately 4,241 acres of HMP-designated development areas that are primarily developed, consisting of pavement, remnant and abandoned military structures, and ruderal vegetation. These activities include and rehabilitation and construction of roads, utilities, and other infrastructure and new research/educational, residential,

commercial, light industrial, and recreational projects pursuant to the 1997 Fort Ord Base Reuse Plan, City of Marina General Plan, City of Seaside General Plan, City of Del Rey Oaks General Plan, City of Monterey General Plan, CSUMB Master Plan, UC MBEST Master Plan, County of Monterey General Plan, and the Fort Ord Dunes State Park Final General Plan. For the development activities proposed within the existing disturbed/developed areas, the likelihood of impacts to Federal or State-listed species is low, due to the negligible amount of suitable habitat within these parcels. Therefore, for this and all alternatives, it is unlikely that take authorization from USFWS or CDFW would be required for the majority of development activities within the 4,241 acres of previously developed development areas.

HMA management activities stemming from the development of HMA-specific resource management plans will include direct impacts from road and trail maintenance, fuelbreak establishment and maintenance, recreational and educational use, and beach management, as well as indirect impacts from prescribed burns and alternative vegetative management. This take of listed species, such as roughly 59 miles of fuelbreak construction, will be covered in Alternative 1.

Direct impacts on HCP species are reduced under this alternative; however, the extent of mitigation measure implementation and funding would also be reduced. The HMP requires preservation of the Plan Area as identified in Mitigation Measure-2 (establish a base-wide, connected habitat reserve system in the Plan Area). This mitigation measure codifies the deed restrictions and Memoranda of Agreement (MOAs) in place as a result of Army obligations under the HMP. These agreements provide the basic mechanism for implementing parcel-specific habitat protection measures specified by the HMP, while Mitigation Measure-1 (adopt implementing ordinance or policy) ensures the HCP is implemented at the local, agency, or institutional level; however, since the HCP would not provide take coverage for development of natural lands within development parcels, the amount of revenue generated by CFD and post-FORA replacement funding mechanism to fund HCP implementation would be reduced. Mitigation measure scope and frequency would be reduced to take into account reduced impacts and available funding.

There are several reasons why the Permittees did not choose to implement Alternative 1. Firstly, the alternative limits development from much of the base, and MCWD will be unlikely to build supportive facilities to build out. It will fail to meet the 1997 Fort Ord Base Reuse Plan and local General/Master Plans for post-closure recovery. Secondly, the parties affected by the closure, disposal, and reuse of the former Fort Ord have been proactive in developing a coordinated regulatory compliance program that maximizes the opportunities offered by the proposed HCP. A valuable element of cooperation between development and habitat preservation interests could be lost. This would be contrary to the spirit of the HMP, as well as this HCP, and could limit benefits to both reuse and habitat management that will result from a more comprehensive approach. Due to the disadvantages of this alternative, the Permittees did not implement Alternative 1.

Table 10-1. Alternatives to Take Comparison

		Proposed HCP				Alternative 1 ¹						Alternative 2 ²						Alternative 3: No Action			
		Direct Impacts on Species Habitat (Non-Federal)		Direct Impacts on Species Habitat (Federal)		Direct Impacts on Species Habitat (Non-Federal)			Direct Impacts on Species Habitat (Federal)			Direct Impacts on Species Habitat (Non-Federal)			Direct Impacts on Species Habitat (Federal)			Direct Impacts on Species Habitat (Non-Federal)		Direct Impacts on Species Habitat (Federal)	
HCP Species	Acres	Acres	% of Total in Plan Area	Acres	% Total in Plan Area	Acres	% of Total in Plan Area	% Reduced from Proposed HCP	Acres	% Total in Plan Area	% Reduced from Proposed HCP	Acres	% Total in Plan Area	% Reduced from Proposed HCP	Acres	% Total in Plan Area	% Reduced from Proposed HCP	Acres	% Reduced from Proposed HCP	Acres	% Reduced from Proposed HCP
Sand gilia	9,089	1,511	17%	311	3%	40	0.4%	97%	190	2%	39%	1,337	15%	11%	190	2%	39%	378	75%	311	0%
Yadon’s piperia	2,420	204	8%	71	3%	0.03	<0.01%	>99%	71	3%	0%	199.03	8%	2%	71	3%	0	51	75%	71	0%
Monterey spineflower	12,978	3,528	27%	373	3%	57	0.4%	98%	228	2%	39%	3,182	25%	10%	228	2%	39%	882	75%	373	0%
Seaside bird’s beak	6,849	499	7%	306	4%	13	0.2%	97%	187	3%	39%	468	7%	6%	187	3%	39%	125	75%	306	0%
Smith’s blue butterfly	110	7	6%	0	0%	0.5	0.5%	93%	0	0%	--	0.5	0.5%	93%	--	0%	--	1.75	75%	0	0%
Western snowy plover	71	11	15%	0	0%	0.1	0.1%	99%	0	0%	--	0.1	0.1%	99%	--	0%	--	2.75	75%	0	0%
California tiger salamander	19,598	3,614	18%	713	4%	66	0.3%	98%	435	2%	39%	3,311	17%	8%	435	2%	39%	904	75%	713	0%
California red-legged frog	16,362	2,120	13%	661	4%	44	0.3%	98%	404	2%	39%	1,881	11%	11%	404	2%	39%	530	75%	661	0%

¹Alternative 1 direct impacts include impacts associated with management activities within HMAs as identified in Table 4-5a and Table 4-5b.

²Alternative 2 direct impacts include impacts associated with development in designated development parcels and Management Activities within HMAs as identified in Table 4-5a and Table 4-5b.

10.3 Alternative 2: Prohibit Development in Habitat Management Areas and Increase Development Density in Designated Development Areas

This alternative would restrict development to existing developed areas within HMAs (i.e., where no HCP species habitat occurs) and within designated development areas (i.e., existing developed areas and natural lands areas in designated for development) and allow for take in HMAs only where and when it results from HMA management activities (see Chapter 3, *Covered Activities* for descriptions and locations of covered management activities). Direct impacts would be limited to HCP species that have habitat in designated development parcels, and those impacts expected from HMA management activity implementation. This alternative would reduce direct impacts on HCP species by 2–99% (Yadon’s piperia to western snowy plover) on non-Federal lands (see Table 10-1).

Alternative 2 includes development within the previously developed 4,241 acres and within the 5,051 acres of designated development parcels. Development in HMAs, including allowable development identified in the HMP as well as future road corridors and infrastructure (i.e., MCWD, Inter-Garrison Road Widening, FORTAG, and Marina Airport Expansion), would not be allowed unless take is avoided. The benefit of this conservation strategy is based in the historical fact that the HMA lands were selected to be part of the HMA system because they were assessed to have higher quality habitat for listed wildlife and higher density occurrences of listed plant species (overall). These habitats and populations would remain unmarred and improved through conservation actions and mitigation measures similar to those described in Chapter 5 of the Draft Fort Ord Multi-Species HCP.

Alternative 2’s design would require increased development density within the development parcels to allow for future road corridors and infrastructure, as well as recreational facilities to be established within the designated development areas. Under this alternative, the parties would apply for basewide ITPs for the take of listed species that may occur as a result of development in designative development areas and implementation of habitat management activities which are described in the proposed HCP.

There are two reasons why the Permittees did not choose to pursue Alternative 2. Firstly, because future road corridors and infrastructure as well as recreational facilities would be established within the designated development areas, less housing, commercial and light industrial development could be built in those areas. Therefore, it would fail to meet the 1997 Fort Ord Base Reuse Plan and local General and Master Plans for post-closure recovery. Relatedly, the effect will increase the ratio of roads, infrastructure, and recreation facilities to those land uses which generate CFD or replacement funding mechanism revenue. This would, in turn, affect the Cooperative’s ability to predict funding availability for mitigation measure implementation and endowment establishment. As such, the funding assurances required for HCP permit issuance would be compromised. The Permittees elected to not implement Alternative 2, to allow for a greater predictability in funding availability in order to implement mitigation measures. Furthermore, including development in the HMAs allows the Permittees to address a more comprehensive suite of potential future impacts and plan accordingly for appropriate avoidance and mitigation measures.

10.4 Alternative 3: No Action

Under this alternative, the Permittees would not form the HCP JPA, not receive base-wide permits for take, and not implement the HCP. Underlying agreements and land use plans would move ahead at a modified level during the 50 years of the proposed HCP term. Project-by-project development activities, habitat management activities, and mitigation strategies are anticipated. We anticipate roughly one quarter of the direct impact of the proposed HCP, for reasons explained below.

While the conservation program established by the 1997 HMP is intended to be a comprehensive program for the former base, it stems from an agreement between the Army and USFWS and does not exempt other landowners of transferred property (existing or future) from the ESA Section 9 prohibitions against take of listed species or from compliance with the provisions of the CESA. Under the HMP, HMA managers would be required to complete RMPs for their HMAs, but any take of listed species as part of the HMA management would need to be authorized through permitting/RMP draft consultation with the Wildlife Agencies.

Development activities are expected to occur on approximately 4,241 acres of HMP-designated development areas that are primarily developed, consisting of pavement, remnant and abandoned military structures, and ruderal vegetation. These activities include rehabilitation and construction of roads, utilities, and other infrastructure and new research/educational, residential, commercial, light industrial, and recreational projects pursuant to the 1997 Fort Ord Base Reuse Plan, City of Marina General Plan, City of Seaside General Plan, City of Del Rey Oaks General Plan, City of Monterey General Plan, CSUMB Master Plan, UC MBEST Master Plan, County of Monterey General Plan, and the Fort Ord Dunes State Park Final General Plan. For the development activities proposed within the existing disturbed/developed areas, the likelihood of impacts to Federal or State-listed species is low, due to the negligible amount of suitable habitat within these parcels. Therefore, for this and all alternatives, it is unlikely that take authorization from USFWS or CDFW would be required for the majority of development activities within the 4,241 acres of development areas.

As previously stated, the HMP identifies 5,051 acres of vegetated development areas, and these areas are known, or have the potential, to support Federal and State listed species. The HMP also identifies allowable development activities and specific future road and other infrastructure projects that could occur within the remaining HMP-designated areas, comprised of habitat reserves and corridors. In the case of the No Action Alternative, HMP-allowable development activities and future road corridors and other infrastructure projects in these remaining HMP-designated areas would not be covered under the comprehensive base-wide ITPs. Therefore, development activities both inside and outside of the HMP-designated development areas would also need to obtain individual ITPs on an individual, project-by-project basis if take of listed species would occur.

Implementation of the 1997 HMP also requires Borderland activities within the non-Federal areas to protect the resources in the FONM. Borderland activities include establishing firebreaks, patrolling, and installing gates and fencing. If Borderland activities on the roughly 14.9 mile FONM border result in take of listed species, the land holders (City of Monterey, City of Del Rey Oaks, City of Seaside, Monterey Peninsula College, CSUMB, and County of Monterey) will apply for State or Federal ITPs and will likely propose mitigation measures within the habitat areas to offset impacts. This is complicated by the fact that the Cities of Monterey, Del Rey Oaks, and Seaside as well as CSUMB do not directly own or manage any HMA parcels.

Development in the 5,051 acres of HMP-designated development areas, road, trail and infrastructure development within the remaining HMP-designated areas, RMP management activities and Borderland activities all have the potential of take of listed species. The largest portion of potential take would likely result from development within the 5,051-acre HMP-designated development area, which is vegetated with various habitat types that are known, or have the potential to, support Federal and State-listed species. Development therein would likely be required to comply with ESA (primarily through the Section 10 process), CESA, CEQA, NEPA, and other environmental regulations, which may require protections for species and their habitats and consideration of environmental effects on a project-by-project basis. The specific type, number, timing, and extent of development projects within the 5,051 acres is unknown; and therefore, the number of individual ITPs the USFWS and CDFW would approve within a 50-year period is unknown. However, given the project-by-project review, it is anticipated that development, if permitted, would occur at a slower pace. For analysis purposes, we assume that future project specific permits would include mitigation at a 3:1 ratio. We therefore assume that approximately 25% of the designated development area, or 1,263 acres, could be developed on a project-by-project basis during the 50-year period. Remaining areas would be suitable and available to provide mitigation in the form of preserved land that may be required by ITPs. The amount of take under the No Action Alternative is expected to be 75% less over the 50-year period than the proposed HCP (see Table 10-1).

The FORA Capital Improvement Program would no longer be funding HCP-required endowments. In the absence of an approved Fort Ord Multi-Species HCP, there would be no base-wide, comprehensive mitigation strategy and, therefore, formulating adequate mitigation for future projects and activities may become more complicated and constrained as redevelopment of the former Fort Ord occurs on a project-by-project basis. 25%, or approximately \$21 Million of the current FORA CIP funding for HCP endowments, would likely be set aside for the implementation of the HMP on HMAs and Borderlands to the FONM, and the remainder divided among land use jurisdictions which would require take authorization for the project-by-project development of 1,263 acres.

The parties did not adopt this alternative because it would not allow sufficient development to implement the 1997 Fort Ord Reuse Plan and General Plans/Master Plans of the jurisdictions for the post-base closure economic recovery. The Permittees also did not adopt this alternative because the lack of State ITPs and lack of HCP funding structure would strain the jurisdictions' abilities to implement habitat management and mitigations to comply with the 1997 HMP and manage threatened and endangered species' habitats in a comprehensive, effective, and efficient manner. Conservation of species and habitat without the HCP would likely result in a pattern of conservation that is fragmented and managed in a piecemeal fashion under this project-by-project permitting process. Due to the disadvantages of this alternative, the Permittees would not choose the No Action Alternative.

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