

APPENDIX A. LEGISLATION AND REGULATIONS

Below is a list of the most significant federal and state laws and regulations and other regulatory instruments that may govern implementation of this Integrated Natural Resources Management Plan.

Federal Laws

American Indian Religious Freedom Act (42 United States Code (USC))
Americans with Disabilities Act of 1990 (PL 101-336; 42 USC 12101)
Archaeological and Historic Preservation Act of 1974 (PL 93-291; 16 USC 469 *et seq.*)
Archaeological Resources Protection Act of 1979 (PL 96-95; 16 USC 470aa-11)
Bald Eagle Protection Act (PL 95-616; 16 USC 688 *et seq.*)
Clean Air Act (as amended through 1990)
Clean Water Act (PL 95-217; 33 USC 1251 *et seq.*)
Coastal Zone Management Act (16 USC 145 *et seq.*)
Conservation Programs on Military Reservations (see Sikes Act below)
Defense Appropriations Act of 1991 – Legacy Program
Emergency Wetlands Resources Act of 1986 (16 USC 3901-3932)
Endangered Species Act of 1973 (PL 95-632, 16 USC 1531 *et seq.*)
Estuarine Areas Act (16 USC 1221-1226)
Farmland Protection Policy Act (7 USC 4201-4209)
Federal Facilities Compliance Act of 1992 (PL 102-386; amending 42 USC 6961)
Federal Insecticide, Fungicide and Rodenticide Act (7 USC 136 *et seq.*)
Fish and Wildlife Conservation Act (FWCA) of 1980 (16 USC 2901 *et seq.*)
Fish and Wildlife Conservation and Natural Resource Management Programs on Military Reservation
(Amends Public Law 86-797 (Sikes Act) (PL 96-561))
Hunting, Fishing and Trapping on Military Lands (an update to the Military Construction Authorization Act 10 USC 2665)
Leases: Non-Excess Property of Military Departments (10 USC 2667)
Marine Mammal Protection Act (MMPA) of 1972, as amended (16 USC 1361 *et seq.*)
Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972, as amended (33 USC 1401 *et seq.* and 16 USC 1431 *et seq.*)
Migratory Bird Conservation Act (Chapter 257; 45 Stat 1222; 16 USC 715 *et seq.*)
Migratory Bird Treaty Act (PL 65-186; 16 USC 703 *et seq.*)
Military Reservation and Facilities: Hunting, Fishing and Trapping Act of 1958 (Public Law 85-337, 10 USC 2671)
National Environmental Policy Act of 1969 (as amended, PL 91-190; 42 USC 4321 *et seq.*)
National Historic Preservation Act of 1966 (as amended, PL 89-665; 16 USC 470 *et seq.*)
Native American Graves Protection and Repatriation Act (25 USC, Section 3001 *et seq.*)
Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990
North American Wetlands Conservation Act (16 USC 4401 *et seq.*)
Noxious Plant Control Act (PL 90-583)
Outdoor Recreation on Federal Lands (16 USC 4601{1} *et seq.*)
Plant Protection Act of 2000(7 USC 7701 *et seq.*) (replaces Federal Noxious Weed Act of 1973 (PL 93-629))
Plant Quarantine Act (7 USC 151-167)
Readiness and Environmental Protection Initiative (within Section 2811, FY 2003 National Defense Authorization Act) (10 USC 2684a)
Rivers and Harbors Act (33 USC 401)
Sale of Certain Interests In Lands; Logs (10 USC 2665)

Sikes Act (PL 105-85, as amended through 2004 including PL 108-136; 16 USC 670 *et seq.*)
Soil Conservation Act of 1938 (16 USC 5901 *et seq.*)
Soil Conservation and Domestic Allotment Act (7 USC 128)
Watershed Protection and Flood Prevention Act (PL 84-566; 16 USC 1001-1009)

Executive Orders and Presidential Memoranda

Executive Order 11593, Protection and Enhancement of the Cultural Environment
Executive Order 11644, Use of Off-Road Vehicles on the Public Lands
Executive Order 11987, Exotic Organisms
Executive Order 11988, Floodplain Management
Executive Order 11989, Off-Road Vehicles on Public Lands
Executive Order 11990, Protection of Wetlands
Executive Order 11991, Protection and Enhancement of Environmental Quality: Amends Executive Order 11514
Executive Order 12608, Protection of Wetlands: Amends Executive Order 11990
Executive Order 12898, Environmental Justice
Executive Order 13007, Indian Sacred Sites
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks
Executive Order 13112, Invasive Species
Executive Order 13175, Consultation and Coordination with Indian Tribal Governments
Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds
Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation
Presidential Memorandum, Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds (April 26, 1994)
Presidential Memorandum, Government-to-Government Relations with Native American Tribal Governments

Department of Defense (DoD) Directives/Instructions

DoD Directive 4150.7, DoD Pest Management Program
DoD Directive 4700.4, Natural Resources Management Program
DoD Directive 4710.1, Archaeological and Historic Resources Management
DoD Instruction 4715.1, Environmental Security
DoD Directive 4715.1E, Environment, Safety, and Occupational Health
DoD Instruction 4715.9, Environmental Planning and Analysis
DoD Instruction 5000.13, Natural Resources
DoD Directive 6050.1, Environmental Effects in the United States of DOD Actions
DoD Directive 6050.2, Use of Off-Road Vehicles on DOD Lands
Department of Defense, American Indian and Alaska Native Policy

Marine Corps Orders (MCO)

MCO 5090.2, Marine Corps Environmental Compliance Protection Manual

California (CA) Regulations

California Coastal Act
California Constitution Article 10, Water
California Department of Fish and Game Code
California Endangered Species Act
California Environmental Quality Act
Porter-Cologne Water Quality Control Act

Additional information on the National Environmental Policy Act (NEPA) and other natural resource laws is discussed below.

National Environmental Policy Act

NEPA requires a detailed statement of significant environmental impacts of major federal actions. For example, an action may be considered significant if it has a long-term impact or potential risk because of its effect on a species protected under the Endangered Species Act (ESA). The process identifies reasonable alternatives to proposed actions that might have less or no environmental effect. Individual and cumulative impacts must be considered. The following three-tiered approach is used to evaluate impacts.

- Certain categories of actions may be excluded from the need to prepare a detailed environmental analysis for NEPA purposes. ***Categorical Exclusions*** are categories of actions that have been previously determined to not have a significant effect on the human environment, either individually or cumulatively. Marine Corps Order P5090.2A (para. 12201.3a) provides a list of Categorical Exclusions and associated extraordinary circumstances that preclude the use of the Categorical Exclusions.
- An ***Environmental Assessment*** (EA) is the analysis to be completed when the government is uncertain as to whether an action will significantly affect the environment or whether the action is controversial; the result of an EA is either a Finding of No Significant Impact or a requirement to complete an EIS.
- An ***Environmental Impact Statement*** (EIS) is a full-disclosure document that presents a full and complete discussion of significant impacts, informing the public and decision makers of reasonable alternatives to the proposed action.

Significance Determination

The issue of “significance” in terms of environmental effects is important to NEPA compliance. An issue is not necessarily significant just because a regulatory consultation or permit requirement is encountered (*e.g.*, Section 7 ESA consultation with the USFWS, obtaining a Section 404 Clean Water Act [CWA] permit). For example, the Nationwide Section 404 CWA permits have already been subjected to NEPA review, programmatically, with a conclusion that their use would not have significant impacts, either individually or cumulatively. Significant effects of proposed actions are determined by adverse effects on important resources that are not mitigated.

Definitions of adverse effects vary by law. Thus, it is important to use specific definitions within specific laws (*e.g.*, CWA, ESA) for determining adverse effects.

For biological resources in general, primary criteria for determining significance are the ***unmitigated*** loss of a resource identified as threatened or endangered by the USFWS, the local and regional rarity of affected resources, and the degree to which affected resources may be impacted. To a large degree, significance thresholds are based on the regulatory status of resources, which reflect their rarity and/or special significance. The following types of effects to biological resources are generally considered significant:

- unmitigated permanent or long-term temporary impact to federally listed species, including significant loss of occupied habitats (Section 7 ESA consultation with the USFWS will assist with this determination);
- unmitigated loss or impact to large quantities of wetlands in waters of the United States (U.S.), as defined by CWA regulations;
- unmitigated effects to important quantities of regionally- and locally-declining populations (*i.e.*, federal species of special concern and species considered rare and threatened or endangered by the State of California);

- unmitigated loss of important quantities of declining vegetation communities that are considered rare, both locally and regionally (with impacts evaluated in terms of such factors as setting [e.g., population size, habitat quality] and the magnitude and nature of effects (e.g., temporary versus permanent);
- alteration of regionally- and locally-important wildlife corridors that would severely and permanently limit their use by wildlife species; and/or
- substantial, unmitigated erosion resulting in loss of site integrity to support vegetation and degradation of downstream water quality by sediment loading.

Guidance for Addressing Natural Resources in NEPA Documents

The Natural Resources Division should be consulted regarding topics for analysis for each individual NEPA document to be prepared. Details for addressing natural resources in NEPA documents for MCAS Miramar can be obtained from the Station Environmental Department.

Endangered Species Act

MCO 5090.2 states, “*The Marine Corps will consult ... on any Marine Corps action that may affect any endangered or threatened species or critical habitat to ensure that such action is not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of critical habitat... In addition, the Marine Corps will further programs for the conservation of endangered and threatened species. Each installation supporting endangered or threatened species must address their management in its INRMP detailing protective measures that assure the continued health and viability of these species on the installation.*”

When evaluating actions potentially affecting threatened or endangered species identified in Chapter 4, planners (e.g., Public Works Division, military trainers, Real Estate Division, Environmental Management) must take into account requirements of the Endangered Species Act (ESA) and timelines needed for compliance. Formal consultations with the USFWS pursuant to **Section 7** of the ESA (50 CFR 402) are required prior to federal agencies authorizing, funding, or implementing proposed actions which may affect a federally threatened or endangered species or its critical habitat²².

Once formal consultations are initiated, consultations can be lengthy. Formal consultations involve up to a 90-day consultation period and an additional 45-day period for the USFWS to prepare a biological opinion (135-day total). Either the lead agency or the USFWS may request an extension of the formal consultation period, but such extensions require mutual agreement. Conditions that may require an extension include complex issues or circumstances for which additional data (e.g., surveys) may be needed to avoid a jeopardy biological opinion.

Preparation of **biological assessment** information is required to initiate formal consultation. A biological assessment is required for major federal construction activities; however, a biological assessment may be prepared to support consultation for any action that may affect a federally listed threatened or endangered species. A listing of the basic information required to initiate formal consultation required by Section 7 of the ESA is found at 50 CFR 402.14(c). As part of a joint partnering effort between local Navy, Marine Corps, and USFWS staff, a working group developed an informal document, *Guidelines for Preparing Biological Assessments for Section 7 Endangered Species Act Consultation*, in 2000. Preparation of

²² Critical habitat is a legal term defined by the ESA for species listed by the USFWS. No critical habitat has been designated on MCAS Miramar; thus, the term should not normally be used with regard to projects proposed for MCAS Miramar. Section 7.4, *Special Status Species Management* describes how implementation of this INRMP meets criteria to preclude critical habitat designation, as provided for by ESA Section 4(a)(3)(b)(i).

biological assessments for proposed actions on MCAS Miramar should follow the guidelines of this document unless otherwise directed (obtain a copy from Miramar Natural Resources Division staff).

The time required to prepare a biological assessment is quite variable depending on the complexity of the proposed action and the magnitude of potential effects on the species of concern. Potential requirements for additional information (e.g., surveys) can further extend the timeline for completion of the biological assessment. Anywhere from a few weeks to more than a year may be required to finalize a biological assessment before it can be submitted to the USFWS as part of the request to initiate formal consultations.

A **biological opinion** is the USFWS opinion resulting from the formal Section 7 ESA consultation process. It is a written statement from the USFWS regarding its opinion on effects of a proposed action on listed species and the potential to jeopardize the continued existence of the species. It also includes a summary of the information on which the opinion is based, detailing how the agency action affects the species or its critical habitat. It provides nondiscretionary Terms and Conditions with Reasonable and Prudent Measures that must be implemented in conjunction with a proposed action to avoid or minimize impacts. The USFWS also provides nonbinding Conservation Recommendations as part of the biological opinion.

A biological opinion is required for actions that may adversely affect a threatened or endangered species so as to avoid jeopardizing the continued existence of any such species and violations under **Section 9** of the ESA. Section 9 of the Act prohibits the “take” of a threatened or endangered species. *The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct* (16 USC 1532). The term “harass” in this definition has been further defined to mean *...an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering* (50 CFR 17.3). *Harm, in the definition of “take” in the Act [ESA] means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral pattern, including breeding, feeding, or sheltering* (50 CFR 17.3).

Part of a biological opinion is the issuance of an incidental take authorization, which authorizes take of listed species that is “incidental” to the conduct of an otherwise legal activity, provided terms and conditions established in the biological opinion are followed and implemented. Terms and conditions can involve additional costs relative to mitigation requirements, which may include compensation for lost resources, minimization of, and avoidance of impacts on threatened or endangered species or critical habitat. Such potential costs must be considered as part of project planning and construction.

Consultation under the ESA shall be considered complete for NEPA planning purposes when, at a minimum, a draft biological opinion is issued by the USFWS (Commandant of the Marine Corps, *Supplemental Policy Guidance to SECNAVINST 5090.6A for Consultations and Regulatory Coordination*, July 27, 2009).

The informal consultation process to fulfill Section 7 requirements generally will require less time than formal consultations. This is an option only when the incidental take of a threatened or endangered species and other adverse effects can be avoided. This process can also be used to initiate a dialog with the USFWS regarding the necessity for formal consultation. The outcome of an informal consultation is often a letter from the USFWS stating that the proposed action is not likely to adversely affect the listed species, although sometimes the conclusion of informal consultation can be reached solely through discussion.

When a proposed action affects a species proposed for listing as threatened or endangered, a **formal conference** (as opposed to a consultation for a listed species) with the USFWS may be required. The

standard for requiring a conference is that the proposed action may jeopardize the continued existence of the species, as opposed to affecting it, as is the standard for listed species. The USFWS encourages **informal conferencing** when proposed species are involved. Unlike biological opinions, recommendations made in conference opinions are advisory and therefore non-binding.

The primary purpose of conferencing is to avoid delay of a proposed action should a species proposed for listing become listed, and to ensure that the proposed action does not jeopardize a species' recovery potential. Should a species become formally listed prior to implementation of the proposed action, federal agencies are required to consult with the USFWS to confirm that the conference opinion still serves as the formal biological opinion. This is typically a simple procedure if there are no significant changes in the action as planned or in the information used during the conference.

ESA consultations are accomplished for the Station through the Environmental Management Department. The action proponent shall bear the responsibility for preparation of a biological assessment along with the documentation necessary for execution of consultation/conferencing requirements. Often this work and documentation is accomplished by contract with a qualified consulting firm. Species and habitat information possessed by the Station can be made available to action proponents; however, any needed supplementation or field verification shall be accomplished (or funded) by the proponent.

For non-federal proposed actions requiring the approval of MCAS Miramar, the Station, as a federal agency, is required to complete a Section 7 consultation/conference with the USFWS prior to authorizing a proposed action which may affect a proposed or listed threatened or endangered species. This is the Station's requirement regardless of any requirement the action proponent may or may not have regarding such species. All MCAS Miramar approvals will be conditioned upon the action proponent's commitment to fund and/or implement Reasonable and Prudent measures with associated Terms and Conditions which result from this consultation/conference procedure.

Some non-federal actions associated with previously issued rights-of-way and easements may not require authorization from the Station. In such cases, where no federal action is involved, the Section 7 ESA consultation requirement for federal agencies may not be applicable, and the non-federal action proponent may need to resolve ESA compliance directly with the USFWS under the provisions of Section 10 of the ESA.

Clean Water Act (CWA)

CWA permitting for Marine Corps actions on MCAS Miramar will be processed through the Environmental Management Department. Preparation of permit application and associated information, wetland delineation, and other applicable information are the responsibility of the action proponent. Permitting necessary for non-Marine Corps proposed actions shall be accomplished and funded by the action proponent in coordination with MCAS Miramar staff. Completion of the regulatory permitting process is required for all federal and non-federal actions as part of receiving final Station approval to implement the requested action.

NEPA documentation can be completed prior to obtaining CWA permits, provided the decision maker is made aware of permit requirements and, to the maximum extent possible, made aware of potential mitigation requirements. The proponent must provide appropriate documentation indicating coordination with the Army Corps of Engineers, proposed mitigation, if any, and that the Corps of Engineers is likely to concur with the impacts determination (Commandant of the Marine Corps, *Supplemental Policy Guidance to SECNAVINST 5090.6A for Consultations and Regulatory Coordination*, July 27, 2009).

Executive Order 11990, *Protection of Wetlands* directs all federal agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands as well as to preserve and enhance the beneficial values of wetlands. Marine Corps Order P5090.2A (Chapter 12) requires that all activities adversely affecting the quality or quantity of tidelands or fresh water wetlands that are not covered by nationwide or regional permits have, at a minimum, an EA prepared. In a similar manner to Executive Order 11990, Executive Order 11988, *Floodplain Management* directs federal agencies to provide leadership in avoiding direct or indirect development of floodplains, as well as to restore and preserve the natural and beneficial values of floodplains.

Section 404 of the CWA addresses the discharge of dredge or fill material into waters of the United States, including wetlands (definitions at 40CFR 230.3 (s) and (t)). The term “waters of the United States” is broadly defined to include navigable waters (including intermittent streams), impoundments, tributary streams, and wetlands associated with navigable waters. This includes ephemeral streams on MCAS Miramar. In general, wetlands are areas inundated or saturated by surface or ground water to the extent that they support vegetation adapted for saturated soil conditions (*e.g.*, vernal marshes, vernal pool habitat). A discharge is any material that results in a change in the bottom elevation of a water body or wetland, including grading, road fills, stream crossings, building pads, and flood and erosion control on streambanks. Regulatory authority has been delegated by the Environmental Protection Agency to the U.S. Army Corps of Engineers for Section 404. Nationwide and individual permits are options for meeting the requirements of Section 404.

The Army Corps of Engineers has developed a series of nationwide permits that pre-authorize certain minor discharges (*e.g.*, construction of outfall structures, backfill or bedding for utility lines, fill for bank stabilization, minor road crossings), provided they meet certain conditions. Use of most nationwide permits requires review by the Army Corps of Engineers and possibly other federal agencies. Notification of the Army Corps of Engineers is usually required, and applicants must meet general and regional conditions outlined in the regulations and ensure the proposed project does not conflict with other federal laws (*e.g.*, ESA, NEPA).

Section 404 regulations apply to vernal pools when they are adjacent or connected to waters of the U.S. The Los Angeles District Engineer of the Army Corps of Engineers has established **Regional General Conditions** (U.S. Army Corps of Engineers 2012) to the nationwide permits. One condition requires that any action that affects jurisdictional vernal pools must have, at a minimum, an individual Section 404 permit. DON and USMC policy direct that an action requiring an individual Section 404 CWA permit requires a minimum of an EA for NEPA documentation. Not all vernal pool habitat on MCAS Miramar is subject to the permitting jurisdiction of the CWA²³. The jurisdictional status of individual vernal pools will be determined in consultation with the Station Natural Resources Division. However, regardless of the jurisdictional status of vernal pool habitats, any projects that may affect them must consider the presence/absence of endangered species and the federal “no net loss” of wetlands policy (Executive Order 11990) in project planning and NEPA documentation.

The individual permit process is much more complex and time consuming than the Nationwide Permit program. Typically, the application process involves a pre-application meeting (if requested), permit application process, the posting of a public notice to allow for public comment, and a final decision by the Army Corps of Engineers in which the Corps indicates its readiness to prepare an EA (or cause one to be prepared), Public Interest Review, and 404(b)(1) Evaluation. If the conclusion is that the action will cause significant impacts, then the Army Corps of Engineers must prepare an EIS (or cause one to be prepared,

²³ Solid Waste Agencies of Northern Cook County (SWANCC) vs. the U.S. Army Corps of Engineers.

often by the federal agency that is required to have the permit). Further, all ESA requirements must be fulfilled before a permit can be issued.

Before an applicant can receive an individual Army Corps of Engineers permit to discharge dredge or fill material into waters of the United States, including jurisdictional wetlands, the applicant may be required to demonstrate that the proposed discharge is unavoidable and the least damaging alternative. These considerations are required under the Environmental Protection Agency's 404(b)(1) Guidelines (40 CFR 230). An alternative analysis should be considered early during project planning process to reduce costs, avoid delays, and increase certainty in permit approval (Yocum *et al.* 1989). These requirements for alternative analysis, in general, exceed those required by NEPA.

For proposed actions involving wetlands, requirements of the CWA need to be considered. The CWA contains specific provisions for the regulation of the disposal of dredge soil within navigable waters, and placement of materials into wetlands. Permits are required under sections 401, 402, and 404 of the CWA for proposed actions that involve wastewater discharges and/or dredging/placement of fill in wetlands or navigable waters. These permits are required prior to the initiation of proposed actions. However, such permitting may be accomplished for emergency situations, as defined by the regulatory agency.

Section 401 addresses water quality issues and requires issuance of a Water Quality Certification by the Regional Water Quality Control Board before a Section 404 Permit can be issued. Completing the Section 401 process may be as challenging as issues associated with Section 404. The state charges a fee for Section 401 water quality certification application processing.

Section 402 of the CWA addresses requirements for storm water discharges into natural drainages and is administered by the U.S. Environmental Protection Agency. The CWA also requires federal agency consistency with state nonpoint source pollution management plans. Nonpoint source pollution results from ground disturbing actions, such as construction, military training, and fuelbreak construction. Marine Corps' policy is to support the development and implementation of nonpoint source pollution management programs that ensure water quality protection. This is typically accomplished through the use of Best Management Practices (BMPs). As defined by MCO 5090.2, BMPs are "*methods, measures, or practices selected by an agency to meet its nonpoint source control needs, including, but not limited to, structural and nonstructural controls and operation and maintenance procedures (40 CFR 130).*"

Migratory Bird Treaty Act

The Migratory Bird Treaty Act is an international agreement among the United States, Canada, and Mexico that protects designated species of birds. Virtually all birds are protected under the Migratory Bird Treaty Act, with only a few exceptions, such as the California quail. Birds classified as migratory also include species that occupy MCAS Miramar throughout the year. A complete list of all species of all migratory birds protected by the Migratory Bird Treaty Act is in 50 CFR 10.13.

The Migratory Bird Treaty Act controls the taking of these birds, their nests, eggs, parts, or products. The Act states that it is unlawful "at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, attempt to capture, or attempt to kill, purchase, offer to purchase, deliver for shipment, ship, export, import, cause to be shipped, deliver for transport, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, possess, offer for sale, sell, offer to sell, barter, offer to barter, any migratory bird, any part, nest, or egg of any such bird, or any part, nest, or egg thereof;" unless and except as permitted by regulations in the Migratory Bird Treaty Act.

All persons, organizations, and agencies, are liable for prosecution for violations and must follow permitting requirements for taking migratory birds. Special purpose permits may be requested and issued that allow

for the relocation or transport of migratory birds for management purposes.

Executive Order 13186

Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* required that DoD and the USFWS establish a Memorandum of Understanding that will promote the conservation of migratory bird populations. A Memorandum of Understanding (MOU) has been developed between the agencies to promote the conservation of migratory birds and address non-military readiness activities²⁴ (*i.e.*, natural resources management, installation support functions, industrial activities, facility construction/demolition, hazardous waste cleanup) (September 5, 2014). Specifically the MOU requires that DoD shall:

- follow all migratory bird permitting requirements for activities subject to 50 CFR (*e.g.*, banding and marking, scientific collecting, special Canada goose permit, special purposes, depredation);
- encourage incorporation of comprehensive migratory bird management objectives into DoD planning documents, including INRMPs;
- consistent with current and emerging mission requirements, manage military lands and non-military readiness activities in such a way that supports migratory bird conservation, habitat protection, restoration, and enhancement;
- inventory and monitor bird populations on DoD land to the extent feasible to facilitate decision about the need for, and effectiveness of, conservation efforts;
- work cooperatively with USFWS and state fish and wildlife agencies to promote timely development, effective review, and revisions of the INRMPs, including any potential revisions to promote the conservation of migratory birds;
- incorporate conservation measures addressed in Regional or State Bird Conservation Plans into INRMPs;
- consistent with imperatives of safety and security, allow the USFWS and other partners reasonable access to military lands for conducting sampling or survey programs;
- consistent with imperatives of safety and security and bird conservation responsibilities, support the economic and recreational benefits of bird-related activities by allowing public access to military lands for recreational uses;
- develop policies and procedures for facilities design that will promote the conservation of migratory bird populations, including:
 - mitigating the negative impacts of reflective glass in buildings;
 - maximizing the use of native landscaping to promote migratory bird habitat, except in areas subject to BASH hazards; and
 - turning off interior building lighting at night, especially building surfaces that may be visible to migratory or resident birds.
- prior to starting any activity that is likely to affect populations of migratory birds, take the following specific steps:
 - identify potentially affected species and determine if any species of concern could be affected;
 - use NEPA to assess and document expected impacts on species of concern; and
 - engage in early planning and scoping with the USFWS relative to potential impacts of a proposed action to proactively address migratory bird conservation and initiate appropriate actions to avoid or minimize the take of migratory birds.
- Continue to promote the conservation of migratory birds on military lands by:
 - fire and fuel management practices;
 - invasive species and aquatic nuisance species management practices; and

²⁴ Military readiness activities are addressed in a rulemaking in accordance with section 315, National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314, 116 Stat. 2458).

- communication towers, utilities and energy development.

This MOU does not address incidental take resulting from military readiness activities or active DoD airfield operations, as covered by 50 CFR 21.15 (Authorization of take incidental to military readiness). Installation commanders responsible for military airfields will not implement wildlife conservation prescriptions set forth in this MOU if they conclude that such actions will negatively impact military mission or combat capability. Bird-related management activities with a potential to affect airfield operations or safety will be managed according to DoDI 4165.57 and the airfield's Bird/Wildlife Aircraft Strike Hazards (BASH) Program.

Final Rule – Migratory Bird Permits; Take of Migratory Birds by the Armed Forces

Section 315 of the 2003 National Defense Authorization Act provides that, not later than one year after its enactment, the Secretary of the Interior (Secretary) shall exercise his/her authority under Section 704(a) of the Migratory Bird Treaty Act to prescribe regulations to authorize the Armed Forces to incidentally take migratory birds during military readiness activities authorized by the Secretary of Defense or the Secretary of the military department concerned. The Authorization Act further requires the Secretary to promulgate such regulations with the concurrence of the Secretary of Defense.

The USFWS published a final rule (Federal Register Volume 72, Number 39, February 28, 2007) that authorizes the Armed Forces for the incidental taking of migratory birds during military readiness activities. This final rule “... *authorizes such take, with limitations, that result from military readiness activities of the Armed Forces. If any of the Armed Forces determine that a proposed or an ongoing military readiness activity may result in a significant adverse effect on a population of a migratory bird species, then they must confer and cooperate with the Service to develop appropriate and reasonable conservation measures to minimize or mitigate identified significant adverse effects. The Secretary of the Interior, or his/her designee, will retain the power to withdraw or suspend the authorization for particular activities in appropriate circumstances.*”

This rule only includes military readiness activities. It specifically does not include routine operation of installation operating support functions (*e.g.*, administrative offices; military exchanges; commissaries; water treatment facilities; storage facilities; schools; housing; motor pools; laundries; morale, welfare, and recreation activities; shops; mess halls), operation of industrial activities, or construction or demolition of facilities relating to these routine operations.

The rule anticipates that installations will use the NEPA process to determine whether an ongoing or proposed military readiness activity is “*likely to result in a significant adverse effect on the population of a migratory bird species.*” If such significant adverse effects are likely, an installation is required to confer with the USFWS to develop and implement appropriate conservation measures to minimize or mitigate any such significant adverse effects. The Armed Forces will continue to be responsible for ensuring that military readiness activities are implemented in accordance with all applicable statutes including NEPA and ESA.

Withdrawal of authorization may be proposed if the Secretary [*of Interior*] determines that failure to do so is likely to result in a significant adverse effect on a population of a migratory bird species and one or more of the following circumstances apply:

(A) The Armed Forces have not implemented conservation measures that (i) are directly related to protecting the migratory bird species affected by the proposed military readiness activity; (ii) would significantly reduce take of migratory birds species affected by the military readiness activity, (iii) are economically feasible, and (iv) do not limit the effectiveness of military readiness activities.

(B) The Armed Forces fail to conduct mutually agreed upon monitoring to determine the effects of a military readiness activity on migratory bird species and/or the efficacy of the conservation measures implemented by the Armed Forces.

(C) The Armed Forces have not provided reasonably available information that the Secretary has determined is necessary to evaluate whether withdrawal of take authorization for the specific military readiness activity is appropriate.

DoD and USMC Policy Requirements

The DoD and USMC have incorporated policies to reflect the MOU and Final Rule mentioned above in regards to migratory bird protection. The DoD Instruction 4715.03 (Natural Resources Conservation Program) of March 18, 2011 includes policies on the protection of migratory birds in Enclosure 2, paragraph 7.n(1) and Enclosure 3, paragraph 1.h. These policies state that the DoD shall, where appropriate, protect migratory birds pursuant to the Migratory Bird Treaty Act, and seek to minimize impacts on migratory birds. MCO 5090.2, change 3 of August 26, 2013, chapter 11, subparagraph 11104.3.d states that the Marine Corps will consult the USFWS during INRMP preparation to minimize the taking of protected birds caused by actions not directly associated with military readiness activities.

Final Rule – Migratory Bird Permits; Removal of Migratory Birds from Buildings

The USFWS published a final rule (Federal Register Volume 72, Number 193, October 5, 2007) that amended 50 CFR part 21 to allow removal of migratory birds (other than federally listed threatened or endangered species, Bald Eagles, and Golden Eagles) from inside buildings in which the birds may pose a threat to themselves, to public health and safety, or to commercial interests. This regulatory addition facilitates removal of birds from buildings, which would otherwise require a migratory bird permit.

Birds removed under this rule must be captured using a humane method and, in most cases, immediately released to the wild. *“This regulation does not allow removal of birds or nests from the outside of buildings without a permit. Removal of active nests from inside buildings must be conducted by a federally permitted migratory bird rehabilitator.”*

MCAS Miramar Migratory Bird Permit

MCAS Miramar maintains a Depredation-Airport Permit that covers take, temporary possession, and transport of injured birds to rehabilitation facilities to *“relieve or prevent injurious situations impacting public safety.”* Preventing significant bird air strikes by aircraft is critical to successful operations of the air station. Removal actions to alleviate excrement falling onto workspaces and aircraft have been deemed impacting public safety. The permit excludes federally listed threatened or endangered species, Bald Eagles, and Golden Eagles.

The permit cannot be used for situations where birds *“are merely causing a nuisance.”* Many conditions apply that should be reviewed as any specific actions are taken. Standard and specific conditions for Migratory Bird Depredation Permits are included with the permit. Actions to exclude or preclude bird use of areas where incompatible with operations should be considered prior to any bird removal attempt.

Impacts of Migratory Bird Issues on Project Planning

As part of planning and/or approving construction, re-construction, and maintenance actions, steps need to be taken to avoid impacts on migratory birds, their nests, and young. Wording needs to be placed in all contracts and work orders to prevent work delay costs to the government that may result from the presence of bird nests in work areas. The Environmental Management Department, Natural Resources Division can provide contractual language prepared for and approved by the Navy for construction contracts on MCAS Miramar.

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APPENDIX B. PLANT SPECIES KNOWN TO OCCUR AT MCAS MIRAMAR

(Undeveloped areas only. No Main Station landscaped plants included.)

Marine Corps Air Station Miramar – Observed Flora			
Scientific Name	Common Name+	Status*	Reference **
Lycophyta (Fern-allies)			
Isoetaceae – Quill Family			
<i>Isoetes howellii</i>	Howell’s Quillwort	ACOE vernal pool indicator, Native	4, 7
<i>Isoetes orcuttii</i>	Orcutt’s Quillwort	ACOE vernal pool indicator, Native	4, 5, 6, 7, 16
Selaginellaceae – Spike Moss Family			
<i>Selaginella bigelovii</i>	Bigelow’s Spike-Moss	Native	13a, 13b, 17, 19
<i>Selaginella cinerascens</i>	Mesa Spike-Moss	Native	9, 10, 13a, 13b, 17, 19, 25
Pterophyta (Ferns)			
Marsileaceae – Pepperwort Family			
<i>Marsilea vestita</i>	Hairy Pepperwort	ACOE vernal pool indicator, Native	4, 20
<i>Pilularia americana</i>	American Pillwort	ACOE vernal pool indicator, Native	4, 5, 6, 7, 10, 16, 20
Ophiglossaceae – Adder’s-Tongue Fern Family			
<i>Ophioglossum californicum</i>	California Adder’s-Tongue Fern	Native	13a, 19
Polypodiaceae – Polypody Family			
<i>Polypodium californicum</i>	California Polypody	Native	11
Pteridaceae – Brake Family			
<i>Adiantum jordanii</i>	California Maidenhair	Native	11, 13a, 13b
<i>Pellaea andromedifolia</i>	Coffee Fern	Native	12
<i>Pellaea mucronata</i>	Bird’s-foot Cliff-Brake	Native	13a, 13b, 17, 24
<i>Pentagramma triangularis</i> ssp. <i>viscosa</i>	Sticky Silverback Fern	Native	11, 13a, 13b
Anthophyta (Dicotyledones)			
Adoxaceae – Adoxa Family			
<i>Sambucus nigra</i> ssp. <i>caerulea</i> (<i>S. mexicana</i>)	Blue Elderberry	Native	9, 13a, 13b, 22
Aizoaceae – Fig-marigold Family			
<i>Carpobrotus</i> species	Iceplant	Invasive, Non-native	1a, 9
<i>Mesembryanthemum crystallinum</i>	Crystalline Iceplant	Invasive, Non-native	Station Natural Resources Division (NRD) Staff
<i>Mesembryanthemum nodiflorum</i>	Slender-leaf Iceplant	Invasive, Non-native	2
Amaranthaceae – Amaranth Family			
<i>Amaranthus albus</i>	White Tumbleweed	Non-native	22
Anacardiaceae – Sumac Family			
<i>Malosma laurina</i>	Laurel Sumac	Native	2, 9, 11, 13a, 13b, 17, 23, 25
<i>Rhus integrifolia</i>	Lemonadeberry	Native	9, 11, 13a, 13b, 17, 24,

Marine Corps Air Station Miramar – Observed Flora			
Scientific Name	Common Name+	Status*	Reference **
			25, 26
<i>Rhus ovata</i>	Sugar Bush	Native	11
<i>Schinus molle</i>	Peruvian Pepper Tree	Non-native	11
<i>Toxicodendron diversilobum</i>	Western Poison-Oak	Native	9, 13a, 13b, 17, 24, 28
Apiaceae – Carrot Family			
<i>Apiastrum angustifolium</i>	Mock Parsley	Non-native	11, 12, 13a, 13b, 25
<i>Apium graveolens</i>	Common Celery	Non-native	13a, 13b
<i>Conium maculatum</i>	Common Poison Hemlock	Non-native	NRD Staff
<i>Daucus pusillus</i>	Rattlesnake Weed	Native	11, 12, 13a, 13b, 17, 24, 25, 26
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego Button Celery	FE, ACOE vernal pool indicator, Native	2, 3, 4, 5, 6, 7, 14, 16, 20
<i>Foeniculum vulgare</i>	Sweet Fennel	Invasive, Non-native	1a, 1b, 1d, 1e
<i>Lomatium dasycarpum</i>	Woolly-fruit Lomatium	Native	11, 13b
<i>Osmorhiza brachypoda</i>	California Sweet-cicely	Native	13b
<i>Sanicula arguta</i>	Sharp-tooth Sanicle	Native	11, 13a, 13b
<i>Sanicula bipinnatifida</i>	Purple Sanicle	Native	13b
<i>Sanicula crassicaulis</i>	Pacific Sanicle	Native	13a, 13b, 25
Apocynaceae – Dogbane Family			
<i>Asclepias fascicularis</i>	Narrow-leaf Milkweed	Native	11, 13a, 13b, 17
<i>Nerium oleander</i>	Oleander	Non-native	NRD Staff
Asteraceae – Sunflower Family			
<i>Acourtia microcephala</i>	Sacapellote	Native	11, 13a, 13b
<i>Ambrosia psilostachya</i>	Western Ragweed	Native	11, 13a, 13b, 17, 24, 26
<i>Anthemis cotula</i>	Mayweed	Non-native	13b, 22
<i>Argyranthemum frutescens</i>	Paris Daisy	Non-native	13b
<i>Artemisia californica</i>	California Sagebrush	Native	2, 9, 11, 12, 13a, 13b, 17, 24, 25, 25, 26
<i>Artemisia douglasiana</i>	Mugwort	Native	28, Staff
<i>Artemisia dracunculus</i>	Tarragon	Non-native	13b
<i>Artemisia palmeri</i>	Palmer's Sagewort	Native	8, 13a, 13b
<i>Baccharis pilularis</i>	Coyote Bush	Native	10, 11, 13b, 25, 26
<i>Baccharis salicifolia</i>	Mule-fat	Native	9, 11, 13a, 13b, 17, 18, 24, 26, 28
<i>Baccharis sarothroides</i>	Broom Baccharis	Native	9, 10, 11, 12, 13a, 13b, 17, 24, 25, 26, 28
<i>Bahiopsis (Viguiera) laciniata</i>	San Diego Sunflower	Native	9, 11, 13b, 15
<i>Brickellia californica</i>	California Brickellbush	Native	17, 24
<i>Carduus pycnocephalus</i>	Italian Thistle	Invasive, Non-native	13b, 19, 24, 25
<i>Centaurea melitensis</i>	Tocalote	Invasive, Non-native	2, 10, 12, 13a, 13b, 16, 17, 24, 25, 28, 29
<i>Centromadia pungens</i> ssp. <i>pungens</i>	Common Spikeweed	Native	28
<i>Chaenactis artemisiifolia</i>	Artemisia Pinchushion	Native	11, 13b

Marine Corps Air Station Miramar – Observed Flora			
Scientific Name	Common Name+	Status*	Reference **
<i>Chaenactis glabriuscula</i> var. <i>glabriuscula</i>	Yellow Pincushion	Native	11, 13b
<i>Cirsium cymosum</i>	Peregrine Thistle	Native	13b
<i>Cirsium occidentale</i>	California Thistle	Native	13a
<i>Cirsium vulgare</i>	Bull Thistle	Non-native	1b
<i>Corethrogyne</i> <i>filaginifolia</i>	California Sand-aster	Native	9, 11, 12, 13a, 13b, 17, 24, 25, 26
<i>Cotula australis</i>	Australian Brass-Buttons	Non-native	11, 29
<i>Cotula coronopifolia</i>	African Brass-Buttons	Non-native	2, 3, 5, 6, 10, 13a, 13b, 16, 22
<i>Cynara cardunculus</i>	Artichoke Thistle	Invasive, Non- native	1a, 1b, 1c, 1d, 1e, 1f
<i>Deinandra fasciculata</i>	Fascicled Tarweed	Native	2, 3, 7, 10, 11, 12, 13a, 13b, 16, 17, 24, 25, 26, 28
<i>Dimorphotheca sinuata</i>	Blue-eye Cape-Marigold	Non-native	13b
<i>Dittrichia graveolens</i>	Stinkwort	Invasive, Non- native	1a, 1b, 1d, 1e, 1f, 29
<i>Encelia californica</i>	California Encelia	Native	11
<i>Encelia farinosa</i>	Brittlebrush	Native	NRD Staff
<i>Erigeron (Conyza)</i> <i>bonariensis</i>	Flax-leaf Fleabane	Non-native	13a, 25
<i>Erigeron (Conyza)</i> <i>canadensis</i>	Horseweed	Non-native	11, 12, 26, 28
<i>Erigeron foliosus</i> var. <i>foliosus</i>	Leafy Daisy	Native	11, 13b, 17
<i>Eriophyllum</i> <i>confertiflorum</i>	Golden Yarrow	Native	11, 12, 13b, 18, 25, 26
<i>Gazania linearis</i>	Gazania	Non-native	NRD Staff, 13b
<i>Glebionis</i> (<i>Chrysanthemum</i>) <i>coronarum</i>	Garland Daisy	Non-native	1a, 1b, 1c, 1d, 22
<i>Harzardia squarrosa</i> var. <i>grindelioides</i>	Sawtoothed Goldenbush	Native	13a, 13b, 25, 26
<i>Hedypnois cretica</i>	Crete Hedypnois	Non-native	10, 11, 13a, 13b, 17
<i>Helianthus annuus</i>	Common Sunflower	Non-native	13a, 22
<i>Helianthus gracilentus</i>	Slender Sunflower	Native	NRD Staff, 26
<i>Helminthotheca (Picris)</i> <i>echioides</i>	Bristly Oxtongue	Non-native	13a, 13b, 25, 29
<i>Heterotheca grandiflora</i>	Telegraph Weed	Native	11, 13a, 13b, 24, 25
<i>Holocarpha virgata</i>	Sticky Tarweed	Native	7, 10, 11, 13a, 16, 25, 26
<i>Hypochaeris glabra</i>	Smooth Cat's-Ear	Non-native	3, 7, 10, 11, 12, 13a, 13b, 16, 17, 25
<i>Hypochaeris radicata</i>	Hairy Cat's-Ear	Non-native	13b
<i>Isocoma menziesii</i>	Coast Goldenbush	Native	2, 9, 11, 13a, 13b, 17, 24, 25, 26, 28
<i>Lactuca serriola</i>	Prickly Lettuce	Non-native	10, 13a, 13b, 24, 29
<i>Lasthenia gracilis</i> (<i>californica</i>)	California Goldfields	Native	11, 12, 13a, 13b
<i>Layia platyglossa</i>	Tidy Tips	Native	NRD Staff, 13b

Marine Corps Air Station Miramar – Observed Flora			
Scientific Name	Common Name+	Status*	Reference **
<i>Logfia filaginoides</i> (<i>Filago californica</i>)	California Filago	Native	13a, 13b, 16, 25, 26
<i>Logfia (Filago) gallica</i>	Narrow-leaf Filago	Non-native	10, 11, 12, 13a, 13b, 16, 17, 18, 25, 28
<i>Madia exigua</i>	Pygmy Madia	Native	13b
<i>Matricaria discoidea</i> (<i>Chamomila suaveolens</i>)	Common Pineapple-weed	Non-native	13b, 22
<i>Micropus californicus</i>	Slender Cottonweed	Native	19
<i>Osmadenia tenella</i>	Rosin Weed	Native	10, 11, 12, 13b
<i>Pentachaeta aurea</i>	Golden-rayed Pentachaeta	Native	11, 13b
<i>Pluchea odorata</i>	Salt Marsh Fleabane	Native	NRD Staff
<i>Porophyllum gracile</i>	Odora	Native	11, 13a, 13b
<i>Pseudognaphalium beneolens</i>	Fragrant Everlasting	Native	NRD Staff
<i>Pseudognaphalium biolettii</i> (<i>Gnaphalium bicolor</i>)	Bicolor Cudweed	Native	11, 13b, 24, 25, 26
<i>Pseudognaphalium (Gnaphalium) californicum</i>	California Everlasting	Native	11, 13a, 13b, 17, 24, 25, 26
<i>Pseudognaphalium (Gnaphalium) canescens</i>	Everlasting Cudweed	Native	13a, 13b, 17, 24
<i>Pseudognaphalium (Gnaphalium) luteoalbum</i>	Cudweed	Non-native	13a, 13b
<i>Pseudognaphalium (Gnaphalium) microcephalum</i>	White Everlasting	Native	28
<i>Pseudognaphalium (Gnaphalium) stramineum</i>	Cotton-batting Plant	Native	13a, 13b
<i>Psilocarphus brevissimus</i>	Woolly-Marbles	ACOE vernal pool indicator, Native	3, 4, 5, 6, 7, 10, 12, 16 20
<i>Psilocarphus tenellus</i>	Slender Woolly-Marbles	Native	4, 7, 10, 13b, 16, 20
<i>Rafinesquia californica</i>	California Chicory	Native	13a, 13b, 22
<i>Senecio vulgaris</i>	Common Groundsel	Non-native	11, 13b
<i>Silybum marianum</i>	Milk Thistle	Invasive, Non-native	1b, 11, 13a, 13b, 24, 28
<i>Solidago californica</i>	California Goldenrod	Native	NRD Staff
<i>Sonchus asper</i>	Prickly Sow Thistle	Non-native	10, 11, 13a, 13b, 25, 29
<i>Sonchus oleraceus</i>	Common Sow Thistle	Non-native	10, 11, 12, 13a, 13b, 16
<i>Stebbinsoseris heterocarpa</i>	Grassland Stebbinsoseris	Native	12
<i>Stephanomeria virgata</i>	Tall Wreath Plant	Native	11, 12, 13a, 13b, 17, 24, 26
<i>Stylocline gnaphaloides</i>	Everlasting Nest-Straw	Native	11, 13a, 13b, 17
<i>Taraxacum officinale</i>	Common Dandelion	Non-native	13b
<i>Uropappus lindleyi</i>	Silver Puffs	Native	11, 13a, 13b
<i>Xanthium strumarium</i>	Cocklebur	Non-native	13a, 22
Boraginaceae – Borage Family			
<i>Amsinckia menziesii</i>	Rancher's Fiddleneck	Native	11, 13b, 25, 26, 28

Marine Corps Air Station Miramar – Observed Flora			
Scientific Name	Common Name+	Status*	Reference **
<i>Cryptantha clevelandii</i>	Cleveland's Cryptantha	Native	22
<i>Cryptantha intermedia</i>	Nievas Cryptantha	Native	13a, 13b, 22, 25, 26
<i>Cryptantha micromeres</i>	Minute-flower Cryptantha	Native	13b
<i>Cryptantha muricata</i>	Prickly Cryptantha	Native	9
<i>Eriodictyon crassifolium</i>	Felt-leaf Yerba Santa	Native	9, 11, 13b, 17, 19, 24, 25
<i>Eriodictyon (Turricula) parryi</i>	Poodle-dog Bush	Native	11
<i>Harpagonella palmeri</i>	Palmer's Grappling Hook	Native	11, 15, 18
<i>Pectocarya linearis</i>	Slender Pectocarya	Native	11, 13b, 25, 26
<i>Phacelia cicutaria</i> var. <i>hispida</i>	Caterpillar Phacelia	Native	11, 13b
<i>Phacelia distans</i>	Wild Heliotrope	Native	13b, 24, 25, 26
<i>Phacelia grandiflora</i>	Giant-flower Phacelia	Native	NRD Staff, 13b
<i>Phacelia parryi</i>	Parry's Phacelia	Native	13b, 19
<i>Phacelia ramosissima</i> var. <i>latifolia</i>	Branching Phacelia	Native	11
<i>Plagiobothrys acanthocarpus</i>	Adobe Popcornflower	ACOE vernal pool indicator, Native	5, 20, 22, 25
<i>Plagiobothrys bracteatus</i>	Bracted Popcornflower	ACOE vernal pool indicator, Native	5
<i>Plagiobothrys collinus</i>	Popcornflower	Native	11, 13b
<i>Plagiobothrys leptocladus</i>	Alkali Plagiobothrys	ACOE vernal pool indicator, Native	10
<i>Plagiobothrys nothofulvus</i>	Rusty Popcornflower	Native	12, 22
Brassicaceae – Mustard Family			
<i>Athysanus pusillus</i>	Dwarf Athysanus	Native	
<i>Brassica nigra</i>	Black Mustard	Non-native	7, 9, 10, 13a, 13b, 17, 22, 24, 25, 29
<i>Capsella bursa-pastoris</i>	Shepherd's Purse	Non-native	11
<i>Cardamine californica</i>	Milk Maids	Native	NRD Staff
<i>Caulanthus heterophyllus</i>	San Diego Jewelflower	Native	11, 12, 13b, 17
<i>Coronopus didymus</i>	Lesser Wart-cress	Non-native	22
<i>Hirschfeldia incana</i>	Short-pod Mustard	Non-native	9, 11, 13b, 24, 25, 29
<i>Lepidium nitidum</i>	Shining Peppergrass	Native	12, 13a, 13b, 22
<i>Lepidium virginicum</i> var. <i>robinsonii</i>	Robinson's Peppergrass	Native	8, 13b
<i>Lobularia maritima</i>	Sweet Alyssum	Non-native	13a
<i>Nasturtium officinale</i>	Watercress	Native	NRD Staff, 13b
<i>Raphanus sativus</i>	Wild radish	Non-native	13a, 13b, 22, 25
<i>Sisymbrium irio</i>	London Rocket	Non-native	29,
<i>Sisymbrium orientale</i>	Indian Hedge-mustard	Non-native	13b
<i>Thysanocarpus</i> spp.	Lace Pod	Native	11, 13b
Cactaceae – Cactus Family			
<i>Cylindropuntia californica</i>	Cane Cholla	Native	11
<i>Cylindropuntia prolifera</i>	Coast Cholla	Native	9, 2002 SDNHM specimen
<i>Ferocactus viridescens</i>	Coast Barrel Cactus	Native	8, 9, 11, 13a, 13b, 17,

Marine Corps Air Station Miramar – Observed Flora			
Scientific Name	Common Name+	Status*	Reference **
			18, 19, 24
<i>Opuntia littoralis</i>	Coastal Prickly-Pear	Native	9, 11, 13a, 13b, 17, 19, 24
<i>Opuntia oricola</i>	Pancake Prickly-Pear	Native	2002 SDNHM specimen, 19
Campanulaceae – Bellflower Family			
<i>Downingia cuspidata</i>	Toothed Downingia	ACOE vernal pool indicator, Native	2, 3, 4, 5, 6, 7, 10, 16, 20
Caprifoliaceae – Honeysuckle Family			
<i>Lonicera subspicata</i> var. <i>denudata</i>	Johnston's Honeysuckle	Native	11, 13a, 13b, 17, 23, 24
Caryophyllaceae – Pink Family			
<i>Cardionema ramosissimum</i>	Sandmat	Native	11, 17
<i>Cerastium fontanum</i>	Chickweed	Non-native	13a
<i>Cerastium glomeratum</i>	Mouse-ear Chickweed	Non-native	11, 13a, 13b, 19
<i>Polycarpon tetraphyllum</i>	Four-leaf Allseed	Non-native	13b
<i>Silene antirrhina</i>	Snapdragon Catchfly	Native	13a
<i>Silene gallica</i>	Common Catchfly	Non-native	11, 12, 13a, 13b, 17, 19, 24
<i>Silene laciniata</i> ssp. <i>laciniata</i>	Southern Pink	Native	11, 13b, 17, 19
<i>Silene multinervia</i>	Many-nerve Catchfly	Native	13b
<i>Spergula arvensis</i>	Spurry, Stickwort	Non-native	10, 11, 12, 13b, 17
<i>Spergularia bocconi</i>	Biccone's Sand-spurry	Non-native	11, 13a, 13b, 16
<i>Stellaria media</i>	Common Chickweed	Non-native	11, 13b, 19
Chenopodiaceae			
<i>Atriplex semibaccata</i>	Australian Saltbush	Non-native	1b, 22, 25, 26
<i>Chenopodium album</i>	Lamb's Quarters	Non-native	13a, 29
<i>Chenopodium californicum</i>	California Goosefoot	Native	13a, 13b, 19
<i>Salsola tragus</i>	Russian Thistle	Invasive, Non-native	1b, 1d, 2, 11, 16, 19
Cistaceae – Rock-rose Family			
<i>Cistus creticus</i>	Purple Rock-rose	Non-native	NRD Staff
<i>Helianthemum scoparium</i>	Peak Rush-rose	Native	9, 11, 12, 13a, 13b, 17, 25, 26
Cleomaceae – Spiderflower Family			
<i>Peritoma (Isomeris) arborea</i>	Bladderpod	Native	11, Staff
Convolvulaceae – Morning-glory Family			
<i>Calystegia macrostegia</i>	Western Bindweed	Native	9, 13a, 13b, 17, 19, 24, 26
<i>Convolvulus arvensis</i>	Field Bindweed	Non-native	11
<i>Cressa truxillensis</i>	Alkali Weed	Native	11
<i>Cuscuta californica</i>	Dodder	Native	11, 13a, 13b, 19, 24
<i>Dichondra occidentalis</i>	Western Dichondra	Native	11, 13a, 15
Crassulaceae – Stonecrop Family			
<i>Crassula aquatica</i>	Water Pygmyweed	ACOE vernal pool indicator, Native	4, 5, 6, 7, 10, 16, 20

Marine Corps Air Station Miramar – Observed Flora			
Scientific Name	Common Name+	Status*	Reference **
<i>Crassula connata</i>	Pygmyweed	Native	10, 11, 12, 13a, 13b, 19, 25
<i>Dudleya edulis</i>	Ladies' Fingers	Native	11, 24, 25
<i>Dudleya lanceolata</i>	Lance-leaf Dudleya	Native	11, 19, 25
<i>Dudleya pulverulenta</i>	Chalk Dudleya	Native	11, 17, 18, 19, 24
<i>Dudleya variegata</i>	Variegated Dudleya	Native	15, 18
Cucurbitaceae – Gourd Family			
<i>Marah macrocarpus</i>	Wild Cucumber	Native	11, 12, 13a, 13b, 17, 19, 25
Datisceae – Datisca Family			
<i>Datisca glomerata</i>	Durango Root	Native	NRD Staff
Dipsacaceae – Teasel Family			
<i>Dipsacus sativus</i>	Fuller's Teasel	Non-native	13a
Elatinaceae – Elatine Family			
<i>Elatine brachysperma</i>	Short-seed Waterwort	Native	5, 6, 7, 10, 16, 20
<i>Elatine californica</i>	California Waterwort	ACOE vernal pool indicator, Native	4, 7, 22
Ericaceae – Heath Family			
<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i>	Del Mar Manzanita	FE, Native	11, 13b, 15, 18, 19, 23
<i>Arctostaphylos glandulosa</i> ssp. <i>glandulosa</i> (<i>zacaensis</i>)	Southern Eastwood Manzanita/Zaca Lake Manzanita	Native	15, 18, 19, 23
<i>Comarostaphylis diversifolia</i> var. <i>diversifolia</i>	Summer-holly	Native	8, 11
<i>Xylococcus bicolor</i>	Mission Manzanita	Native	9, 11, 12, 13a, 13b, 17, 18, 19
Euphorbiaceae – Spurge Family			
<i>Croton californicus</i>	California Croton	Native	22
<i>Croton</i> (<i>Eremocarpus</i>) <i>setigerus</i>	Doveweed	Native	2, 3, 7, 10, 11, 13a, 13b, 16, 17, 19, 24, 25, 26
<i>Euphorbia</i> (<i>Chamaesyce</i>) <i>albomarginata</i>	Rattlesnake Weed	Native	17, 25, 26
<i>Euphorbia</i> (<i>Chamaesyce</i>) <i>maculata</i>	Spotted Spurge	Non-native	NRD Staff
<i>Euphorbia pepus</i>	Petty Spurge	Non-native	13a, 13b, 22, 25
<i>Euphorbia</i> (<i>Chamaesyce</i>) <i>prostrata</i>	Prostrate Spurge	Non-native	NRD Staff
<i>Euphorbia</i> (<i>Chamaesyce</i>) <i>polycarpa</i>	Small-seed Sandmat	Native	11, 13a, 13b, 16
<i>Ricinus communis</i>	Castor Bean	Invasive, Non-native	1a, 1b, 1d, 11, 19
Fabaceae – Pea Family			
<i>Acacia melanoxylon</i>	Blackwood Acacia	Invasive, Non-native	1a, 1b, 1c, 1d, 1e, 11, 19
<i>Acmispon americanus</i> (<i>Lotus purshianus</i>)	Spanish Clover	Native	13a, 13b, 16, 19, 25
<i>Acmispon glaber</i> (<i>Lotus</i>)	Deerweed	Native	7, 9, 11, 12, 13a, 13b,

Marine Corps Air Station Miramar – Observed Flora			
Scientific Name	Common Name+	Status*	Reference **
<i>scoparius</i>)			16, 17, 19, 24, 25, 26, 28
<i>Acmispon (Lotus) heermannii</i>	Heermann's Lotus	Native	13b
<i>Acmispon maritimus (Lotus salsuginosus)</i>	Humble Lotus	Native	13b
<i>Acmispon miscranthus</i>	Grab Lotus	Native	19
<i>Acimispon parviflorus (Lotus micranthus)</i>	Miniature Lotus	Native	13b, 19
<i>Acimispon (Lotus) strigosus</i>	Strigose Lotus	Native	12, 13a, 13b, 17, 19
<i>Lathyrus vestitus</i>	San Diego Sweet-pea	Native	11, 13b, 19, 24
<i>Lotus corniculatus</i>	Birdfoot Trefoil	Non-native	13a
<i>Lupinus bicolor</i>	Miniature Lupine	Native	10, 11, 13a, 13b, 19
<i>Lupinus concinnus</i>	Bajada Lupine	Native	13a, 13b
<i>Lupinus hirsutissimus</i>	Stinging Lupine	Native	11
<i>Lupinus succulentus</i>	Arroyo Lupine	Native	11, 13b, 25, 26
<i>Lupinus truncatus</i>	Collar Lupine	Native	11, 13b, 19
<i>Medicago polymorpha</i>	California Burclover	Non-native	11, 13a, 13b, 19, 29
<i>Melilotus albus</i>	White Sweetclover	Non-native	13a, 13b, 19, 28
<i>Melilotus indicus</i>	Indian Sweetclover	Non-native	11, 13a, 13b, 29
<i>Melilotus officinalis</i>	Yellow Sweetclover	Non-native	19
<i>Trifolium depauperatum</i>	Balloon-sack Clover	Native	7, 28 13a, 13b
<i>Trifolium fragiferum</i>	Strawberry Clover	Non-native	22
<i>Trifolium gracilentum</i>	Pin-point Clover	Native	13b
<i>Trifolium hirtum</i>	Rose Clover	Non-native	19
<i>Trifolium microcephalum</i>	Maiden Clover	Native	13a, 13b
<i>Trifolium willdenovii</i>	Valley or Tomcat Clover	Native	13b
<i>Vicia americana</i>	American Vetch	Native	19
<i>Vicia ludoviciana</i>	Deer Pea Vetch	Native	13b
<i>Vicia sativa ssp. sativa</i>	Spring Vetch	Non-native	19
<i>Vicia villosa</i>	Hairy Vetch	Non-native	11, 13a, 13b
Fagaceae – Beech Family			
<i>Quercus agrifolia</i>	Coast Live Oak	Native	9, 13a, 13b, 15, 17, 18, 24
<i>Quercus berberidifolia</i>	Scrub Oak	Native	9, 11, 12, 13a, 13b, 17, 19, 24
<i>Quercus dumosa</i>	Nuttall's Scrub Oak	Native	2, 8, 13a, 19, 26
<i>Quercus engelmannii</i>	Engelmann Oak	Native	NRD Staff, 13b
Gentianaceae – Gentian Family			
<i>Zeltnera venusta (Centaurium venustum)</i>	Canchalagua	Native	10, 11, 13a, 13b, 16, 19, 25
Geraniaceae – Geranium Family			
<i>Erodium botrys</i>	Long-beak Filaree	Non-native	2, 3, 7, 9, 10, 11, 12, 13a, 13b, 16, 17, 18, 19, 24, 25, 28, 29
<i>Erodium cicutarium</i>	Red-stem Filaree	Non-native	7, 10, 11, 13a, 13b, 16, 18, 19, 25, 28, 29
<i>Erodium moschatum</i>	White-stem Filaree	Non-native	13b, 16
<i>Geranium californicum</i>	California Geranium	Native	13b, 19, 25, 26

Marine Corps Air Station Miramar – Observed Flora			
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<i>Geranium carolinianum</i>	Carolina Geranium	Native	11, 13a, 13b, 19
<i>Geranium dissectum</i>	Cut-leaf Geranium	Non-native	NRD Staff, 13b
<i>Geranium molle</i>	Dove-foot Geranium	Non-native	16
Grossulariaceae – Gooseberry Family			
<i>Ribes indecorum</i>	White-flower Currant	Native	11, 17
<i>Ribes malvaceum</i>	Chaparral Currant	Native	13b
<i>Ribes speciosum</i>	Fuchsia-flower Gooseberry	Native	11, 13a, 13b, 22
Heliotropaceae – Heliotrope Family			
<i>Heliotropium curassavicum</i>	Salt Heliotrope	Native	NRD Staff, 13b
Hydrophyllaceae – Waterleaf Family			
<i>Emmenanthe penduliflora</i>	Whispering Bells	Native	13b, 19
<i>Eucrypta chrysanthemifolia</i>	Common Eucrypta	Native	11, 13a, 13b, 19
<i>Pholistoma auritum</i> ssp. <i>auritum</i>	Fiesta Flower	Native	11, 13b
<i>Pholistoma racemosum</i>	San Diego Fiesta Flower	Native	11, 13a, 13b
Hypericaceae – St. John’s Wort Family			
<i>Hypericum canariense</i>	Canary Island St. John’s Wort	Non-native	1a, 1b, 1d, 1e, 1f
Lamiaceae – Mint Family			
<i>Marrubium vulgare</i>	Horehound	Non-native	11, 19, 28
<i>Monardella viminea</i> (M. <i>linoides</i> ssp. <i>viminea</i>)	Willow Monardella	FE, Native	8, 9, 13b, 17, 18, 19, 24
<i>Pogogyne abramsii</i>	San Diego Mesa Mint	FE, ACOE vernal pool indicator, Native	2, 3, 4, 5, 6, 7, 10, 14, 16, 18, 19, 20
<i>Salvia apiana</i>	White Sage	Native	9, 11, 13a, 13b, 17, 19, 24, 26
<i>Salvia columbariae</i>	Chia	Native	11, 12, 13a, 13b, 17, 19
<i>Salvia mellifera</i>	Black Sage	Native	2, 9, 12, 13a, 13b, 15, 17, 18, 24, 25, 26
<i>Scutellaria tuberosa</i>	Danny’s Skullcap	Native	11, 19
<i>Stachys ajugoides</i>	Hedge-nettle	Native	13a, 13b, 19, 26
<i>Stachys bullata</i>	California Hedge-nettle	Native	13b, 24
<i>Trichostema lanatum</i>	Woolly Bluecurls	Native	11, 13b, 19
Lythraceae – Loosestrife Family			
<i>Lythrum hyssopifolium</i>	Grass Poly	Non-native	3, 4, 5, 6, 7, 10, 11, 13a, 13b, 16, 19, 20
Malvaceae – Mallow Family			
<i>Malacothamnus densiflorus</i>	Many-flower Bushmallow	Native	19, 24
<i>Malacothamnus fasciculatus</i>	Chaparral Mallow	Native	9, 11, 13a, 13b, 17, 19, 26
<i>Malva parviflora</i>	Cheeseweed	Non-native	11, 13a, 19, 29
<i>Sidalcea malviflora</i>	Checker Mallow	Native	9, 11, 13a, 13b
Molluginaceae – Carpet-weed Family			
<i>Glinus lotoides</i>	Lotus Sweetjuice	Non-native	16
Myrsinaceae – Myrsine Family			

Marine Corps Air Station Miramar – Observed Flora			
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<i>Anagallis arvensis</i>	Scarlet Pimpernel	Non-native	9, 10, 11, 13a, 13b, 16, 19, 25, 29
<i>Anagallis minima</i> (<i>Centunculus minimus</i>)	Chaffweed	ACOE vernal pool indicator, Native	4, 5, 6, 7, 10, 16, 20, 22
<i>Anagallis monelli</i>	Blue Pimpernel	Non-native	NRD Staff
Myrtaceae – Myrtle Family			
<i>Eucalyptus globulus</i>	Blue Gum	Non-native	1b, 22
<i>Eucalyptus sideroxylon</i>	Red Iron Bark	Non-native	22
Nyctaginaceae – Four O’Clock Family			
<i>Mirabilis laevis</i> (<i>californica</i>)	Wishbone Bush	Native	11, 12, 13a, 13b, 19
Oleaceae – Olive Family			
<i>Olea europa</i>	Mission Olive	Non-native	NRD Staff, 24
Onagraceae – Evening-primrose Family			
<i>Camissonia bistorta</i>	California Sun Cup	Native	11, 19
<i>Camissonia cheiranthifolia</i>	Beach Evening Primrose	Native	19
<i>Camissonia micrantha</i>	Miniature Sun Cup	Native	19
<i>Camissonia robusta</i>	Robust Sun Cup	Native	13b
<i>Clarkia delicata</i>	Campo Clarkia	Native	11
<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	Four-spot Clarkia	Native	11, 13a, 13b, 17, 19
<i>Epilobium</i> (<i>Zauschneria</i>) <i>canum</i>	California Fuchsia	Native	9, 13a, 13b, 17, 19, 24
<i>Epilobium pygmaeum</i>	Smooth Boisdualia	Native	20
Orobanchaceae – Broom-Rape Family			
<i>Castilleja affinis</i>	Coast Paintbrush	Native	13b
<i>Castilleja densiflora</i> ssp. <i>gracilis</i>	Parish’s Owl’s-clover	Native	13a, 13b
<i>Castilleja exserta</i>	Purple Owl’s-clover	Native	7, 10, 11, 12, 13a, 13b, 19, 25
<i>Cordylanthus rigidus</i> ssp. <i>setigerus</i>	Dark-tip Bird’s Beak	Native	11, 19, 26
<i>Pedicularis densiflora</i>	Indian Warrior	Native	11, 19
Oxalidaceae – Wood-sorrel Family			
<i>Oxalis albicans</i> ssp. <i>californica</i>	California Wood Sorrel	Native	11, 13a, 13b, 17, 19
<i>Oxalis pes-caprae</i>	Bermuda Buttercup	Invasive, Non-native	1a, 1b, 11, 12, 13a, 16, 19, 29
Papaveraceae – Poppy Family			
<i>Dicentra chrysantha</i>	Golden Ear-drops	Native	13a, 13b
<i>Eschscholzia californica</i>	California Poppy	Native	9, 11, 13b, 18, 19, 25, 28
<i>Papaver californicum</i>	Fire Poppy	Native	13b
Phrymaceae – Hopseed Family			
<i>Mimulus aurantiacus</i>	Coast Monkey Flower	Native	9, 11, 13a, 13b, 17, 19, 24, 25, 26
<i>Mimulus brevipes</i>	Slope Semiphore	Native	11, 13b, 19
<i>Mimulus guttatus</i>	Seep Monkey Flower	Native	11, 13a, 13b, 17
<i>Mimulus pilosus</i>	Downy Monkey Flower	Native	13b, 19

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Plantaginaceae – Plantain Family			
<i>Antirrhinum coulterianum</i>	Coulter's Snapdragon	Native	13b, 22
<i>Antirrhinum kelloggii</i>	Climbing Snapdragon	Native	13b, 19
<i>Antirrhinum nuttallianum</i>	Nuttall's Snapdragon	Native	11, 12, 13a, 13b, 19, 25
<i>Callitriche marginata</i>	Long-stem Water Starwort	ACOE vernal pool indicator, Native	4, 5, 6, 7, 10, 16, 19, 20
<i>Collinsia heterophylla</i>	Chinese Houses	Native	11, 13b, 19
<i>Linaria canadensis</i>	Blue Toadflax	Native	13a, 13b, 19
<i>Penstemon centranthifolius</i>	Scarlet Bugler	Native	22
<i>Plantago coronopus</i>	Cut-leaf Plantain	Non-native	10
<i>Plantago erecta</i>	California Plantain	Native	7, 10, 12, 13a, 13b, 16, 19, 25, 26
<i>Plantago elongata</i>	Vernal Pool Plantain	ACOE vernal pool indicator, Native	6, 5, 7, 10, 16, 20
<i>Plantago lanceolata</i>	English Plantain	Non-native	22
<i>Plantago major</i>	Common Plantain	Non-native	13b
<i>Plantago ovata</i>	Woolly Plantain	Native	13b, 26
<i>Veronica anagallis-aquatica</i>	Water Speedwell	Non-native	13b, 22
<i>Veronica peregrina</i>	Purslane Speedwell	Native	4, 6, 10
Platanaceae – Sycamore Family			
<i>Platanus racemosa</i>	Western Sycamore	Native	9, 13a, 13b, 17, 19, 24, 28
Plumbaginaceae – Leadwort Family			
<i>Limonium sinuatum</i>	Sea-Lavender	Non-native	9, 24
Polemoniaceae – Phlox Family			
<i>Eriastrum filifolium</i>	Thread-leaf Woolly-Star	Native	13b
<i>Gilia angelensis</i>	Grassland Gilia	Native	11, 13b
<i>Linanthus dianthiflorus</i>	Farinose Ground Pink	Native	11, 12, 13a, 19
<i>Navarretia atractylodes</i>	Holly-leaf Skunkweed	Native	22
<i>Navarretia fossalis</i>	Spreading Navarretia	FT, ACOE vernal pool indicator, Native	4, 7, 20
<i>Navarretia hamata</i>	Hooked Skunkweed	Native	7, 10, 11, 12, 13a, 13b, 16, 19, 25, 26
Polygonaceae – Buckwheat Family			
<i>Chorizanthe fimbriata</i>	Fringed Spineflower	Native	11, 13b, 17, 19, 24, 25
<i>Chorizanthe polygonoides</i> var. <i>longispina</i>	Long-spined Spineflower	Native	8, 11, 13a, 13b, 16, 18, 19
<i>Chorizanthe procumbens</i>	Prostrate Spineflower	Native	11, 13b, 15, 19
<i>Eriogonum fasciculatum</i>	Flat-topped Buckwheat	Native	2, 9, 12, 13a, 13b, 15, 17, 18, 24, 25, 26, 28
<i>Eriogonum gracile</i>	Slender Buckwheat	Native	22
<i>Eriogonum wrightii</i>	Foothill Buckwheat	Native	17
<i>Polygonum arenastrum</i>	Common Knotweed	Non-native	19
<i>Pterostegia drymarioides</i>	Woodland Threadstem	Native	11, 13a, 13b, 19, 25
<i>Rumex conglomeratus</i>	Whorled Dock	Non-native	13b

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<i>Rumex crispus</i>	Curly Dock	Non-native	1d, 2, 5, 6, 9, 10, 13a, 13b, 16, 17, 19, 24, 29
<i>Rumex salicifolius</i>	Willow Dock	Native	9, 13a, 13b, 24
Portulacaceae – Purslane Family			
<i>Calandrinia breweri</i>	Brewer's Calandrinia	Native	13b
<i>Calandrinia ciliata</i>	Red Maids	Native	11, 12, 13a, 13b, 19
<i>Calyptridium monandrum</i>	Common Calyptridium	Native	13a, 13b
<i>Claytonia perfoliata</i>	Miner's Lettuce	Native	11, 13a, 13b, 19
Primulaceae – Primrose Family			
<i>Dodecatheon clevelandii</i>	Padre's Shooting Star	Native	11, 13a, 13b, 19, 26
Ranunculaceae – Buttercup Family			
<i>Clematis lasiantha</i>	Pipestems	Native	19
<i>Clematis pauciflora</i>	Ropevine	Native	13a, 13b, 17, 22
<i>Delphinium parryi</i>	Parry's Larkspur	Native	13b, 17
<i>Myosurus minimus</i>	Little Mousetail	ACOE vernal pool indicator, Native	4, 5, 6
<i>Thalictrum fendleri</i> var. <i>polycarpum</i>	Smooth-leaf Meadow-rue	Native	11, 13a, 13b
Resedaceae – Mignonette Family			
<i>Reseda luteola</i>	Mignonette	Non-native	13b, 22
Rhamnaceae – Buckthorn Family			
<i>Ceanothus otayensis</i>	Otay-lilac	Native	8
<i>Ceanothus tomentosus</i>	Ramona-lilac	Native	11, 12, 13a, 13b, 17, 18, 19, 24, 25
<i>Ceanothus verrucosus</i>	Wart-stem Ceanothus	Native	15, 23
<i>Fragula (Rhamnus) californica</i>	Coffeeberry	Native	NRD Staff
<i>Rhamnus crocea</i>	Spiny Redberry	Native	9, 11, 13a, 13b, 17, 19, 24
<i>Rhamnus ilicifolia</i>	Hollyleaf Redberry	Native	18, 19
Rosaceae – Rose Family			
<i>Adenostoma fasciculatum</i>	Chamise	Native	2, 9, 11, 12, 13a, 13b, 17, 18, 23, 24, 25
<i>Cercocarpus minutiflorus</i>	San Diego Mountain-mahogany	Native	11, 13a, 13b, 15, 17, 18, 19, 24
<i>Heteromeles arbutifolia</i>	Toyon	Native	9, 11, 13a, 13b, 17, 24, 25, 28
<i>Prunus ilicifolia</i>	Holly-leaf Cherry	Native	9, 11, 13a, 13b, 15, 17, 18, 24
<i>Prunus virginiana</i> var. <i>demissa</i>	Western Choke-cherry	Native	11
Rubiaceae – Madder Family			
<i>Galium angustifolium</i> ssp. <i>angustifolium</i>	Narrow-leaved Bedstraw	Native	11, 12, 13a, 13b, 19, 24, 25, 26
<i>Galium aparine</i>	Goose Grass	Native	11, 13a, 13b, 19, 25, 26
<i>Galium nuttallii</i>	San Diego Bedstraw	Native	13a, 13b, 25
<i>Galium stellatum</i>	Star-flower Bedstraw	Native	13a
Rutaceae – Rue Family			
<i>Cneoridium dumosum</i>	Bush-rue	Native	9, 11, 12, 13a, 13b, 19,

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Scientific Name	Common Name+	Status*	Reference **
			23
Salicaceae – Willow Family			
<i>Populus fremontii</i>	Western Cottonwood	Native	22
<i>Salix exigua</i>	Narrow-leaved Willow	Native	19, 28
<i>Salix gooddingii</i>	Goodding's Black Willow	Native	9, 24
<i>Salix laevigata</i>	Red Willow	Native	19
<i>Salix lasiolepis</i>	Arroyo Willow	Native	9, 13a, 13b, 19, 26, 28
Saururaceae – Lizard's-tail Family			
<i>Anemopsis californica</i>	Yerba Mansa	Native	13a, 13b, 26
Saxifragaceae – Saxifrage Family			
<i>Jepsonia parryi</i>	Coast Jepsonia	Native	11, 13a, 13b, 19
Scrophulariaceae – Figwort Family			
<i>Myoporum laetum</i>	Myoporum	Non-native	NRD Staff
<i>Scrophularia californica</i>	California Figwort	Native	19
Solanaceae – Nightshade Family			
<i>Datura wrightii</i>	Thorn-apple	Non-native	13a, 13b, 22, 28
<i>Nicotiana glauca</i>	Tree Tobacco	Invasive, Non-native	1a, 1b
<i>Solanum americanum</i>	White Nightshade	Non-native	12, 13b
<i>Solanum douglasii</i>	Douglas's Nightshade	Native	13a
<i>Solanum eleagnifolium</i>	White Horse-nettle	Invasive/Non-native	NRD staff
<i>Solanum parishii</i>	Parish's Nightshade	Native	13a, 13b, 17, 19, 25, 26
<i>Solanum xanti</i>	Chaparral Nightshade	Native	9, 11, 13b
Tamaricaceae – Tamarisk Family			
<i>Tamarix</i> species	Tamarisk, Salt Cedar	Invasive, Non-native	1a, 1b, 1d, 1e, 13a
Urticaceae – Nettle Family			
<i>Hesperocnide tenella</i>	Western Nettle	Native	13a, 13b
<i>Parietaria hespera</i>	Pellitory	Native	13a, 13b
Verbenaceae – Vervain Family			
<i>Verbena lasiostachys</i>	Western Vervain	Native	22, 28
<i>Verbena menthifolia</i>	Mint-leaf Vervain	Native	22
Violaceae – Violet Family			
<i>Viola pedunculata</i>	Johnny Jump-up	Native	11, 13a, 13b, 19
Viscaceae – Mistletoe Family			
<i>Phoradendron macrophyllum</i>	Big-leaf Mistletoe	Native	13b
Anthophyta (Monocotyledones)			
Agavaceae – Agave Family			
<i>Hesperoyucca (Yucca) whipplei</i> ssp. <i>whipplei</i>	Our Lord's Candle	Native	11, 13a, 13b, 17, 19, 24
<i>Yucca schidigera</i>	Mohave Yucca	Native	9, 11, 19, 23
Alismataceae – Water-Plantain Family			
<i>Alisma plantago-aquatica</i>	Water plantain	Native	NRD Staff, 13b
Alliaceae – Onion Family			
<i>Allium haematochiton</i>	Red-skin Onion	Native	19
<i>Allium praecox</i>	Early Onion	Native	13a, 13b, 19
Areaceae – Palm Family			

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<i>Washingtonia robusta</i>	Fan palm	Non-native	NRD Staff
Asphodelaceae – Asphodel Family			
<i>Asphodelus fistulosus</i>	Hollow-stem Asphodelus	Non-native	22, NRD Staff
Cyperaceae – Sedge Family			
<i>Carex praegracilis</i>	Clustered Field Sedge	Native	13b
<i>Carex spissa</i>	San Diego Sedge	Native	28
<i>Carex triquetra</i>	Triangular-fruit Sedge	Native	11, 13a, 13b
<i>Cyperus eragrostis</i>	Tall Flatsedge	Native	21, 28
<i>Cyperus involucratus</i>	African Umbrella Plant	Non-native	10, 13a, 13b, 16
<i>Eleocharis acicularis</i>	Needle Spike-sedge	Native	5, 6, 16
<i>Eleocharis macrostachya</i>	Pale Spike-sedge	Native	3, 4, 5, 6, 7, 9, 10, 13a, 13b, 16, 20
<i>Eleocharis parishii</i>	Parish's Spike-sedge	Native	19
<i>Schoenoplectus (Scripus) californicus</i>	California Bulrush (Tulle)	Native	13a, 13b, 28
Hyacinthaceae – Hyacinth Family			
<i>Chlorogalum parviflorum</i>	Small-flowered Soap Plant	Native	11, 12, 13a, 13b, 19, 25
<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	Wavyleaf Soap Plant	Native	11
Iridaceae – Iris Family			
<i>Sisyrinchium bellum</i>	Blue-eyed Grass	Native	9, 11, 13a, 13b, 19, 24, 25, 26
Juncaceae – Rush Family			
<i>Juncus arcticus</i> var. <i>mexicanus</i>	Mexican Rush	Native	10, 13b, 22
<i>Juncus bufonius</i>	Toad Rush	Native	5, 6, 7, 10, 11, 13b, 16, 19, 20, 25, 26
<i>Juncus dubius</i>	Mariposa Rush	Native	4, 5, 6, 7, 9, 10, 11, 13a, 16, 19
<i>Juncus phaeocephalus</i>	Brown-head Rush	Native	22
Juncaginaceae – Arrow-Grass Family			
<i>Triglochin (Lilaea) scilloides</i>	Flowering-quillwort	Native	4, 5, 6, 7, 10, 16, 20, 22
Liliaceae – Lily Family			
<i>Calochortus splendens</i>	Splendid Mariposa Lily	Native	11, 13a, 13b, 19
<i>Calochortus weedii</i> var. <i>weedii</i>	Weed's Mariposa Lily	Native	11, 19
<i>Fritillaria biflora</i>	Chocolate Lily	Native	NRD Staff, 13b
Melanthiaceae – Camas Family			
<i>Zigadenus fremontii</i>	Fremont's Camas	Native	11, 19
Orchidaceae – Orchid Family			
<i>Piperia unalascensis</i>	Slenderspire Piperia	Native	22
Poaceae – Grass Family			
<i>Agrostis avenacea</i>	Pacific Bentgrass	Invasive, Non-native	2, 3, 4, 5, 6, 7, 10, 11, 16
<i>Agrostis exarata</i>	Spike Redtop	Native	13b
<i>Agrostis microphylla</i>	Small-leaf Bent	Native	5, 6, 16
<i>Agrostis pallens</i>	Seashore Bentgrass	Native	9, 19

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<i>Agrostis viridis</i>	Water Bent	Non-native	13a
<i>Arundo donax</i>	Giant Reed	Invasive, Non-native	1a, 1b, 1c, 1f, 22
<i>Avena barbata</i>	Slender Wild Oat	Invasive, Non-native	2, 3, 7, 10, 11, 12, 13a, 13b, 16, 17, 19
<i>Avena fatua</i>	Wild Oat	Invasive, Non-native	11, 17, 19, 24, 29
<i>Bothriochloa barbinodis</i>	Cane Bluestem	Native	11, 25, 26
<i>Brachypodium distachyon</i>	Purple Falsebrome	Non-native	13a, 13b, 17
<i>Briza minor</i>	Quaking Grass	Non-native	13a, 13b
<i>Bromus carinatus</i>	California Brome	Native	11
<i>Bromus diandrus</i>	Ripgut Brome	Non-native	7, 11, 12, 13a, 13b, 16, 17, 18, 19, 24, 25, 29
<i>Bromus hordeaceus</i>	Soft Chess	Non-native	2, 3, 7, 10, 11, 12, 13b, 16, 17, 19, 24, 25, 29
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Foxtail Chess	Non-native	2, 3, 7, 9, 10, 11, 12, 13a, 13b, 16, 17, 18, 19, 24, 25, 28, 29
<i>Chloris virgata</i>	Feather Finger Grass	Non-native	NRD Staff
<i>Cortaderia selloana</i>	Pampas Grass	Invasive, Non-native	1a, 1b, 1d, 1e, 1f, 13a, 22, 29
<i>Cynodon dactylon</i>	Bermuda Grass	Non-native	11, 13a, 13b
<i>Deschampsia danthonioides</i>	Annual Hairgrass	ACOE vernal pool indicator, Native	3, 4, 5, 6, 7, 10, 11, 16, 19
<i>Distichlis spicata</i>	Saltgrass	Native	7, 13b, 24
<i>Ehrharta longiflora</i>	Long-flower Veldt Grass	Invasive, Non-native	13b
<i>Elymus (Taeniatherum) caput-medusae</i>	Medusahead	Non-native	NRD Staff
<i>Elymus (Leymus) condensatus</i>	Giant Wild Rye	Native	11, 13a, 13b
<i>Elymus glaucus</i>	Blue Wildrye	Native	13a
<i>Festuca (Vulpia) bromoides</i>	Six-weeks Fescue	Non-native	19
<i>Festuca (Vulpia) microstachys</i>	Desert Fescue	Native	NRD Staff
<i>Festuca (Vulpia) myuros</i>	Rat-tail Fescue	Non-native	3, 7, 10, 12, 13a, 13b, 16, 19, 24, 29
<i>Festuca (Vulpia) octoflora</i>	Tufted Fescue	Native	12, 13a, 13b
<i>Festuca perennis</i> (<i>Lolium multiflorum</i> & <i>L. perenne</i>)	Italian Ryegrass & Perennial Ryegrass	Non-native	2, 10, 11, 13a, 13b, 17, 19, 22, 24
<i>Gastridium ventricosum</i>	Nit Grass	Non-native	5, 6, 7, 10, 11, 12, 13a, 13b, 16, 17, 19
<i>Hordeum murinum</i>	Hare Barley	Non-native	13a, 13b, 24
<i>Hordeum vulgare</i>	Cultivated Barley	Non-native	7
<i>Koeleria macrantha</i>	Junegrass	Native	13b
<i>Lamarckia aurea</i>	Golden-top	Non-native	10, 11, 12, 13b, 16, 17, 19, 29

Marine Corps Air Station Miramar – Observed Flora			
Scientific Name	Common Name+	Status*	Reference **
<i>Melica imperfecta</i>	Coast Range Melic	Native	13a, 13b, 17, 22, 25
<i>Melinis repens</i>	Natal Grass	Non-native	NRD Staff
<i>Muhlenbergia microsperma</i>	Littleseed Muhly	Native	11, 13b, 19
<i>Muhlenbergia rigens</i>	Deergrass	Native	11, 13a, 19
<i>Orcuttia californica</i>	California Orcutt Grass	FE, ACOE vernal pool indicator, Native	4, 22
<i>Paspalum dilatatum</i>	Dallis Grass	Non-native	NRD Staff
<i>Pennisetum setaceum</i>	African Fountain Grass	Non-native	1b, 1d, 11, 13b, 19
<i>Phalaris caroliniana</i>	Carolina Canary Grass	Non-native	13a
<i>Phalaris lemmonii</i>	Lemon's Canary Grass	Native	3, 5, 6, 10, 13b, 16
<i>Phalaris minor</i>	Little-seed Canary Grass	Non-native	11, 13b, 19
<i>Poa annua</i>	Annual Bluegrass	Non-native	13b, 22
<i>Poa pratensis</i>	Kentucky Bluegrass	Non-native	13b
<i>Poa secunda</i>	One-sided Bluegrass	Native	19
<i>Polypogon monspeliensis</i>	Annual Beard Grass	Non-native	2, 3, 5, 6, 7, 10, 11, 13a, 13b, 16, 19
<i>Schismus barbatus</i>	Mediterranean Schismus	Non-native	29
<i>Scribneria bolanderi</i>	Scribner's Grass	Native	13b
<i>Stipa (Nassella) cernua</i>	Nodding Needlegrass	Native	12, 25, 26
<i>Stipa coronata (Achnatherum coronatum)</i>	Crested Needle Grass	Native	17, 22
<i>Stipa (Nassella) lepida</i>	Foothill Needlegrass	Native	11, 13a, 13b, 19, 25, 26
<i>Stipa (Agrostis, Oryzopsis, Piptatherum) miliacea</i>	Smilo Grass	Non-native	13b
<i>Stipa (Nassella) pulchra</i>	Purple Needlegrass	Native	4, 7, 9, 10, 11, 13a, 13b, 17, 18, 19, 25, 26
Themidaceae – Brodiaea Family			
<i>Bloomeria (Muilla) clevelandii</i>	San Diego Goldenstar	Native	8, 9, 10, 11, 13a, 13b, 15, 18, 19
<i>Bloomeria crocea</i>	Common Goldenstar	Native	11, 13b
<i>Brodiaea jolonensis</i>	Dwarf Brodiaea	Native	7, 10, 11
<i>Brodiaea orcuttii</i>	Orcutt's Brodiaea	Native	3, 5, 6, 7, 8, 10, 11, 13b, 16, 18, 19
<i>Dichelostemma capitatum</i>	Blue Dicks	Native	9, 11, 12, 13a, 13b, 19, 25
<i>Muilla maritima</i>	Common Goldenstar	Native	10, 11, 13a, 13b, 19
Typhaceae – Cattail Family			
<i>Typha domingensis</i>	Southern Cattail	Native	13a, 13b
<i>Typha latifolia</i>	Broad-leaved Cattail	Native	11, 19

*Definitions:

Federal Federal categories per the Endangered Species Act, administered by the USFWS

FE Endangered - any species officially listed by the USFWS that is in danger of extinction throughout all or a significant portion of its range

FT Threatened - any species officially listed by the USFWS that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

FC Candidate - species for which there is sufficient information to support a proposal for listing under the Endangered Species Act.

- State** California-listed per California Endangered Species Act of 1984, administered by the CDFG:
- CE Endangered. Taxa which are in serious danger of becoming extinct throughout all, or a significant portion, of their range due to one or more causes including loss of habitat, change in habitat, over exploitation, predation, competition, or disease (Section 2062 of the Fish and Game Code).
- CT Threatened. Taxa which, although not presently threatened with extinction, are likely to become endangered species in the foreseeable future (Section 2067 of the Fish and Game Code).
- CR Rare. Taxa which, although not presently threatened with extinction, are present in such small numbers throughout their range that they may become endangered if the present environment worsens (Section 1901 of the Fish and Game Code).
- CC Candidate. Taxa which the Fish and Game Commission has formally noticed as being under review by the Department in addition to the list of threatened and endangered species.

California Native Plant Society Per the CNPS publication, *Inventory of Rare and Endangered Vascular Plants of California*:

- 1B Rare, threatened, or endangered in California and elsewhere
- 2 Rare, threatened, or endangered in California, but more common elsewhere
- 3 Need more information (a review list)
- 4 Plants of limited distribution (a watch list)

ACOE vernal pool indicator Per Army Corps of Engineers Special Public Notice, Regional General Conditions to the Nationwide Permits, Regional General Condition #1 – Vernal Pool Notification, *Indicator Species for Vernal Pools* List, Los Angeles District, Regulatory Branch, November 1997.

Native Per California Invasive Plant Council publication *Invasive Plants of California's Wildlands*: Plant species growing within their natural range and dispersal potential.

Non-native Per California Invasive Plant Council publication *Invasive Plants of California's Wildlands*: Plant species growing beyond their natural range or natural zone of potential dispersal, including all domesticated and feral species and all hybrids involving at least one non-native parent species.

Invasive Per California Invasive Plant Council publication *Invasive Plants of California's Wildlands*: Plant species that spread into areas where they are not native, or that displace natives or bring about changes in species composition, community structure, or ecosystem function.

+Common Name follows The Jepson Manual, San Diego Natural History Museum, or California Native Plant Society terminology respectively.

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APPENDIX C. VEGETATION COMMUNITIES KNOWN TO OCCUR AT MCAS MIRAMAR

Marine Corps Air Station Miramar – Vegetation Communities		
General Vegetation Type*	Alliance*	Acres
Buckwheat Scrub	<i>Eriogonum fasciculatum</i> Shrubland Alliance	2,446.12
TOTAL:	1 Total Alliance	2,446.12
Ceanothus Chaparral	<i>Ceanothus tomentosus</i> Shrubland Alliance	1,558.13
Ceanothus Chaparral	<i>Ceanothus tomentosus-Quercus berberidifolia</i> Shrubland Alliance	1,055.43
Ceanothus Chaparral	<i>Ceanothus tomentosus-Xylococcus bicolor</i> Shrubland Alliance	153.35
Ceanothus Chaparral	<i>Ceanothus verrucosus</i> Provisional Shrubland Alliance	102.75
TOTAL:	4 Total Alliances	2,869.66
Chamise Chaparral	<i>Adenostoma fasciculatum</i> Shrubland Alliance	4,657.12
Chamise Chaparral	<i>Adenostoma fasciculatum-Salvia mellifera</i> Shrubland Alliance	891.00
Chamise Chaparral	<i>Adenostoma fasciculatum-Xylococcus bicolor</i> Shrubland Alliance	576.35
TOTAL:	3 Total Alliances	6,124.47
Freshwater Marsh	<i>Juncus (balticus ssp. ater, mexicanus)</i> Herbaceous Alliance	7.25
Freshwater Marsh	<i>Schoenoplectus californicus</i> Herbaceous Alliance	15.73
Freshwater Marsh	<i>Typha (angustifolia, domingensis, latifolia)</i> Herbaceous Alliance	3.36
TOTAL:	3 Total Alliances	26.34
Grassland/Herbaceous	<i>Avena (barbata, fatua)</i> Semi-Natural Herbaceous Stands	1,063.54
Grassland/Herbaceous	<i>Bromus (diandrus, hordeaceus)-Brachypodium distachyon</i> Semi-Natural Herbaceous Stands	173.80
Grassland/Herbaceous	<i>Bromus madritensis ssp. rubens</i> Semi-Natural Herbaceous Stands	21.68
Grassland/Herbaceous	<i>Deinandra fasciculata</i> Herbaceous Alliance	7.17
Grassland/Herbaceous	<i>Festuca perennis</i> Semi-Natural Herbaceous Stands	43.22
Grassland/Herbaceous	<i>Festuca myuros</i> Semi-Natural Herbaceous Stands	21.42
Grassland/Herbaceous	<i>Stipa pulchra</i> Herbaceous Alliance	146.62
TOTAL:	7 Total Alliances	1,477.46
Other Chaparral	<i>Cercocarpus betuloides</i> Shrubland Alliance	159.81
Other Chaparral	<i>Prunus ilicifolia</i> Shrubland Alliance	1.61
Other Chaparral	<i>Rhus integrifolia</i> Shrubland Alliance	5.91
Other Chaparral	<i>Xylococcus bicolor</i> Shrubland Alliance	40.63
TOTAL:	4 Total Alliances	207.96
Other Upland Scrub	<i>Acmispon glaber</i> Shrubland Alliance	949.51
Other Upland Scrub	<i>Arctostaphylos glandulosa</i> Shrubland Alliance	14.60
Other Upland Scrub	<i>Baccharis sarothroides</i> Shrubland Alliance	255.19
Other Upland Scrub	<i>Bahiopsis laciniata</i> Shrubland Alliance	7.04
Other Upland Scrub	<i>Eriodictyon crassifolium</i> Provisional Shrubland Alliance	6.51
Other Upland Scrub	<i>Malosma laurina</i> Shrubland Alliance	728.74

Marine Corps Air Station Miramar – Vegetation Communities		
General Vegetation Type*	Alliance*	Acres
Other Upland Scrub	<i>Rhamnus crocea</i> Shrubland Alliance	19.80
TOTAL:	7 Total Alliances	1,981.39
Riparian Scrub	<i>Artemisia palmeri</i> Herbaceous Alliance	0.99
Riparian Scrub	<i>Baccharis salicifolia</i> ssp. <i>salicifolia</i> Shrubland Alliance	26.90
TOTAL:	2 Total Alliances	27.89
Riparian Woodland	<i>Salix lasiolepis</i> Shrubland Alliance	53.27
Riparian Woodland	<i>Platanus racemosa</i> Woodland Alliance	97.78
Riparian Woodland	<i>Quercus agrifolia</i> Woodland Alliance	63.57
Riparian Woodland	<i>Salix gooddingii</i> Woodland Alliance	38.16
TOTAL:	4 Total Alliances	252.78
Sage and Sagebrush	<i>Artemisia californica</i> Shrubland Alliance	319.20
Sage and Sagebrush	<i>Artemisia californica</i> - <i>Eriogonum fasciculatum</i> Shrubland Alliance	39.50
Sage and Sagebrush	<i>Artemisia californica</i> - <i>Salvia mellifera</i> Shrubland Alliance	13.10
Sage and Sagebrush	<i>Salvia apiana</i> Shrubland Alliance	5.75
Sage and Sagebrush	<i>Salvia mellifera</i> Shrubland Alliance	1,540.25
TOTAL:	5 Total Alliances	1,917.80
Scrub Oak Chaparral	<i>Quercus berberidifolia/acuteidens</i> Shrubland Alliance***	402.34
Scrub Oak Chaparral	<i>Quercus (berberidifolia/acuteidens, dumosa)</i> Shrubland Alliance***	280.60
TOTAL:	2 Total Alliances	682.94
Non-Native Tree	<i>Eucalyptus (globulus, camaldulensis)</i> Semi-Natural Woodland Stands	49.72
Non-Native Tree	<i>Olea europaea</i> Semi-Natural Woodland Stands	2.04
TOTAL:	2 Total Alliances	51.76
Developed	Developed	4,894.42
TOTAL:	1 Total Alliance	4,894.42
Disturbed	<i>Acacia melanoxylon</i> Semi-Natural Woodland Stands	3.06
Disturbed	<i>Adenostoma fasciculatum</i> Shrubland Alliance^^	1.14
Disturbed	<i>Brassica (nigra)</i> and Other Mustards Semi-Natural Herbaceous Stands	19.41
Disturbed	<i>Carduus pycnocephalus</i> ssp. <i>pycnocephalus</i> Semi-Natural Herbaceous Stands	7.68
Disturbed	<i>Cortaderia (jubata, selloana)</i> Semi-Natural Herbaceous Stands	9.49
Disturbed	<i>Erodium</i> Semi-Natural Herbaceous Stands	10.05
Disturbed	N/A	51.64
Disturbed	<i>Nicotiana glauca</i> Semi-Natural Woodland Stands	0.20
Disturbed	<i>Pennisetum setaceum</i> Semi-Natural Herbaceous Stands	0.83
Disturbed	<i>Tamarix</i> spp. Semi-Natural Shrubland Alliance	0.55
Disturbed	<i>Washingtonia robusta</i> Semi-Natural Woodland Stands	0.09
TOTAL:	11 Total Alliances	104.14
Plant Totals		
Native Vegetation Alliances		16,691.14

Marine Corps Air Station Miramar – Vegetation Communities		
General Vegetation Type*	Alliance*	Acres
Non-native Vegetation Alliances (Non-Native Grasses [<i>Avena</i> spp., <i>Bromus</i> spp., <i>Festuca</i> spp.], Non-Native Trees)		1,375.42
Disturbed Total		104.14
Vegetation Total		18,170.69
Developed Total		4,894.42
Station Total		23,065.11

Native vegetation communities are:

- Buckwheat scrub
- Ceanothus chaparral
- Chamise chaparral
- Adenostoma fasciculatum shrubland alliance
- Freshwater marsh
- Stipa pulchra herbaceous alliance
- Other chaparral
- Other upland scrub
- Riparian scrub
- Riparian woodland
- Sage and sagebrush
- Scrub oak chaparral

Notes:

*Vegetation types and alliances are defined using descriptions from *A Manual of California Vegetation, Second Edition* (Sawyer *et al.* 2009) and the *Vegetation Classification Manual for Western San Diego County* (SANDAG 2011).

**Disturbed areas are those previously impacted by human activities, but have the potential to return to a natural vegetation type. Developed areas are those that are routinely maintained, and therefore, do not have the potential to be restored to a natural vegetation type.

***Scrub oak DNA studies are currently in progress to resolve the identity of which species is present on MCAS Miramar.

^^This disturbance alliance, although containing a native species, was designated as disturbed because it is a fuel break restoration site that is in the early stages of recovery. The alliance does not currently meet the vegetated requirements of the *Adenostoma fasciculatum* shrubland alliance; therefore, it is designated as disturbed because it has the potential to return to a natural vegetation type.

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APPENDIX D. VERTEBRATE SPECIES KNOWN TO OCCUR OR POTENTIALLY OCCURRING AT MCAS MIRAMAR

MCAS Miramar provides important habitat for a wide variety of wildlife species, including thousands of invertebrates. As a result, not all vertebrate species known to occur on the Station are listed here. For information about invertebrate species please refer to the *Cumulative Report for Three Years Inventory (Oct 1995 – Sept 1998) of Distribution and Habitat Use of Lepidoptera (Insecta) Populations on Marine Corps Air Station Miramar San Diego, CA* (San Diego Natural History Museum 2004b) and *The Lepidoptera of Marine Corps Air Station Miramar: Calculating Faunal Similarity Among Sampling Sites and Estimating Total Species Richness* (Brown and Bash 1999).

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
Amphibians			
Order Caudata			
Family Plethodontidae			
<i>Aneides lugubris</i>	Arboreal salamander		15
<i>Batrachoseps major</i>	Garden slender salamander		8
Order Anura			
Family Pipidae			
<i>Xenopus laevis</i>	African clawed frog	Non-native	15
Family Pelobatidae			
<i>Anaxyrus boreas halophilus</i>	California toad		8
<i>Spea hammondi</i>	Western spadefoot	Status under review by USFWS, CSC	8
Family Hylidae			
<i>Pseudacris regilla</i>	Pacific chorus frog		8
Family Ranidae			
<i>Lithobates catesbeianus</i>	Bullfrog	Non-native	8
Reptiles			
Order Testudines			
Family Emydidae			
<i>Emys marmorata</i>	Western pond turtle	CSC	10; Not Verified by 8 or 15
<i>Trachemys scripta elegans</i>	Northern red-eared slider	Non-native	8, 15
Order Squamata			
Family Phrynosomatidae			
<i>Phrynosoma blainvillii</i>	Coast horned lizard	CSC	8
<i>Sceloporus occidentalis biseriatus</i>	San Joaquin fence lizard		8
<i>Sceloporus occidentalis longipe</i>	Great Basin (western) fence lizard		8
<i>Sceloporus orcutti</i>	Granite spiny lizard		8
<i>Uta stansburiana elegans</i>	California side-blotched lizard		8, 15
Family Xantusiidae			
<i>Xantusia henshawi</i>	Granite night lizard		One 1994 occurrence cited in 7;

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
			Extirpated
Family Scincidae			
<i>Plestiodon skiltonianus interparietalis</i>	Coronado Island skink	CSC	8
Family Teiidae			
<i>Aspidoscelis hyperythra</i>	Orangethroat whiptail	CSC	8
<i>Aspidoscelis tigris stejnegeri</i>	Coastal whiptail		8
Family Anguidae			
<i>Elgaria multicarinata webbii</i>	San Diego alligator lizard		8
Family Anniellidae			
<i>Anniella pulchra pulchra</i>	Silvery legless lizard	CSC	15
Family Leptotyphlopidae			
<i>Rena humilis humilis</i>	Western blind snake		8
Family Boidae			
<i>Charina trivirgata</i>	Rosy boa		15
Family Colubridae			
<i>Arizona occidentalis occidentalis</i>	California glossy snake		Potential (Not Recorded in Recent Surveys) Probably extirpated from Miramar
<i>Coluber mormon</i>	Western racer		8
<i>Diadophis punctatus similis</i>	San Diego ringneck snake		8
<i>Hypsiglena torquata nuchalata</i>	California night snake		8
<i>Lampropeltis getula californiae</i>	California kingsnake		8
<i>Masticophis flagellum piceus</i>	Red coachwhip		8
<i>Masticophis lateralis lateralis</i>	California striped racer		8
<i>Pituophis catenifer annectens</i>	San Diego gopher snake		8
<i>Rhinocheilus lecontei lecontei</i>	Western long-nose snake		15
<i>Salvadora hexalepis virgultea</i>	Coast patch-nosed snake	CSC	15
<i>Thamnophis hammondi</i>	Two-striped garter snake	CSC	8
<i>Tantilla planiceps</i>	Western blackhead snake		8
<i>Trimorphodon lyrophanes</i>	Baja California lyre snake		15
Family Viperidae			
<i>Crotalus ruber</i>	Red-diamond rattlesnake	CSC	8
<i>Crotalus mitchellii pyrrhus</i>	Southwestern speckled		15

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
	rattlesnake		
<i>Crotalus helleri</i>	Southern Pacific rattlesnake		8
Birds			
Order Podicipediformes			
Family Podicipedidae			
<i>Aechmophorus clarkii</i>	Clark's Grebe		10
<i>Aechmophorus occidentalis</i>	Western Grebe	BSC	10
<i>Podiceps nigricollis</i>	Eared Grebe		10
<i>Podilymbus podiceps</i>	Pied-billed Grebe		9
Order Pelecaniformes			
Family Pelecanidae			
<i>Pelecanus erythrorhynchos</i>	American White Pelican		15
<i>Pelecanus occidentalis</i>	Brown Pelican		3
Family Phalacrocoracidae			
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	WL	14, 15
Order Ciconiiformes			
Family Ardeidae			
<i>Ardea alba</i>	Great Egret		9, 14
<i>Ardea herodias</i>	Great Blue Heron		9, 14
<i>Bubulcus ibis</i>	Cattle Egret		10
<i>Butorides striatus</i>	Green-backed Heron		Potential (Not Recorded in Recent Surveys)
<i>Butorides virescens</i>	Green Heron		9
<i>Egretta caerulea</i>	Little Blue Heron		10
<i>Egretta thula</i>	Snowy Egret		9
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron		9, 14
Family Threskiornithidae			
<i>Plegadis chihi</i>	White-faced Ibis		10
Family Cathartidae			
<i>Cathartes aura</i>	Turkey Vulture		9
Order Anseriformes			
Family Anserinae			
<i>Branta canadensis</i>	Canada Goose		9
<i>Chen caerulescens</i>	Snow Goose		10
Family Anatidae			
<i>Aix sponsa</i>	Wood Duck		15
<i>Anas crecca</i>	Green-winged Teal		9, 13
<i>Anas platyrhynchos</i>	Mallard		9, 14
<i>Anas acuta</i>	Northern Pintail		9
<i>Anas discors</i>	Blue-winged Teal		9
<i>Anas cyanoptera</i>	Cinnamon Teal		9
<i>Anas clypeata</i>	Northern Shoveler		9
<i>Anas strepera</i>	Gadwall		9, 14
<i>Anas americana</i>	American Widgeon		2, 13
<i>Aythya valisineria</i>	Canvasback	BSC	Potential (Not Recorded in Recent Surveys)
<i>Aythya americana</i>	Redhead		10

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
<i>Aythya collaris</i>	Ring-necked Duck		15
<i>Aythya affinis</i>	Lesser Scaup		15
<i>Bucephala clangula</i>	Common Goldeneye		Potential
<i>Bucephala albeola</i>	Bufflehead		15
<i>Lophodytes cucullatus</i>	Hooded Merganser		9
<i>Oxyura jamaicensis</i>	Ruddy Duck		9, 14
Order Falconiformes			
Family Accipitridae			
Subfamily Pandioninae			
<i>Pandion haliaetus</i>	Osprey	WL	9
Subfamily Accipitrinae			
<i>Accipiter cooperii</i>	Cooper's Hawk	WL	9, 14
<i>Accipiter striatus</i>	Sharp-shinned Hawk	WL	9, 13
<i>Aquila chrysaetos</i>	Golden Eagle	BGEPA/FP/WL	9
<i>Buteo lineatus</i>	Red-shouldered Hawk		9, 13
<i>Buteo jamaicensis</i>	Red-tailed Hawk		9, 14
<i>Buteo regalis</i>	Ferruginous Hawk	WL	9
<i>Circus cyaneus</i>	Northern Harrier	CSC	9, 13
<i>Elanus leucurus</i>	White-tailed Kite	FP	6
Family Falconidae			
<i>Falco columbarius</i>	Merlin	WL	9, 13
<i>Falco mexicanus</i>	Prairie falcon	WL	9
<i>Falco peregrinus anatum</i>	American peregrine falcon	BSCFP	9
<i>Falco sparverius</i>	American Kestrel		9, 14
Order Galliformes			
Family Odontophoridae			
<i>Callipepla californica</i>	California Quail		9, 14
<i>Callipepla gambelii</i>	Gambel's Quail		13
Family Phasianidae			
<i>Meleagris gallopavo</i>	Wild Turkey		4
Order Gruiformes			
Family Rallidae			
<i>Fulica americana</i>	American Coot		9, 14
<i>Gallinula chloropus</i>	Common Moorhen		9
<i>Porzana carolina</i>	Sora		9
<i>Rallus limicola</i>	Virginia Rail		9
Order Charadriiformes			
Family Charadriidae			
<i>Charadrius semipalmatus</i>	Semipalmated Plover		10
<i>Charadrius vociferus</i>	Killdeer		9, 14
<i>Pluvialis squatarola</i>	Black-bellied Plover		15
Family Recurvirostridae			
<i>Himantopus mexicanus</i>	Black-necked Stilt		15
<i>Recurvirostra americana</i>	American Avocet		
Family Scolopacidae			

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
<i>Actitis macularia</i>	Spotted Sandpiper		15
<i>Calidris alpina</i>	Dunlin		10
<i>Calidris bairdii</i>	Baird's Sandpiper		10
<i>Calidris canutus</i>	Red Knot	BSC	15
<i>Calidris mauri</i>	Western Sandpiper		15
<i>Calidris melanotos</i>	Pectoral Sandpiper		15
<i>Calidris minutilla</i>	Least Sandpiper		9
<i>Catoptrophorus semipalmatus</i>	Willet		Potential (Not Recorded in Recent Surveys)
<i>Gallinago gallinago</i>	Common Snipe		9
<i>Limosa fedoa</i>	Marbled Godwit	BSC	Potential (Not Recorded in Recent Surveys)
<i>Limnodromus griseus</i>	Short-billed Dowitcher	BSC	Potential (Not Recorded in Recent Surveys)
<i>Limnodromus scolopaceus</i>	Long-billed Dowitcher		15
<i>Numenius americanus</i>	Long-billed Curlew	BSC/WL	15
<i>Numenius phaeopus</i>	Whimbrel	BSC	16
<i>Phalaropus fulicaria</i>	Red Phalarope		10
<i>Phalaropus lobatus</i>	Red-necked Phalarope		15
<i>Phalaropus tricolor</i>	Willon's Phalarope	BSC	Potential (Not Recorded in Recent Surveys)
<i>Tringa flavipes</i>	Lesser Yellowlegs		10
<i>Tringa melanoleuca</i>	Greater Yellowlegs		9
<i>Tringa solitaria</i>	Solitary Sandpiper		15
Family Laridae			
Subfamily Larinae			
<i>Larus argentatus</i>	Herring Gull		10
<i>Larus californicus</i>	California Gull		9
<i>Larus canus</i>	Mew Gull		Potential (Not Recorded in Recent Surveys)
<i>Larus delawarensis</i>	Ring-billed Gull		9, 13
<i>Larus occidentalis</i>	Western Gull		9, 13
<i>Larus philadelphia</i>	Bonaparte's Gull		15
Subfamily Sterninae			
<i>Sterna caspia</i>	Caspian Tern		9
<i>Sterna forsteri</i>	Forster's Tern		14, 15
Order Columbiformes			
Family Columbidae			
<i>Columba livia</i>	Feral Pigeon	Non-Native	9, 13
<i>Columba fasciata</i>	Band-tailed Pigeon		10
<i>Columbina passerine</i>	Common Ground-dove		Potential (Not Recorded in Recent Surveys)
<i>Streptopelia decaocto</i>	Eurasian collared dove		14
<i>Zenaida asiatica</i>	White-winged Dove		1
<i>Zenaida macroura</i>	Mourning Dove		9, 14
Order Cuculiformes			
Family Cuculidae			

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
Subfamily Neomorphinae			
<i>Geococcyx californianus</i>	Greater Roadrunner		9, 14
Order Strigiformes			
Family Tyonidae			
<i>Tyto alba</i>	Barn Owl		9, 14
Family Strigidae			
<i>Asio flammeus</i>	Short-eared Owl	CSC	15
<i>Asio otus</i>	Long-eared Owl	CSC	9
<i>Athene cunicularia hypugaea</i>	Burrowing Owl	BSC/CSC	9, 13
<i>Bubo virginianus</i>	Great Horned Owl		9, 14
<i>Otus kennicottii</i>	Western Screech-owl		9
Order Caprimulgiformes			
Family Caprimulgidae			
Subfamily Chordeilinae			
<i>Chordeiles acutipennis</i>	Lesser Nighthawk		9
Subfamily Caprimulginae			
<i>Phalaenoptilus nuttallii</i>	Common Poor-will		9
Order Apodiformes			
Family Apodidae			
Subfamily Chaeturinae			
<i>Chaetura pelagica</i>	Chimney Swift		15
<i>Chaetura vauxi</i>	Vaux's Swift	CSC	9, 14
Subfamily Cypseloidinae			
<i>Cypseloides niger</i>	Black Swift	BSC/CSC	15
Subfamily Aponinae			
<i>Aeronautes saxatalis</i>	White-throated Swift		9, 14
Family Trochillidae			
Subfamily Trochilinae			
<i>Archilochus alexandri</i>	Black-chinned Hummingbird		9, 14
<i>Calypte anna</i>	Anna's Hummingbird		9, 14
<i>Calypte costae</i>	Costa's Hummingbird	BSC	9, 14
<i>Selasphorus rufus</i>	Rufous Hummingbird		9
<i>Selasphorus sasin</i>	Allen's Hummingbird	BSC	9
Order Coraciiformes			
Family Alcedinidae			
Subfamily Cerylinae			
<i>Ceryle alcyon</i>	Belted Kingfisher		9
Order Piciformes			
Family Picidae			
Subfamily Picinae			
<i>Colaptes auratus</i>	Red-shafted Flicker		9
<i>Melanerpes formicivorus</i>	Acorn Woodpecker		9

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
<i>Melanerpes lewis</i>	Lewis's Woodpecker	BSC	10
<i>Picoides nuttallii</i>	Nuttall's Woodpecker		9, 14
<i>Picoides pubescens</i>	Downy Woodpecker		9
<i>Sphyrapicus nuchalis</i>	Red-naped Sapsucker		15
<i>Sphyrapicus ruber</i>	Red-breasted Sapsucker		9
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker		10
Order Passeriformes			
Family Tyrannidae			
Subfamily Fluvicolinae			
<i>Contopus cooperi</i>	Olive-sided Flycatcher	BSC/CSC	9
<i>Contopus sordidulus</i>	Western-wood Pewee		9, 14
<i>Empidonax difficilis</i>	Pacific-slope Flycatcher		9, 14
<i>Empidonax difficilis</i>	Western Flycatcher		15
<i>Empidonax hammondi</i>	Hammond's Flycatcher		15
<i>Empidonax traillii</i>	Willow Flycatcher	BSC/CE	15
<i>Myiarchus cinerascens</i>	Ash-throated flycatcher		9, 13, 14
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	FE/CE	10 (Has not been verified to subspecies)
<i>Sayornis nigricans</i>	Black Phoebe		9, 14
<i>Sayornis saya</i>	Say's Phoebe		9, 14
Subfamily Tyranninae			
<i>Tyrannus melancholicus</i>	Tropical Kingbird		Potential (Not Recorded in Recent Surveys)
<i>Tyrannus verticalis</i>	Western Kingbird		9, 13
<i>Tyrannus vociferans</i>	Cassin's Kingbird		9, 14
Family Laniidae			
<i>Lanius ludovicianus</i>	Loggerhead Shrike	BSC/CSC	9, 14
Family Vireonidae			
<i>Vireo bellii bellii</i>	Least Bell's Vireo	FE/CE/BSC	9, 14
<i>Vireo cassinii</i>	Cassin's Vireo		15
<i>Vireo gilvus</i>	Warbling Vireo		9, 14
<i>Vireo huttoni</i>	Hutton's Vireo		9, 14
<i>Vireo solitarius plumbeox</i>	Solitary Vireo		Potential (Not Recorded in Recent Surveys)
Family Corvidae			
<i>Aphelocoma californica</i>	Western Scrub-jay		9, 14
<i>Corvus brachyrhynchos</i>	American Crow		9, 14
<i>Corvus corax</i>	Common Raven		9, 14
Family Alaudidae			
<i>Eremophila alpestris</i>	California Horned	WL	9, 14

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
	Lark		
Family Hirundinidae			
Subfamily Hirundininae			
<i>Hirundo rustica</i>	Barn Swallow		9, 14
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow		9, 14
<i>Progne subis</i>	Purple Martin		10
<i>Riparia riparia</i>	Bank Swallow	CT	Potential (Not Recorded in Recent Surveys)
<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow		9, 14
<i>Tachycineta bicolor</i>	Tree Swallow		9
<i>Tachycineta thalassina</i>	Violet-green Swallow		9
Family Paridae			
<i>Baeolophus inornatus</i>	Oak Titmouse	BSC	9
<i>Poecile gambeli</i>	Mountain Chickadee		15
Family Sittidae			
<i>Sitta carolinensis</i>	White-breasted Nuthatch		9
Family Aegithalidae			
<i>Psaltiriparus minimus</i>	Bushtit		9, 14
Family Troglodytidae			
<i>Campylorhynchus brunneicapillus sandiegensis</i>	Coastal Cactus Wren (San Diego)	BSC/CSC	15
<i>Cistothorus palustris</i>	Marsh Wren		9
<i>Salpinctes obsoletus</i>	Rock Wren		9
<i>Thryomanes bewickii</i>	Bewick's Wren		9, 14
<i>Troglodytes aedon</i>	House Wren		9, 14
Family Regulidae			
<i>Regulus calendula</i>	Ruby-crowned Kinglet		9
Family Sylviidae			
Subfamily Polioptilinae			
<i>Polioptila caerulea</i>	Blue-gray Gnatcatcher		9, 14
<i>Polioptila californica californica</i>	Coastal California Gnatcatcher	FT/CSC	9, 12, 14
Family Turdidae			
<i>Catharus guttatus</i>	Hermit Thrush		9
<i>Catharus ustulatus</i>	Swainson's Thrush		15
<i>Sialia currucoides</i>	Mountain Bluebird		15
<i>Sialia mexicana</i>	Western Bluebird		9, 13
<i>Turdus migratorius</i>	American Robin		9
Family Timaliidae			
<i>Chamaea fasciata</i>	Wrentit		9, 14
Family Mimidae			
<i>Mimus polyglottos</i>	Northern Mockingbird		9, 13
<i>Oreoscoptes montanus</i>	Sage Thrasher	BSC	10

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
<i>Toxostoma redivivum</i>	California Thrasher		9, 14
Family Sturnidae			
<i>Sturnus vulgaris</i>	European Starling	Non-native	9, 14
Family Motacillidae			
<i>Anthus rubescens</i>	American Pipit		9, 13
Family Bombycillidae			
<i>Bombycilla cedrorum</i>	Cedar Waxwing		9
Family Passeridae			
<i>Passer domesticus</i>	House Sparrow	Non-native	9, 13
Family Ptilonotidae			
<i>Phainopepla nitens</i>	Phainopepla		9, 13
Family Fringillidae			
Subfamily Carduelinae			
<i>Carduelis lawrencei</i>	Lawrence's Goldfinch	BSC	9
<i>Carduelis pinus</i>	Pine Siskin		15
<i>Carduelis psaltria</i>	Lesser Goldfinch		9, 14
<i>Carduelis tristis</i>	American Goldfinch		9, 13
<i>Carpodacus cassinii</i>	House Finch		9, 14
<i>Carpodacus purpureus</i>	Purple Finch		10
Family Parulidae			
<i>Dendroica coronata</i>	Yellow-rumped Warbler		9, 13
<i>Dendroica nigrescens</i>	Black-throated Gray Warbler		9
<i>Dendroica occidentalis</i>	Hermit Warbler		10
<i>Dendroica palmarum</i>	Palm Warbler		10
<i>Dendroica townsendi</i>	Townsend's Warbler		15
<i>Geothlypis trichas</i>	Common Yellowthroat	BSC	9, 14
<i>Oporornis tolmiei</i>	Macgillivray's Warbler		9
<i>Setophaga petechial brewsteri</i>	Yellow Warbler	CSC/BSC	9, 14
<i>Vermivora celata</i>	Orange-crowned Warbler		9, 14
<i>Vermivora ruficapilla</i>	Nashville Warbler		9
<i>Wilsonia citrina</i>	Hooded Warbler		9
<i>Wilsonia pusilla</i>	Wilson's Warbler		9, 14
<i>Icteria virens</i>	Yellow-breasted Chat	CSC	9, 14
Family Thraupidae			
<i>Piranga ludoviciana</i>	Western Tanager		9, 14
<i>Piranga rubra</i>	Summer Tanager	CSC	10
Family Emberizidae			
<i>Aimophila ruficeps canescens</i>	Southern California Rufous-crowned Sparrow	WL	9, 14
<i>Ammodramus savannarum</i>	Grasshopper		9, 13

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
	Sparrow		
<i>Artemisospiza belli belli</i>	Bell's Sage Sparrow	BSC/WL	9
<i>Chondestes grammacus</i>	Lark Sparrow		9, 14
<i>Junco hyemalis</i>	Dark-eyed Junco		9
<i>Melospiza lincolnii</i>	Lincoln's Sparrow		9
<i>Melospiza melodia</i>	Song Sparrow	BSC	9, 14
<i>Passerculus sandwichensis</i>	Savannah Sparrow		9, 13
<i>Passerella iliaca</i>	Fox Sparrow		9
<i>Pipilo chlorurus</i>	Green-tailed Towhee		15
<i>Pipilo crissalis</i>	California Towhee		9, 14
<i>Pipilo maculatus</i>	Spotted Towhee	BSC	9, 14
<i>Poocetes gramineus</i>	Vesper Sparrow		9, 13
<i>Spezilla atrogularis</i>	Black-chinned Sparrow	BSC	9
<i>Spizella passerina</i>	Chipping Sparrow		9
<i>Sturnella neglecta</i>	Western Meadowlark		9, 14
<i>Zonotrichia atricapilla</i>	Golden-crowned Sparrow		9
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow		9, 13
Family Cardinalidae			
<i>Guiraca caerulea</i>	Blue Grosbeak		9, 14
<i>Passerina amoena</i>	Lazuli Bunting		9, 13
<i>Passerina cyanea</i>	Indigo Bunting		10
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak		15
<i>Pheucticus melanocephalus</i>	Black-headed Grosbeak		9, 14
Family Icteridae			
<i>Agelaius phoeniceus</i>	Red-winged Blackbird		9, 14
<i>Agelaius tricolor</i>	Tricolored Blackbird	Status under review by USFWS, /BSC/CCE	15
<i>Cassidix mexicanus</i>	Great-tailed Grackle		9, 14
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird		9, 13
<i>Icterus bullockii</i>	Bullock's Oriole		9, 14
<i>Icterus cucullatus</i>	Hooded Oriole		9, 14
<i>Molothrus ater</i>	Brown-headed Cowbird		9, 14
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird		9
Mammals			
Order Didelphidae			
Family Didelphiidae			
<i>Didelphis virginiana</i>	Opossum		10
Order Insectivora			
Family Soricidae			
<i>Notiosorex crawfordi</i>	Desert shrew		10

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
<i>crawfordi</i>			
<i>Sorex ornatus ornatus</i>	Ornate shrew		7, 10
Order Chiroptera			
Family Vespertilionidae			
<i>Eptesicus fuscus</i>	Big brown bat		10, 11
<i>Lasiurus borealis</i>	Red bat		10, 11
<i>Myotis yumanensis sociabilis</i>	Yuma myotis		10, 11
<i>Pipistrellus hesperus</i>	Western pipistrel		10, 11
Family Molossidae			
<i>Eumops perotis</i>	Western mastiff bat		10, 11
<i>Nyctinomops femorasaccus</i>	Pocketed free-tailed bat	CSC	10, 11
<i>Tadarida brasiliensis</i>	Mexican free-tailed bat		10, 11
Order Lagomorpha			
Family Leporidae			
<i>Lepus californicus bennittii</i>	San Diego black-tailed jackrabbit	CSC	10
<i>Sylvilagus audubonii sanctidiegi</i>	Desert cottontail		10
<i>Sylvilagus bachmani</i>	Brush rabbit		10
Order Rodentia			
Family Sciuridae			
<i>Spermophilus beecheyi nudipes</i>	California ground squirrel		10
Family Geomyidae			
<i>Thomomys bottae sanctidiegi</i>	San Diego Valley pocket gopher		10
Family Heteromyidae			
<i>Chaetodipus californicus femoralis</i>	Dulzura pocket mouse	CSC	15
<i>Chaetodipus fallax fallax</i>	Northwestern San Diego pocket mouse	CSC	10
<i>Dipodomys agilis</i>	Agile kangaroo rat		10
<i>Dipodomys simulans</i>	Dulzura kangaroo rat		7, 10
Family Muridae			
<i>Microtus californicus sanctidiegi</i>	California vole		7, 10
<i>Mus musculus</i>	House mouse	Non-native	10
<i>Neotoma macrotis</i>	Dusky-footed woodrat		7, 10
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	CSC	10
<i>Onychomys torridus ramona</i>	Southern grasshopper mouse		10
<i>Peromyscus boylii rowleyi</i>	Brush mouse		7, 10
<i>Peromyscus californicus insignis</i>	California mouse		7, 10

Marine Corps Air Station Miramar – Known Fauna			
Scientific Name	Common Name	Status*	Reference**
<i>Peromyscus eremicus fraterculus</i>	Cactus mouse		7, 10
<i>Peromyscus maniculatus gambellii</i>	Deer mouse		7, 10
<i>Rattus rattus</i>	Black rat	Non-native	10
<i>Reithrodontomys megalotis longicaudus</i>	Western harvest mouse		7, 10
Order Carnivora			
Family Canidae			
<i>Canis latrans clepticus</i>	Coyote		10
<i>Urocyon cinereoargenteus californicus</i>	Gray fox		10
Family Procyonidae			
<i>Bassariscus astutus</i>	Ringtailed cat		Potential (Not Recorded in Recent Surveys)
<i>Procyon lotor</i>	Common raccoon		10
Family Mustelidae			
<i>Mustela frenata</i>	Long-tailed weasel		10
<i>Mephitis mephitis holtzneri</i>	Striped skunk		10
<i>Spilogale putorius microrhina</i>	Western spotted skunk		Potential (Not Recorded in Recent Surveys)
Family Felidae			
<i>Felis concolor californicus</i>	Mountain lion		10
<i>Lynx rufus californicus</i>	Bobcat		10
Order Artiodactyla			
Family Cervidae			
<i>Odocoileus hemionus fuliginata</i>	Mule deer		10
Fish			
Order Cypriniformes			
Family Cyprinidae			
<i>Pimephales promelas</i>	Fathead minnow		5
Order Perciformes			
Family Centrarchidae			
<i>Lepomis macrochirus</i>	Bluegill		5
<i>Micropterus salmoides</i>	Largemouth bass		5
Order Cyprinodontiformes			
Family Poeciliidae			
<i>Gambusia affinis</i>	Mosquitofish		5
Order Siluriformes			
Family Ictaluridae			
<i>Ictalurus punctatus</i>	Channel catfish		5

*Definitions:

Federal Federal categories per the Endangered Species Act, administered by the USFWS:

FE Endangered - any species officially listed by the USFWS that is in danger of extinction throughout all or a significant portion of its range

FT Threatened - any species officially listed by the USFWS that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Proposed (PT, PE) Any species that has been proposed for listing as a threatened or endangered species

BGEPA Bald and Golden Eagle Protection Act of 1940

BSC Bird Species of Concern includes species that are of concern because of (a) documented or apparent population declines, (b) small or restricted populations, or (c) dependence on restricted or vulnerable habitat, which are

listed with the intent of avoiding future designations under the ESA.

State	State categories per the 1984 California Endangered Species Act ²⁵
CE	Endangered - any species officially listed by the California Fish and Wildlife Commission that is in danger of extinction throughout all or a significant portion of its range.
CT	Threatened - any species officially listed by the California Fish and Wildlife Commission that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
CCE	State candidate for listing as endangered
CCT	State candidate for listing as threatened
FP	State Fully Protected species - species protected by the California Fish and Game Code which states that the species "...may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected" species, although take may be authorized for necessary scientific research;
CSC	California Species of Concern (Animal); and
WL	California Department of Fish and Wildlife's watch list

Status Information taken from California Department of Fish and Wildlife, *Special Animals*, December 2015

****References**

1. Black, Chuck. 2009. Personal observation of white-winged dove.
2. Black, Chuck. 2010. Personal observation of American widgeon.
3. Black, Chuck. 2010. Personal observation of brown pelican at Miramar Fish Pond.
4. Black, Chuck. 2013. Personal observation of wild turkey in East Miramar bivouac area.
5. Black, Chuck. 2015. Fish pond turnover folder. Document maintained in the Natural Resources Division, Environmental Management Department, USMC Miramar, including reports, surveys, and permits concerning the Fish Pond management and use, starting 1992.
6. Black, Chuck. 2016. Personal observation of white-tailed kite.
7. CJSeto Support Services LLC. 2011. *Long-term ecosystem monitoring of the vertebrate fauna at Marine Corps Air Station Miramar, San Diego, California: Small Mammal Component, 2009*. Report prepared under contract M67865-08-T-0051. 10pp+appendices.
8. CJSeto Support Services LLC. 2012a. *Long-term ecosystem monitoring of the vertebrate fauna at Marine Corps Air Station Miramar, San Diego, California: Reptile & Amphibian Component, 2009*. Report prepared under contract M67865-08-T-0051. 17pp+appendices.
9. CJSeto Support Services LLC. 2012b. *Long-term ecosystem monitoring of the vertebrate fauna at Marine Corps Air Station Miramar, San Diego, California: Bird Survey Component, 2009*. Report prepared under contract M67865-08-T-0051. 23pp+figs+appendices.
10. Hunsaker, D., II, and G.W. Cox. 2000. *Vertebrate Survey, Naval Air Station Miramar*. Final Report, Contract N68711-96-LT-60036. Prepared for MCAS Miramar Environmental Management Department and Southwest Division, Naval Facilities Engineering Command, San Diego, CA. 189 pp.
11. Hunsaker, D, II. 2001. *Habitat Use and Relative Density of Bats at Naval Air Station Miramar*. Final Report, Contract N68711-96-LT-60035. Prepared for MCAS Miramar Environmental Management Department and Southwest Division, Naval Facilities Engineering Command, San Diego, CA. 94 pp.
12. MCAS Miramar 2013 GIS data.
13. Naval Facilities Engineering Command Southwest (NAVFAC SW). 2013. *Burrowing Owl Surveys at MCAS Miramar*. MCAS Miramar. San Diego, CA.

14. San Diego Natural History Museum. 2014. *Least Bell's Vireo (Vireo bellii pusillus) and Southwestern Willow Flycatcher (Empidonax traillii extimus) Surveys and Nest Monitoring at Marine Corps Air Station, Miramar*. Prepared for MCAS Miramar, San Diego, CA. San Diego, CA. 27 pp.
15. Varanus Biological Services, Inc., and San Diego Natural History Museum. 2001. *Final Report for Habitat Use and Relative Density of Reptile and Amphibian Populations at Marine Corps Air Station Miramar, San Diego, California*. Contract Number N68711-95-LT-C029. Prepared for MCAS Miramar Environmental Management Department and Southwest Division, Naval Facilities Engineering Command, San Diego, CA. San Diego, CA. 100 pp.
16. Varanus Biological Services, Inc., and San Diego Natural History Museum. 2003. *Long-term Ecosystem Monitoring Project on Marine Corps Air Station Miramar*. Prepared for MCAS Miramar Environmental Management Department and Southwest Division, Naval Facilities Engineering Command, San Diego, CA. San Diego, CA.

APPENDIX E. MCAS MIRAMAR INRMP PROJECTS

Existing in-house management actions and planned projects under this INRMP are listed in Table E.1 below for the objectives identified in Chapter 7 by natural resources management category (*e.g.*, Special Status Species Management, Vernal Pool Habitat Management, and General Wetland Management). Planned projects for each objective are budget items entered into the Marine Corps Status Tool for Environmental Programs (STEP) budget system and are described in a standard format as a means of monitoring overall INRMP implementation.

Table E.1 is formatted for each Action or Project as described below.

Management Category: As identified in Section 7.2 of this INRMP

Objective: As identified under the associated management category in Section 7.2 of this INRMP

Action/Project Title (STEP No.): Title and project STEP number

Description: A brief summary of the planned action/project

Priority: Each action/project is assigned a budget classification that establishes funding priority, using the USMC Common Output Levels of Service (COLS), as summarized below:

COLS Level 3 – Core requirements of the natural resources program that are necessary to maintain compliance with required conservation laws, regulations, Executive Orders, Final Governing Standards, and policies. COLS Level 3 actions/projects are critically important to support Station operations and must be implemented as programmed to consider the INRMP implemented successfully.

COLS Level 2 – Additional core program actions/projects that have lower risks associated with non-completion and are not critical to direct support of the military mission. COLS Level 2 actions/projects could include best management practices or be related to addressing future compliance and policy requirements.

COLS Level 1 – Additional actions/projects that enhance the program, promote sustainability opportunities, and conservation of environmental assets. Similar and more so than COLS Level 2, COLS Level 1 actions/projects are not critical to direct support of the military mission.

Funding Requested: Schedule of funds requested by fiscal year

Funding Source: General sources of funding

- Operations and Maintenance, Marine Corps (O&M, MC)
 - Operations Budget (OPBUD)
 - Centrally Managed Environmental Program (CMP)
- Agricultural Outlease Income

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Table E.1 MCAS Miramar INRMP Implementation Projects

Management Category	Objective	Action/Project Title (STEP No.)	Description	Priority	Funding Requested					Funding Source
					2018	2019	2020	2021	2022	
General Vegetation Management and Soil Conservation	Develop and Implement Natural Land and Habitat Restoration or Rehabilitation	NR - Invasive Plant Management (MI3CONISOPB46280001)	General Stationwide invasive plant control effort, focusing on invasive plants that interfere with training activities, cause health issues, and/or result in habitat degradation.	COLS Level 3	X	X	X	X	X	O&M, MC (OPBUD)
General Vegetation Management and Soil Conservation and Special Status Species Management	Continue Long-Term Ecosystem Monitoring (LTEM) of Vegetation and Soil Conditions and Protect Other Species of Special Regional Concern (i.e., Species at Risk [SAR])	AGR - Long-term Ecosystem Monitoring - Flora (MI2CONONC2246697000)	Miramar has completed 2 previous ecosystem monitoring efforts for at least a decade worth of data. This project would be a continuation of that effort.	COLS Level 2			X			Agricultural Outlease Income
General Vegetation Management and Soil Conservation and Natural Resources-Related Outdoor Recreation Management	Maintain Watershed Productivity, Quality, and Function and Provide Outdoor Recreation Opportunities When Feasible	NR - Minor Projects/Damage Repair (MI2CONONOPB48040006)	Provides funds for minor unanticipated project needs and/or damage repair where immediate response is important. Also funds the MCAS Miramar Fish Pond State aquaculture permit.	COLS Level 2	X	X	X	X	X	O&M, MC (OPBUD)
Grounds Maintenance and Landscaping	Ensure that Grounds Maintenance and Landscaping Operations are Consistent with Marine Corps Conservation Goals and Objectives	NR - Conservation Garden Outreach (MI1CONIPOP46460002)	Per MCO 5090.2 (§11201.2), the Natural Resources Division established a demonstration garden to promote water conservation and water-wise native plant use. Conservation methods, techniques, ecology, and practices are tested and assessed. The project should have annual updates to remain current.	COLS Level 1	X	X	X	X	X	O&M, MC (OPBUD)
Special Status Species Management	Proactively Maintain Up-to-Date Data for Special Status Species	NR – Rare/Endangered Butterfly Monitoring (MI3CONESOPB51570016)	Surveys for Quino checkerspot butterfly and Hermes copper butterfly in potentially suitable habitat across MCAS Miramar.	COLS Level 3					X	O&M, MC (OPBUD)
Special Status Species Management	Proactively Maintain Up-to-Date Data for Special Status Species	NR - Endangered Least Bell's Vireo Survey (MI3CONESOPB48310010)	Surveys for least Bell's vireo over the entire Station, with potential nest monitoring, cowbird control, and banding. Programmed every 3 years. Concurrent surveys will be conducted for the southwestern willow flycatcher.	COLS Level 3		X			X	O&M, MC (OPBUD)
Special Status Species Management	Proactively Maintain Up-to-Date Data for Special Status Species and Proactively Manage Special Status Species' Habitat	NR - Threatened California Gnatcatcher Monitoring (MI3CONESOPB44670014)	Funding increase for additional NAVFAC costs and habitat monitoring in REPI relieved areas.	COLS Level 3	X			X		O&M, MC (OPBUD)
Special Status Species Management	Proactively Maintain Up-to-Date Data for Special Status Species and Protect Other Species of Special Regional Concern (i.e., SAR)	NR - Upland Endangered Plant Monitoring (MI3CONESOPB46620003)	Monitoring and development of Station management plans for two listed upland endangered plants at MCAS Miramar with declining populations (willowy monardella and Del Mar manzanita). Additionally, ESA candidate species may need to be incorporated if they become federally listed.	COLS Level 3			X			O&M, MC (OPBUD)
Vernal Pool Habitat Management	Take Proactive Action to Prevent Damage to Vernal Pool Habitat	AGR – Conservation Outreach (MI1CONIPC2251257013)	This phase will establish signage or a short path and viewpoint of the vernal pool ecosystem within the Miramar Mounds National Natural Landmark site and provide signage and updates to the conservation/research garden.	COLS Level 1	X					Agricultural Outlease Income
Vernal Pool Habitat Management	Take Proactive Action to Prevent Damage to Vernal Pool Habitat	AGR - MMNN Landmark Interpretive Trail - Phase 1 (MI1CONONC2245937007)	This is the first phase of implementation of a planned trail. This would support vernal pool tour requests on the Miramar Mounds National Natural Landmark site.	COLS Level 1		X				Agricultural Outlease Income

Management Category	Objective	Action/Project Title (STEP No.)	Description	Priority	Funding Requested					Funding Source
					2018	2019	2020	2021	2022	
Vernal Pool Habitat Management	Take Proactive Action to Prevent Damage to Vernal Pool Habitat	AGR - MMNN Landmark Interpretive Trail - Phase 2 (MI1CONONC2245947008)	Continues to implement previously developed plan to construct a trail in Phase 1. This would support vernal pool visits on the Miramar Mounds National Natural Landmark site.	COLS Level 1				X		Agricultural Outlease Income
Vernal Pool Habitat Management	Implement Vernal Pool Habitat Restoration and Re-Establishment to Maintain No Net Loss of Vernal Pool Habitat Basin Resources	NR - Vernal Pool Credit Development - Phase I (MI2CONESC2245570011)	First effort to develop vernal pool wetland habitat for multiple associated endangered species in advance of a specific requirement to develop credits, and in accordance with a vernal pool crediting agreement being developed with the USFWS (ESA) and ACOE (CWA).	COLS Level 2					X	O&M, MC (CMP)
Vernal Pool Habitat Management and Special Status Species Management	Implement Vernal Pool Habitat Restoration and Re-Establishment to Maintain No Net Loss of Vernal Pool Habitat Basin Resources and Proactively Manage Special Status Species' Habitat	AGR - Vernal Pool Credit Development - Phase I (MI2CONONC2245580012)	First effort to develop vernal pool wetland habitat associated with endangered species in advance of specific requirement to mitigate. Purpose is to create advance mitigation credits in accordance with an advance vernal pool crediting agreement being developed with the USFWS (ESA) and ACOE (CWA).	COLS Level 2					X	Agricultural Outlease Income
Vernal Pool Habitat Management and Special Status Species Management	Take Proactive Action to Prevent Damage to Vernal Pool Habitat and Proactively Maintain Up-to-Date Data for Special Status Species and Proactively Manage Special Status Species' Habitat	NR - Vernal Pool Management (MI2CONESOPB48060008)	This project funds small management needs associated with the conservation of vernal pool wetland habitat and the six endangered/ threatened species it supports on MCAS Miramar. Includes protective measures, weed removal/control, mapping, small studies/data analysis, and/or long-term trend monitoring.	COLS Level 2	X	X	X	X	X	O&M, MC (OPBUD)
Wildlife Damage Management	Reduce the Potential for Wildlife Damage	NR - Airfield Wildlife Hazard Assessment Update (MI2CONONOPB49410020)	Assessment by California State Department of Fish and Wildlife (CDFW) personnel of bird and mammal (e.g., coyote, rabbit, deer) activity on the airfield that might have potential for Bird/Animal Air Strike Hazard (BASH) incidents, with recommendations on actions to reduce this activity and prevent BASH potentials.	COLS Level 2		X				O&M, MC (OPBUD)
INRMP Planning	Review and Update this INRMP at Least Every Five Years	NR - Update/Revise INRMP with EA (MI3CONIPOP46140015)	Next revision to the INRMP and EA, from the previous INRMP revision and EA completed in 2017. This effort needs to start at least one year before the next review/revision is due in 2022.	COLS Level 3				X		O&M, MC (OPBUD)
Effective INRMP Implementation with Professional Staffing	Provide Staffing and Supplies/Equipment to the Natural Resources Program	NR - Training and Travel Conservation (MI2CONNTOPB48030004)	Project supports the Station Botanist, Wildlife Biologist, and Natural Resources Director positions.	COLS Level 2	X	X	X	X	X	O&M, MC (OPBUD)
Effective INRMP Implementation with Professional Staffing	Provide Staffing and Supplies/Equipment to the Natural Resources Program	NR - Equipment and Supplies (MI2CONONOPB47030005)	Funding for natural resource management-specific materials, supplies, and tools/equipment.	COLS Level 2	X	X	X	X	X	O&M, MC (OPBUD)
Effective INRMP Implementation with Professional Staffing	Provide Staffing and Supplies/Equipment to the Natural Resources Program	AGR - Natural Resources Project Support (MI3CONONC2248087001)	Funding for NAVFAC support on various natural resource projects including project initiation, development, acquisition strategy, in-house management support, and minor contract modifications as required.	COLS Level 3	X	X	X	X	X	Agricultural Outlease Income
Effective INRMP Implementation with Professional Staffing	Provide Staffing and Supplies/Equipment to the Natural Resources Program	NR - Natural Resources Manpower (MI3CONNROPB48050007)	Funds the Station Botanist, Wildlife Biologist, and Natural Resources Division Director positions.	COLS Level 3	X	X	X	X	X	O&M, MC (OPBUD)

Management Category	Objective	Action/Project Title (STEP No.)	Description	Priority	Funding Requested					Funding Source
					2018	2019	2020	2021	2022	
Agricultural Funds	Manage the Agriculture Outlease	AGR - Agriculture Outlease Management Support (MI3CONONC2243657003)	Funds NAVFAC SW oversight and management of MCAS Miramar agricultural outlease activities. Includes funding for an annual environmental audit that is typically coordinated with other lease inspection activities, and Integrated Pest Management Plan oversight.	COLS Level 3	X	X	X	X	X	Agricultural Outlease Income

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Table E.2 is a summary of funding avenues and dollars required for implementation of this INRMP.

Table E.2. INRMP Implementation Costs*

Type Funds Programmed	FY 18	FY 19	FY 20	FY 21	FY 22	Totals
COLS Level 3						
O&M, MC**	\$794	\$581	\$741	\$1,039	\$792	\$3,948
OPBUD**	\$794	\$581	\$741	\$1,039	\$792	\$3,948
CMP	\$0	\$0	\$0	\$0	\$0	\$0
Agricultural Outlease Income	\$54	\$56	\$57	\$81	\$66	\$314
Subtotals (COLS Level 3)	\$848	\$637	\$799	\$1,120	\$858	\$4,262
COLS Level 2						
O&M, MC	\$27	\$93	\$28	\$30	\$390	\$567
OPBUD	\$27	\$93	\$28	\$30	\$30	\$207
CMP	\$0	\$0	\$0	\$0	\$360	\$360
Agricultural Outlease Income	\$0	\$0	\$280	\$0	\$360	\$640
Subtotals (COLS Level 2)	\$27	\$93	\$308	\$30	\$750	\$1,207
COLS Level 1						
O&M, MC	\$60	\$49	\$58	\$67	\$78	\$312
OPBUD	\$60	\$49	\$58	\$67	\$78	\$312
CMP	\$0	\$0	\$0	\$0	\$0	\$0
Agricultural Outlease Income	\$202	\$250	\$0	\$250	\$0	\$702
Subtotals (COLS Level 1)	\$262	\$299	\$58	\$317	\$78	\$1,014
Grand Totals	\$1,137	\$1,029	\$1,164	\$1,467	\$1,686	\$6,483

* Funding in thousands of dollars.

** Project MI3CONNROPB48050007, which provides staffing for the Natural Resources Program, is captured within COLS Level 3, O&M, MC (OPBUD) funding for years 2018-2022 (\$370,000-\$385,000, respectively).

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APPENDIX F. RESOURCE AGENCY, TRIBAL, AND PUBLIC COORDINATION AND INRMP REVIEW

MCAS Miramar provided the USFWS, CDFW, potentially affected Indian tribal governments, potentially interested parties, MCAS Miramar lessees/easement holders, and the general public with opportunities to review and comment on drafts of the INRMP and its associated EA. The Draft INRMP and its associated Draft EA were made available from December 16, 2017 to January 22, 2018 on the MCAS Miramar web site. On December 15-17, 2017 a Public Notice was placed in The San Diego Union-Tribune announcing the availability of the Draft INRMP and Draft EA for review and comment and the availability on the MCAS Miramar web site. The following copies of letters are representative of the correspondence associated with these actions. The first two letters are concurrences from the CDFW and USFWS.

A comment matrix that shows how each agency and public comment received was addressed is included in Appendix C of the EA.

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USFWS and CDFW Concurrence Letters.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008



In Reply Refer To:
FWS-SDG-08B0449-18CPA0267

June 6, 2018
Sent by Email

Susan Vanwinkle
Assistant Environmental Management Officer
Environmental Management Department
Marine Corps Air Station Miramar
P.O. Box 45200, Building 6306
San Diego, California 92145-2001

Subject: Concurrence on the Integrated Natural Resources Management Plan for Marine Corps Air Station Miramar, San Diego, California

Dear Ms. Vanwinkle:

This is in response to your April 20, 2018, email requesting our concurrence that the Integrated Natural Resources Management Plan (INRMP) for Marine Corps Air Station Miramar, San Diego, California is compliant with the Sikes Act [16 United States Code (U.S.C.) §670a *et seq.*].

Based on our review, we concur that the INRMP Revision meets the requirements of the Sikes Act to manage natural resources on the identified installation.

We appreciate the Marine Corps' coordination on the development and review of the INRMP Revision. If you have any questions regarding further coordination, please contact Katy Kughen at 760-431-9440, extension 201.

Sincerely,

GEORGE
STEWART

G. Mendel Stewart
Field Supervisor

Digitally signed by
GEORGE STEWART
Date: 2018.06.06 16:43:38
-07'00'



State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
(858) 467-4201
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director



June 4, 2018

Colonel Jason G. Woodworth
U.S. Marine Corps, Commanding Officer
Marine Corps Air Station Miramar
P.O. Box 452001, San Diego, CA 92145-2001

Subject: Review and Endorsement of the Draft Final Integrated Natural Resources Management Plan, Marine Corps Air Station Miramar, California

Dear Colonel Woodworth:

The California Department of Fish and Wildlife (Department) has reviewed the Draft Final Integrated Natural Resources Management Plan (INRMP) for Marine Corps Air Station Miramar (MCAS), dated April 2018. This INRMP was prepared pursuant to the Sikes Act as amended through 2012 (16 United States Code §670a) in cooperation with the appropriate State Fish and Wildlife Agency (i.e., the Department). The Department is responsible for the conservation, protection, and management of the state's biological resources, including rare, threatened, and endangered plant and animal species, pursuant to the California Endangered Species Act. The Department also administers the Natural Community Conservation Planning program, a California regional habitat conservation planning program.

The purpose of the 2018 MCAS INRMP is to provide responsible planning and management of the natural resources present on the installation's facilities that integrate the concerns and mission of the Department while efficiently supporting the MCAS mission.

As part of our efforts to fulfill our role in the Sikes Act Improvement Act as amended and foster improved conservation, protection, and management of particular species and/or habitat types present on MCAS, the Department, by way of this letter, grants concurrence with and acceptance of the 2018 MCAS Draft Final INRMP.

If you have any questions or comments pertaining to this letter, please contact Paul Schlitt at (858) 637-5510 or via email at Paul.Schlitt@wildlife.ca.gov.

Sincerely,

Edmund Pert
Regional Manager
South Coast Region

cc: Gail Sevens, CDFW, San Diego
Jonathan Snyder, USFWS, Carlsbad

Conserving California's Wildlife Since 1870

Letter to USFWS and CDFW Requesting Concurrence.



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION MIRAMAR
P.O. BOX 452001
SAN DIEGO, CALIFORNIA 92145-2001

IN REPLY REFER TO:
5090/4991
April 20, 2018

U.S. Fish and Wildlife Service
Attention: Mr. J. Snyder
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

California Department of Fish and Game
Attention: Mr. P. Schlitt
3883 Ruffin Road
San Diego, CA 92123

Ladies and Gentlemen:

SUBJECT: MARINE CORPS AIR STATION MIRAMAR DRAFT FINAL INTEGRATED
NATURAL RESOURCES MANAGEMENT PLAN

In accordance with the Sikes Act Improvement Act of 1997 (Public Law 105-85), Department of Defense, and U.S. Marine Corps policy, we have prepared an update of the Marine Corps Air Station (MCAS) Miramar (Station) Integrated Natural Resources Management Plan (INRMP) to address natural resources management on the Station in support of our military mission. This has been accomplished in cooperation with Ms. Katy Kughen of the local U.S. Fish and Wildlife Service (USFWS) Carlsbad Field Office and Mr. Paul Schlitt of the local California Department of Fish and Wildlife (CDFW) South Coast Regional Office. This coordination was to develop an INRMP that reflects mutual agreement concerning conservation, protection, and management of natural resources on the Station. The purpose of this letter is to provide the draft final INRMP, along with an Environmental Assessment (EA) for implementing the plan, and to request a letter of endorsement from your agency indicating that the document reflects mutual agreement. Your letter will be bound in the final INRMP document.


Our coordination with your agencies began with notification of our intent to revise the INRMP and a scoping meeting on January 16, 2014. At the scoping meeting the group decided to start the coordination process with chapter-by-chapter review of an initial draft update. This chapter-by-chapter review occurred between January 2015 and June 2017. On September 14, 2017, we delivered a complete draft INRMP to your offices soliciting review and comment. We received comments on this draft INRMP from CDFW in November 2017. On April 16, 2018, we received final formal comments from the USFWS. The enclosed draft final INRMP addresses the comments we received. For your reference, we have enclosed a comment matrix to help you understand how we addressed the comments. We do still have the ability to make relatively simple changes, but it is too late to include additional new data, revise data calculations, and revise figures.

During the period of December 15, 2017 – January 22, 2018, we held an opportunity for the public to review and comment on the draft INRMP and draft EA posted on our Environmental Management System web page. A notice of availability was published in the San Diego Union newspaper on December 15-17, 2017. We sent letters to potentially interested parties, lease and easement holders, and local Indian Tribes soliciting review and comment on the draft INRMP. Appendix F of the INRMP provides copies of correspondence from many of these efforts, including letters to and from your offices. A complete comment matrix of responses to all comments is included as an appendix to the EA.

In conducting your final review, please note that the enclosed draft final INRMP is written as though this coordination has been completed and mutual agreement/concurrence has been received. Your letters of concurrence will be bound within Appendix F of the final INRMP once the MCAS Miramar Commanding Officer has endorsed the INRMP.

We appreciate your participation in this process. In anticipation of our change of command that will occur in mid-July, we request for your letter of concurrence no later than 1 June. This will allow time for us to address any final comments and submit a final INRMP to our Commanding Officer for his endorsement before he leaves. Our point of contact is Mr. David Boyer, Director, Natural Resources Division, at (858) 577-1125.

Sincerely,



S. B. COLON

Major, U.S. Marine Corps

Environmental Management Officer

By direction of the Commanding Officer

- Enclosures: 1. Draft Final INRMP (1 printed/1 CD copy)
2. Agency and Public Comment/Response Matrix
3. Environmental Assessment

Copy to: Marine Corps Installations West (Env. Sec./Planning and Conservation) w/o enclosures
Marine Corps Installations Command (GF 7) w/o enclosures

USFWS Comments on Public Draft INRMP/EA.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008



In Reply Refer To:
FWS-SDG-18B0168-18TA0849

April 16, 2018
Sent by Email

Susan Vanwinkle
Assistant Environmental Management Officer
Environmental Management Department
Marine Corps Air Station Miramar
P.O. Box 45200, Building 6306
San Diego, California 92145-2001

Attention: Mr. David Boyer

Subject: Comments on the Draft Integrated Natural Resource Management Plan, Marine
Corps Air Station Miramar, San Diego County, California

Dear Ms. Vanwinkle:

We have reviewed the August 2017 Draft Integrated Natural Resource Management Plan (Draft INRMP) for Marine Corps Air Station Miramar (MCAS Miramar). In general, we believe that the Draft INRMP does an excellent job describing the natural resources on MCAS Miramar and the actions that will be implemented by the U.S. Marine Corps (Marine Corps) to protect and manage these resources. Most of our comments regarding the Draft INRMP address updating species information in Sections 4 Biological Resources, Section 5 Management Areas and Land Use Compatibility, and Section 7 Natural Resources Management Goals and Objectives.

Section 4.0 Biological Resources

Comment 1: Please update and reorganize Figure 4.6. We recommend the following:

- Include the 2017 station-wide surveys for the least Bell's vireo (*Vireo bellii pusillus*; vireo);
- Add the Hermes copper butterfly (*Lycaena hermes*; Hermes copper) historical occurrence/occupied habitat polygons;
- For the coastal California gnatcatcher (*Polioptila californica californica*; gnatcatcher), vireo, and Del Mar Manzanita (*Arctostaphylos glandulosa crassifolia*) surveys, group all years together, create Pre- and Post-Cedar Fire groups, or use different qualifiers; the current grouping units make it unclear

as to why different post-fire years have separate data points (e.g., 2004, 2007, 2009, and 2016 breeding sites are grouped together as a Post-Cedar Fire category, and 2013 breeding sites are grouped as a second Post-Cedar Fire category); and

- Remove the qualification that the Quino checkerspot butterfly (*Euphydryas editha quino*; Quino) data points are Post-Cedar Fire as Quino had not been documented as occurring on MCAS Miramar Pre-Cedar Fire.

Comment 2: We recommend that Hermes copper be removed from Table 4.7 and placed in Table 4.6 as it was in the 2011-2015 INRMP. We recommend updating the Hermes copper entry in the table to state that the species status assessment to help inform the listing determination for Hermes copper is scheduled to be published in the Federal Register. Please include a statement in the table that Hermes copper and Quino surveys are scheduled for the 2018 flight seasons, with follow-up surveys to be completed during the 2019 flight seasons.

Comment 3: Please include additional language on pages 4-26 and 4-27 regarding offsetting measures that the Marine Corps will implement if Hermes copper is federally listed. We recommend that similar measures be identified for Hermes copper as are proposed for Quino: that the Marine Corps will limit field training in occupied habitat during the flight season and provide guidance for off-road activities, including foot traffic. The purpose of these measures is to minimize activities near larval host plants to avoid habitat damage and crushing of egg and larval stages of listed butterflies.

Comment 4: We recommend that the southwestern willow flycatcher (*Empidonax traillii extimus*; flycatcher) be removed from Table 4.7 and placed back in Table 4.6 as it was in the 2011-2015 INRMP. Although there are no known nesting occurrences of the flycatcher on MCAS Miramar, it is likely that some of the transient willow flycatchers that have been observed on MCAS Miramar are the listed entity and are migrating through MCAS Miramar on their way to breeding locations in California. Because of this, we feel it is important to continue to list the flycatcher within Table 4.6, which identifies special status species occurring on MCAS Miramar and not place it within the list of other species of regional concern. Please also update similar information that is included on page 4-25 and throughout the document.

Comment 5: In Table 4.7, it is stated that the monarch butterfly (*Danaus plexippus*; monarch) “only travel as far south as San Diego.” Please update this section to reflect the currently known distribution of the monarch, which includes Baja California and Mexico. Additionally, Table 4.7 states that “MCAS Miramar does not have milkweed or winter roost sites.” However, Appendix B, page B-2 of both the 2011-2015 INRMP and the August 2017 Draft INRMP, identifies *Asclepias*

fascicularis, narrow-leaf milkweed, a known host plant for the monarch, as having been documented on MCAS Miramar. Please update this entry to correctly reflect that appropriate oviposition sites and larval host plants occur on MCAS Miramar and that although monarchs have been observed on MCAS Miramar, there are no known wintering roost sites. Please also update the similar information that is included on page 4-27 and throughout the document.

Comment 6: Please update the information on page 4-27, in Table 4.7, and throughout the document, to include a statement that although tricolored blackbirds (*Agelaius tricolor*) are not known to breed on MCAS Miramar, individuals have been documented using wetland habitats during the non-breeding season.

Section 5.0 Management Areas and Land Use Compatibility

Comment 7: We recommend adding Quino to Table 5.1 which identifies vernal pool habitat, special status species locations/territories, and essential habitat totals by Management Area.

Comment 8: Section 5.1 discusses the relationship of the Management Area designations to federally listed species. Please add discussions on Hermes copper and Quino to this section. In Section 5.1.2, include Hermes copper and Quino to the list of species that receive the benefit of Level II Management Areas. On page 5-6 of Section 5.1.2, please identify management considerations for Hermes copper and Quino, such as avoidance of adverse effects by limiting training activities within the Management Areas during the flight seasons and providing guidance for off-road activities, including foot traffic, to minimize activities near larval host plants to avoid habitat damage and crushing of egg and larval stages of listed butterflies.

Section 6.0 Project and Mitigation Planning

Comment 9: Please include Quino to the second bullet on page 6-17 that lists species that have presence and absence survey protocols.

Section 7.0 Natural Resources Management Goals and Objectives

Comment 10: On page 7-18, please add a bullet for Hermes copper using similar language to that used for Quino that the management area designations will be updated accordingly after comprehensive surveys are completed.

Comment 11: We also recommend including information regarding previous positive and negative surveys, referencing any habitat mapping that has occurred in the past, referencing conservation of the Lakeside Down property and including information on any future planned surveys and habitat mapping. Since a listing determination for Hermes copper is scheduled to be published in the Federal

Register, we recommend that Page 7-18 be modified to include information on Hermes copper that is similar to that provided for federally listed species. We recommend providing this information, including measures that have been completed, are being conducted, and are planned so that it is clear that the INRMP provides protection and benefit to this species if it is listed.

Comment 12: On page 7-18, we recommend that the bullet point for Quino be expanded to include information for measures completed, being conducted, and planned in a similar way as the bullet points for the other listed species on MCAS Miramar. Include information regarding previous surveys, reference any habitat mapping that has occurred in the past, and include information on any future planned surveys and habitat mapping.

Comment 13: Please update the information on page 7-13 to state that vireo occur east and west of the Interstate-15 and add appropriate information from the 2017 station-wide surveys.

We commend the Marine Corps for its commitment to protecting the unique biological resources on MCAS Miramar and encourage the Marine Corps to address our recommendations regarding project planning and consultation. Thank you for the opportunity to comment on the Draft INRMP. If you have any questions regarding this letter, please contact Katy Kughen at 760-431-9440, extension 201.

Sincerely,

**JONATHAN
SNYDER**

Digitally signed by
JONATHAN SNYDER
Date: 2018.04.16
13:13:59 -07'00'

for Karen Goebel
Assistant Field Supervisor

CDFW Comments on Public Draft INRMP/EA.

11/27/2017

California Department of Fish and Wildlife (CDFW)

Staff: Paul Schlitt, Senior Environmental Scientist (Specialist)

SUBJECT: Review of the 2018-2022 Marine Corps Air Station Miramar Draft Integrated Natural Resources Management Plan

1. Section 1.1.1 Requirement for Preparation of an INRMP (Page 1-2, 3rd paragraph, last sentence) - The City of Santee is only at the draft stage in developing their MSCP Subarea Plan. Please include a footnote or amend text to reflect that condition.
2. Section 2.6 MCAS Miramar Non-military Land-use (Page 2-15 Reclaimed Water Program Facilities and Pipeline) - CDFW has previously reviewed and commented on the City of San Diego Wet Weather Intermittent Stream Discharge project. Considerable erosion is already evident in the ephemeral drainage channel; this channel is proposed to receive additional discharges from the City's water reclamation facility. Regardless of the timing for permitting the wet weather in-stream discharge project, what discussions/actions have occurred between MCAS Miramar and the City of San Diego concerning the implementation of additional best management practices and protection of downstream conditions within San Clemente Canyon watershed? Addressing this issue is beneficial from a water quality perspective and to lessen potential impacts to the small population of willow monardella (*Monardella viminea*) that is located in West San Clemente Canyon.
3. Section 4.5.2 Wildlife Corridors (Page 4-20, 1st paragraph) – The wildlife corridors (i.e. Oak and Spring Canyons) connecting Mission Trails Regional Park to MCAS Miramar are negatively affected by recreational use in the areas. According to the narrative, site visits to the large culvert revealed minimal wildlife use and substantial human visitation, however details of when that site visit occurred was not provided in INRMP. Has MCAS Miramar considered removing the fencing at the large culvert extending under State Route 52? With the extension of the Stowe trail through MCAS Miramar, have resource management staff observed a shift and/or reduction of human visitation within the area where the culvert is located?
4. Table 6.2.2b (Mitigation Trigger for Vernal Pool Watersheds and Basins) - The mitigation guidance addressing *Required Impact Avoidance, Minimization, and Compensation* states, "For non-jurisdictional true vernal pools, implement compensation of the same habitat type at a 1:1 ratio." In comparison, the narrative on page 6-11 states, "The loss of *true vernal pools* must be mitigated at least on a 1:1 ratio to achieve 'no net loss' of wetlands; however, regulatory agencies typically require higher mitigation ratios due to uncertainties of complete replacement of functions and values." CDFW recommends revising the mitigation guidance in Table 6.2.2a and 6.2.2b (e.g., ratios) to reflect those conditions for when commensurate mitigation would be greater than a 1:1 ratio.
5. Table 6.2.2b (Mitigation Trigger for All Upland Vegetation Communities, Disturbed Areas, and Developed Areas) - The summary of compensation measures states, "For impacts in Level I, II, III, and IV areas, implement habitat compensation for regionally rare native plant community types (e.g. sage and sagebrush scrub) at a 1:1 ratio targeting the same habitat elsewhere." What situations require mitigation of direct impacts to a particular habitat type greater than a 1:1 ratio (e.g., direct impacts to native grassland habitat or a population of a narrow endemic plant)? If mitigation ratios are adjusted as a condition of consultation with the respective regulatory agencies, please include the specific thresholds and details within the INRMP.

**Affidavit of Publication regarding the Public Notice of Availability of the Draft Environment
Assessment for the Implementation of the MCAS Miramar INRMP.**

**The San Diego
Union-Tribune**

PROOF of Publication

Bill To:

Tetra Tech - CU00632065
5383 Hollister Ave
Ste 130
Santa Barbara, CA 93111-2342

**STATE OF ILLINOIS
COUNTY OF Cook**

The Undersigned, declares under penalty of perjury under the laws of the State of California: That he/she is and at all times herein mentioned was a citizen of the United States, over the age of twenty-one years, and that he/she is not a party to, nor interested in the above entitled matter; that he/she is Chief Clerk for the publisher of

Proof of Publication of

See Attached

San Diego Union-Tribune

a newspaper of general circulation, printed and published daily in the City of San Diego, County of San Diego, and which newspaper is published for the dissemination of local news and intelligence of a general character, and which newspaper at all the times herein mentioned had and still has a bona fide subscription list of paying subscribers, and which newspaper has been established, printed and published at regular intervals in the said City of San Diego, County of San Diego, for a period exceeding one year next preceding the date of publication of the notice hereinafter referred to, and which newspaper is not devoted to nor published for the interests, entertainment or instruction of a particular class, profession, trade, calling, race, or denomination, or any number of same; that the notice of which the annexed is a printed copy, has been published in said newspaper in accordance with the instruction of the person(s) requesting publication, and not in any supplement thereof on the following dates, to wit:

December 15, 2017; December 16, 2017; December 17, 2017

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated in the City of Chicago, State of Illinois
on this 18th of December 2017.

Stefanie Sobie
San Diego Union-Tribune
Legal Advertising

5351678

The San Diego Union-Tribune

Bill To:

Tetra Tech - CU00632065
5383 Hollister Ave
Ste 130
Santa Barbara, CA 93111-2342

Sold To:

Tetra Tech - CU00632065
5383 Hollister Ave
Ste 130
Santa Barbara, CA 93111-2342

Notice of Public Review
Period for the MCAS Miramar Draft Integrated Natural Resources Management Plan
Marine Corps Air Station (MCAS) Miramar is now soliciting public review and comment on the draft update of its Integrated Natural Resources Management Plan (INRMP) and draft Environmental Assessment for Implementation. The INRMP integrates the management of natural resources in support of the military readiness mission of MCAS Miramar. The Draft INRMP has been posted on the MCAS Miramar environmental management system web site at www.miramarems.com.

Comments and information should be sent such that they will be received by 22 January. Please use the following mailing address:

COMMANDING OFFICER,
MCAS MIRAMAR
ATTN S7 (MR BOYER)
H&HS SQUADRON
PO BOX 452013
SAN DIEGO, CA 92145

Snapshot of MCAS Miramar Web Site with the posted Draft INRMP and EA files.

s/Natural-Resources/INRMP/

INRMP



MCAS Miramar Integrated Natural Resources Management Plan 2018

Program Overview

The primary purpose of the Integrated Natural Resources Management Plan (INRMP) is to integrate Marine Corps Air Station (MCAS) Miramar's land use needs, in support of the military mission, with the management and conservation of natural resources. The INRMP establishes MCAS Miramar's approach and guidelines relative to natural resources to accomplish this. The INRMP does not dictate land use decisions, but rather provides important resource information to support sound land use decisions and natural resource management.

The INRMP summarizes the baseline information which ensures compliance with regulatory and planning processes, such as those required by the National Environmental Policy Act, Endangered Species Act, and Clean Water Act. This INRMP fulfills other responsibilities with regard to Department of Defense and Marine Corps policies, and legal requirements regarding natural resource planning. The INRMP will be reviewed annually and revised and/or reapproved at least every five years.

We are in the process of preparing and update of our INRMP for 2018. We invite you to review and comment on [DRAFT INRMP](#) and the associated [DRAFT Environmental Assessment \(EA\) for Implementation](#). We request that you prepare any comments you have so that we will receive them by January 22, 2018.

Please provide comments to:

COMMANDING OFFICER MCAS MIRAMAR
ATTN S7 (NATURAL RESOURCES DIVISION DIRECTOR)
H&HS SQUADRON
PO BOX 452013
SAN DIEGO, CA 92145

DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR IMPLEMENTATION

[DRAFT Environmental Assessment \(EA\) for Implementation](#)

DRAFT INRMP

[Executive Summary and Table of Contents](#)

[Chap 1 Introduction](#)

[Chap 2 MCAS Miramar Land-Use](#)

[Chap 3 Physical Setting](#)

[Chap 4 Biological Resources](#)

[Chap 5 Management Areas and Land Use Compatibility](#)

[Chap 6 Project and Mitigation Planning](#)

[Chap 7 Natural Resources Management Goals and Objectives](#)

[Chap 8 Compliance and Law Enforcement](#)

[Chap 9 INRMP Implementation and Evaluation](#)

[References, Reviewers and Preparers](#)

[Appendices](#)

LINKS

[F A Qs \(Frequently Asked Questions\)](#)
[Welcome Aboard](#)
[Environmental Training](#) ...
[Environmental Emergency Response Information](#) ...
[Spill Response Procedures \(Flow Chart\)](#)
[Hazardous Waste Information](#)
[Environmental Policy Statement](#)
[ESOP's](#)
[Station ECPSOP](#) ...
[Environmental Awareness PowerPoint](#)
[Draft - Integrated Natural Resources Mgmt Plan](#)

MARINES
THE OFFICIAL WEBSITE OF THE UNITED STATES MARINE CORPS



Letters distributed to interested parties (41 letters were mailed out).



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION MIRAMAR
P.O. BOX 452001
SAN DIEGO, CALIFORNIA 92145-2001

IN REPLY REFER TO:

5090/4919
DEC 07 2017

Dear Potentially Interested Party:

SUBJECT: PUBLIC REVIEW OF THE MARINE CORPS AIR STATION MIRAMAR
DRAFT INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

Marine Corps Air Station (MCAS) Miramar invites public review and comment on the draft update of its Integrated Resources Management Plan (INRMP) prepared in accordance with the Sikes Act Improvement Act of 1997 and the associated draft Environmental Assessment (EA) for implementation. This plan will govern the natural resources management program of MCAS Miramar to support the military readiness mission for the next five years.

To facilitate review, we have placed the two documents on the environmental portion of the MCAS Miramar web site:
<http://www.miramar-ems.marines.mil>.

We request that any information or comments you wish to provide for our consideration be in writing such that we receive them by January 22, 2018. Please use the following address:

COMMANDING OFFICER MCAS MIRAMAR
ATTN S7 (MR BOYER)
PO BOX 452013
SAN DIEGO CA 92145

If you have questions, you may contact our Natural Resources Division staff at (858) 577-1125.

Sincerely

A handwritten signature in cursive script that reads "S. M. Van Winkle".

S. M. VAN WINKLE
Asst. Environmental Management Officer
By direction of the Commanding Officer

Representative letter to lease and easement holder. Similar letters were sent to other lease and easement holders.



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION MIRAMAR
P.O. BOX 452001
SAN DIEGO, CALIFORNIA 92145-2001

11011
Ser/RE0043
January 3, 2018

Orlando Gardner
Realty Specialist RPAO
Army Reserve 63rd Regional Support Command
63d RSC DPW PLANS 230 RT Jones Rd
Mountainview, CA 94043

SUBJ: PUBLIC REVIEW PERIOD FOR THE MARINE CORPS AIR STATION
MIRAMAR DRAFT INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

Mr. Gardner:

In compliance with the Sikes Act, Marine Corps Air Station (MCAS) Miramar has prepared an Integrated Natural Resources Management Plan (INRMP). The INRMP addresses resource management on all of the lands for which MCAS Miramar has real property accountability, including lands occupied by others pursuant to a license, lease, easement, use agreement, or right of way. Natural resources management actions undertaken by, or on behalf of, the Marine Corps are planned for and do occur on or around your area of operation.

Your real estate interest with the Station provides that the rights shall be subject to such reasonable rules and regulations to ensure that the exercise of such rights shall not interfere with the Government activities at the facility. One purpose of this letter is to provide notice that your actions in regards to the natural resources on the Station must be consistent with the philosophies and supportive of the objectives of the MCAS Miramar INRMP.

Given that the INRMP covers lands associated with your operations, we are providing you with notice that we are in the process of revising our INRMP. At this time, we solicit your review and comment on our Draft INRMP to ensure that issues important to you are considered. To address the implementation of planned actions in the INRMP, we have prepared an Environmental Assessment (EA) that you may also review and provide comment on.

For your convenience, we have placed the draft INRMP and draft EA on the environmental portion of the MCAS Miramar web site at:
<http://www.miramar-ems.marines.mil>.

If you have any comments or information to provide, we request that you transmit them such that we will receive them by January 22, 2018. Please use the following address:

COMMANDING OFFICER, MCAS MIRAMAR
ATTN S7 (MR DAVID BOYER)
H&HS SQUADRON
PO BOX 452013
SAN DIEGO CA 92145

If you have questions about the natural resource management aspects of this plan, please contact our Natural Resources Division staff at (858) 577-1125. For questions related to your real estate interests, please contact Robert Turley at (858) 577-9220.

Sincerely,

BRINKMAN.TRAVI
S.DUANE.1244909
120

Digitally signed by
BRINKMAN.TRAVIS.DUANE.124
4909129
Date: 2018.01.03 14:55:01 -0800

T.D. BRINKMAN
Lieutenant Commander, U.S. Navy
Public Works Officer, Installation and
Logistics
By direction of the Commanding Officer

Coordination letter sent to USFWS and CDFW.



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION MIRAMAR
P.O. BOX 452001
SAN DIEGO, CALIFORNIA 92145-2001

IN REPLY REFER TO:
5090/ 4874
SEP 13 2017

U.S. Fish and Wildlife Service
Attention: Mr. J. Snyder
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

California Department of Fish and Game
Attention: Mr. P. Schlitt
4949 Viewridge Avenue
San Diego, CA 92123

Ladies and Gentlemen:

SUBJECT: REVIEW OF THE MARINE CORPS AIR STATION MIRAMAR DRAFT
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

As part of our continuing coordination on the update of our Marine Corps Air Station (MCAS) Miramar Integrated Natural Resources Management Plan (INRMP), we are providing a complete draft of our INRMP and draft Environmental Assessment (EA) on implementation for your review and comment. We believe we incorporated your staff comments from the chapter-by-chapter reviews we have shared over the past 14 months with Ms. Katy Kughen and Mr. Paul Schlitt. Included with the draft INRMP is a comment/response matrix prepared by our contractor to track how your previous comments were addressed. The enclosed compact disk contains electronic files of these documents.

One month following our transmission of the draft INRMP and EA for your review and comment, we plan to solicit public review and comment on the draft INRMP and EA documents. This will be accomplished by transmitting notification letters and posting the documents on the environmental portion of the MCAS Miramar web site linked from: <http://www.miramar-ems.marines.mil/Divisions/Natural-Resources-Division/Natural-Resources/>. During this public review and comment period of 30 days, you may continue your review, but please contact us within the first 30 days from your receipt of this letter if you find something in the draft INRMP sufficiently objectionable to require revision prior to our posting for public review.

We request that you provide any review comments you have by November 27, 2017. If you have any questions, please contact our Natural Resources Division Director, Mr. David Boyer, at (858) 577-1125 and electronic mail: david.a.boyer1@usmc.mil.

Sincerely,



S. M. VAN WINKLE
Asst. Environmental Management Officer
By direction of the Commanding Officer

Enclosure: CD containing: 1. Draft INRMP
2. Comment/Response Matrix
3. Draft Environmental Assessment

Copy to: MCIWest (Env. Sec./Planning and Conservation)
MCICOM (GF 7)

Early Chapter-by-Chapter Coordination and Review with State and Federal Fish and Wildlife Agencies January 2015 – June 2017

An initial scoping meeting was held on MCAS Miramar on 16 January 2014 and was attended by Mr. Paul Schlitt from the California Department of Fish and Wildlife (CDFW), Ms. Katy Kughen from the U.S. Fish and Wildlife Service (USFWS), MCAS Miramar Natural Resources Division, and Tetra Tech. The purpose of this meeting was to discuss an early chapter-by-chapter review of the updated MCAS Miramar INRMP. As each chapter of the INRMP was updated, it was sent to CDFW and USFWS for initial review and comment. This approach allowed comments from the agencies to be addressed in text prior to the preparation of the Public Draft INRMP. It also spaced out the review over a longer period of time allowing for a more detailed review, rather than requesting comments on the entire INRMP all at once.

The first updated INRMP chapters were provided to CDFW and USFWS in January 2015. Comments were received as early as February 2015 from the state and federal fish and wildlife agencies and were addressed in text. This process continued throughout 2016 and 2017, with the last comments received from the state and federal fish and wildlife agencies in June 2017.

Sample coordination letters distributed to the local Tribes.



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION MIRAMAR
P.O. BOX 452001
SAN DIEGO, CALIFORNIA 92145-2001

IN REPLY REFER TO:
5090/ 4947
JAN 19 2017

Mr. Virgil Perez, Chairman
Iipay Nation of Santa Ysabel
P.O. Box 130
Santa Ysabel, CA 92070

Dear Mr. Perez:

Marine Corps Air Station (MCAS) Miramar continues work to update our Integrated Cultural Resources Management Plan (ICRMP) and the Integrated Natural Resources Management Plan (INRMP). We presented these efforts to you before in letters of February 2014 and June 2016. Our work has produced draft updates that we seek your input on.

Integrated Cultural Resources Management Plan (ICRMP) Update. This plan integrates and guides our management of archaeological, historical, and other culturally important resources at MCAS. Specific site information will be kept in a confidential appendix that is not publically available. Management and consultation procedures will be reviewed and updated as needed. We solicit your participation in this update and any information you would like to provide.

Integrated Natural Resources Management Plan (INRMP) Update. This plan integrates and guides our natural resource management on the Station. We are updating natural resource information and management actions along with information about Station operations and land uses. Our draft update is posted for public review at: <http://www.miramar-ems.marines.mil/programs/natural-resources/INRMP/>.

We are inviting you to participate with further planning of these plans as they may relate to your cultural interests. Enclosed are electronic versions of the ICRMP and the INRMP on a CD-ROM. If you would like a paper version of these documents, please contact us. If you wish to provide any information or comment, or you need additional information, we request that you contact us. Please provide comments on the INRMP by February 24, 2018. Please provide your comments on the ICRMP by March 26, 2018.

Our point of contact is Mr. David Boyer, Director, Natural Resources Division, at (858)577-1125 or by electronic mail at david.a.boyer1@usmc.mil.

Sincerely,

A handwritten signature in blue ink that reads "S.M. Van Winkle".

S.M. VAN WINKLE
Asst. Environmental Management Officer
By direction of the Commanding Officer

Enclosure: CD-ROM with ICRMP and Draft INRMP



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION MIRAMAR
P.O. BOX 452001
SAN DIEGO, CALIFORNIA 92145-2001

IN REPLY REFER TO:
5090 4648
13 JUN 2016

Mr. Robert Pinto, Sr., Chairman
Ewilaapaayp Band of Kumeyaay Indians
P.O. Box 2250
Alpine, CA 91901

Dear Mr. Pinto:

Marine Corps Air Station Miramar is planning a number of actions which may be considered "undertakings" by the National Historic Preservation Act (NHPA). In accordance with our responsibilities under the NHPA, we are contacting you to determine whether you attach religious or cultural significance to the sites involved and if you desire to be consulted further regarding any one or more of these projects. None of these actions are dependent upon each other, but we have chosen to initially present them to you in one letter to determine your level of interest for each. We also solicit any specific knowledge you have regarding the occurrence of historic or prehistoric sites in the vicinity of any of the project sites. Record searches and field surveys have been done or are planned in an effort to determine if any of the projects could affect a historically significant site. Any information you can provide would be helpful for this effort.

The following paragraphs briefly discuss the projects and any alternatives being considered. All projects are on the Air Station. Some projects have been presented to you before and are again included because we are still planning the actions. The enclosed figure shows the general location of each project. We have also included a "Response Form" that you may use to express any interests or information you wish to share regarding one, or more, of the projects or alternatives. Our point of contact for this communication is identified in the last paragraph of this letter so that you may contact him if you prefer.

F-35 Aircraft Facilities Development. We continue planning new and rehabilitated airfield facilities needed to support basing of the new F-35 Joint Strike Fighter at the Air Station. This project has been presented to you in previous communications, but some additional area is now involved. The project requires relocation of an aircraft wash rack and vehicle access roads, demolition of some existing buildings and aircraft hangars, new construction of aircraft hangars and support facilities, replacement of some security fence, and replacement of a new small arms storage magazine.

Bunker Demolition in East Miramar. We are planning to demolish two Cold War era test bunkers in East Miramar that were originally constructed in 1961. The project will result in complete removal of

building materials and utilities. After removal of the buildings, the sites will be graded to eliminate holes and reduce erosion. Our plans currently intend to reseed the site with native plant species to help stabilize the soil. There are already access roads to the sites, and we expect this demolition work to occur within the area previously disturbed by original construction.

De La Garza Road Stream Crossing Repair/Replacement. We are planning to repair, by replacement, an existing paved road crossing of the Rose Canyon streambed on our Main Station area that was damaged by flooding this past winter (De La Garza Road). The existing culverts, concrete, asphalt, and riprap will be removed and a new set of box culverts will be installed with concrete aprons and new riprap protection. The road crossing will then be restored with asphalt connections.

San Diego Gas & Electric Natural Gas Pipeline in East Miramar. We are cooperating with the San Diego Gas and Electric Company to support their need for a large natural gas transmission pipeline through the Station. The current alternatives enter the Station from the north and follow an existing County Water Authority pipeline corridor for about 2 miles. Alternatives consider pipeline placement along either the east or west sides of this corridor. The pipeline section on MCAS Miramar is at the southern end of a 47-mile long project that begins near Rainbow, California. Overall project planning is being managed by the California Public Utilities Commission as the lead agency.

Integrated Natural Resources Management Plan (INRMP) Update. We presented this to you before, but we continue our preparation on a 5-year update to our INRMP for MCAS Miramar. This plan integrates and guides our natural resource management on the Station. We will be updating natural resource information and management actions along with information about Station operations and land uses. Our current INRMP can be reviewed at the following web site: <http://www.miramar-ems.marines.mil/Divisions/NaturalResourcesDivision/NaturalResources.aspx>.

Integrated Cultural Resources Management Plan (ICRMP) Update. We recently started work to update our ICRMP for MCAS Miramar. This plan integrates and guides our management of archaeological, historical, and other culturally important resources on the Station. We will be updating this plan with information from surveys and evaluations completed in the past six years. Specific site information will be kept in a confidential appendix that is not publically available. Management and consultation procedures will be reviewed and updated as needed. We solicit your participation in this update and any information you would like to provide. Our current ICRMP can be viewed at the following web site: [http://www.miramar-ems.marines.mil/Portals/60/Docs/MEMS/Cult Res/ICRMP Final \(April%202011\).pdf](http://www.miramar-ems.marines.mil/Portals/60/Docs/MEMS/Cult Res/ICRMP Final (April%202011).pdf).

We are inviting you to participate with further planning of these projects as they may relate to your cultural interests. Because the U.S. Army Corps of Engineers may be issuing permits associated with one or more these projects, they may use our lead agency communications and consultation results for their permitting processes.

If you wish to provide any information or comment, or you need additional information, we request that you contact us by August 11, 2016. Our point of contact is Mr. David Boyer, Director, Natural Resources Division, at (858)577-1125 or by electronic mail at "david.a.boyer1@usmc.mil".

Sincerely,



E. S. BENJAMIN
Lieutenant Colonel, U.S. Marine Corps
Environmental Management Officer
By direction of the Commanding Officer

Enclosures: (1) Location Figure
(2) Response Form



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION MIRAMAR
P.O. BOX 452000
SAN DIEGO CA 92145-2000

IN REPLY REFER TO:
5090 4 1 3 7
2 4 FEB 2014

Ms. Gwendolyn Parada, Chairwoman
La Posta Band of Mission Indians
P.O. Box 1120
Boulevard, CA 91905

Dear Ms. Parada:

Marine Corps Air Station Miramar is planning a number of actions which may be considered "undertakings" by the National Historic Preservation Act (NHPA). In accordance with our responsibilities under the NHPA, we are contacting you to determine whether you attach religious or cultural significance to the sites involved and if you desire to be consulted further regarding any one or more of these projects. None of these actions are dependent upon each other, but we have chosen to initially present them to you in one letter to determine your level of interest for each. We would also solicit any specific knowledge you have regarding the occurrence of historic or prehistoric sites in the vicinity of any of the project sites. Record searches and field surveys are planned or are being done in an effort to determine if any of the projects could affect a historically significant site. Any information you can provide would be helpful for this effort.

The following paragraphs briefly discuss the projects and any alternatives being considered. All projects are on the Air Station. The enclosed figure shows the general location of each project and project alternatives. We have also included a "Response Form" that you may use to express any interests or information you wish to share regarding one, or more, of the projects or alternatives.

We have started planning for the development of vernal pool wetland habitat mitigation areas that may formally be set up as a mitigation and conservation bank with the U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service. We are doing this in cooperation with these agencies, and in coordination with the U.S. Environmental Protection Agency. Up to six areas on MCAS Miramar may be authorized by this planning for restoration, re-establishment, establishment, and long-term conservation of vernal pool wetlands. Vernal pool associated threatened and endangered species would be

introduced to the newly created habitat. Actions associated with this habitat development would include re-contouring the top 2-3 feet of soil to create basins and mounds, planting native species, and non-native plant control. Some soil remediation work may also be needed to clean up from past land uses.

We are beginning the process of preparing a 5-year update to our Integrated Natural Resources Management Plan (INRMP) for MCAS Miramar. This plan integrates and guides our natural resource management on the Station. We will be updating natural resource information and management actions along with information about Station operations and land uses. Our current INRMP can be reviewed at the following web site: <http://www.miramarmarine.mil/Divisions/NaturalResourcesDivision/NaturalResources.aspx>.

We are planning to construct a sewer equalization tank in Rose Canyon for the purposes of better managing sewage flow from the Station. Our preferred alternative replaces an existing sewer line with a long linear tank under an existing paved road in the bottom of Rose Canyon. Construction will require an additional 3-5 feet beyond the paved road that would be restored to native plants following construction. An alternative also being considered is construction of a more traditional storage tank on the side of the canyon with a pump station just upstream of preferred alternative. Construction laydown areas would be in nearby areas already disturbed or developed and would be the same for both alternatives.

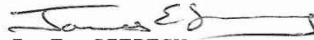
Our Marine Corps Community Services department is planning to build an outdoor adventure park on a part of the Station between Interstate Highway 15 and Kearny Villa Road, and north of Miramar Way. This area once supported horse stables and is adjacent to their recreational vehicle storage lot. The outdoor adventure park would include a rock climbing/repelling wall, BMX bicycle track, themed paintball and airsoft BB gun areas, exercise course, playground, outdoor amphitheater, batting cages, and picnic area with associated fencing, landscaping and parking.

Finally, we are planning to expand the aircraft parking area for KC-130 aircraft to the east of the existing aircraft parking area and associated hangar. This is required to make room on the flightline for new F-35 Joint Strike Fighter aircraft. The project requires relocation of an aircraft wash rack and vehicle access road, demolition of a some existing buildings, and development of a few vernal pools that would be re-established elsewhere in compensation.

We are inviting you to participate with further planning of these projects as they may relate to your cultural interests. Because the U.S. Army Corps of Engineers may be issuing permits associated with one or more of these projects, they may use our lead agency communications and consultation results for their permitting processes.

If you wish to provide any information or comment, or you need additional information, we request that you contact us by April 10, 2014. Our point of contact is Mr. David Boyer, Director, Natural Resources Division, at (858) 577-1125 or by electronic mail at "david.a.boyer1@usmc.mil".

Sincerely,



J. E. SZEPESEY
Lieutenant Colonel, U.S. Marine Corps
Environmental Management Officer
By direction of the Commanding Officer

Enclosures: (1) Location Figure
(2) Response Form