



2020 Secretary of the Navy Environmental Award Environmental Quality – Non-industrial Installation Marine Corps Air Station Miramar



MCAS Miramar occupies 23,000 acres in San Diego County, including more than 17,000 acres of undeveloped land that supports eleven threatened and endangered species.

Marine Corps Air Station (MCAS) Miramar is located at the center of a network of Marine Corps and Navy installations and ranges in the Southwestern United States. Situated 13 miles north of downtown San Diego and approximately four miles east of the Pacific Ocean, MCAS Miramar encompasses 23,065 acres of marine terrace and undeveloped coastal foothills, and provides air station facilities and property, services, materiel support, and training venues in support of combat readiness for 3rd Marine Aircraft Wing and other tenants. MCAS Miramar is bisected by Interstate 15 (I-15). West of I-15, the Main Station hosts flight operations and commercial, industrial, administrative and residential facilities, while east of I-15 is East Miramar, which is primarily comprised of undeveloped training areas, small arms ranges, and warehouses. As the population in San Diego County continues to grow, increased demand for new development and redevelopment of existing commercial and residential areas makes East Miramar an encroachment buffer for the station at-large. With more than 15,000 civilians, service members and their families working and living on station, and over 260 helicopters and fixed-wing aircraft assigned to the installation,

MCAS Miramar is the largest air station in the Marine Corps, and plays an important role in the San Diego community as an economic engine and ambassador of the military mission. With access to more than 65% of the Department of Defense's training ranges in the continental United States, MCAS Miramar is at the heart of modernizing Marine Corps aviation. This modernization includes ongoing and planned construction and infrastructure improvements in support of the West Coast basing of the F-35 Joint Strike Fighter, including hangar construction, ramp expansion, and construction of new communications and simulator facilities. The MCAS Miramar Environmental Management Department (EMD) supports the installation and its tenants through its comprehensive compliance, pollution prevention, conservation, planning, training, and management activities. MCAS Miramar faces numerous challenges and opportunities such as: an increasingly constrained fiscal environment; evolving legislative, administrative and policy requirements; encroachment; an increase in the intensity and occurrence of wild fires; and, the integration and fielding of new weapons systems. The EMD partners with other staff sections, tenants, and external organizations to implement innovative and timely solutions to ensure uninterrupted support of the mission.

Summary of Accomplishments

Perfluoroalkyl Substance (PFAS) Management

The need for viable treatment alternatives to manage per- and polyfluoroalkyl substance (PFAS) contaminants associated with Aqueous Film Forming Foam (AFFF) is becoming more apparent in the wake of evolving PFAS regulations at the state and federal level. Over time, AFFF wastewater from fire suppression systems has been collected and retained in underground storage tanks at five hangars aboard MCAS Miramar, totaling approximately 320,000 gallons. Rather than disposing of the wastewater as hazardous waste, MCAS Miramar pursued an innovative project to conduct an initial study and treat the AFFF wastewater and tank rinsate to below the United States Environmental Protection Agency (U.S. EPA) Lifetime Health Advisory (LHA) level of 70 parts per trillion (ppt) for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), and the U.S.



2020 Secretary of the Navy Environmental Award Environmental Quality – Non-industrial Installation Marine Corps Air Station Miramar

EPA Regional Screening Level (RSL) of 400 ppt for perfluorobutanesulfonic acid (PFBS). The trailer-mounted treatment system processes the contaminated wastewater through vessels containing organoclay, granular activated carbon, ion-exchange resin media, and colloidal scavenger resin. The system has successfully treated PFAS concentrations of up to 6,450,000 ppt for PFOS, 95,400 ppt for PFOA, and 130,000 ppt for PFBS to below the LHA and RSL, allowing MCAS Miramar to coordinate with the City of San Diego for batch discharge of treated and tested water directly to the sanitary sewer. The process is saving the Marine Corps more than a million dollars in disposal costs: disposal as hazardous waste would have cost more than \$8 per gallon, while the cost of treatment on site is just under \$3 per gallon.



MCAS Miramar employs a trailer-mounted treatment system to remove PFAS from AFFF-contaminated wastewater to below LHA and RSLs.

In order to evaluate the potential risk to human health and the environment from historical AFFF releases, EMD is supporting Naval Facilities Engineering Command Southwest on a Preliminary Assessment/Site Inspection (PA/SI) study. The PA was completed in 2019 and evaluated historical data to identify locations where PFAS may have been released to the environment. Historical areas of interest included: known crash sites/aircraft fires, firefighting training areas, and storage vessels/containers and release locations. The PA screened 242 potential areas on the station where PFAS may have been stored, used, disposed of, or released to the environment. Of these sites, 37 areas were identified as having the potential for a release based on the historical record review and were moved forward for evaluation in an upcoming SI. The SI will include media sampling at each site to confirm the absence or presence of PFAS at each location. While groundwater will be sampled as part of a comprehensive study, groundwater beneath the installation is not classified as a beneficial source of drinking water by the state, minimizing potential for impacts to human health.

Environmental Leadership and Management

Environmental leadership at MCAS Miramar is a multi-tiered framework that applies the Commanding Officer's Environmental Policy to daily operations through a robust Environmental Compliance Coordinator (ECC) program and extensive audit and outreach by the Environmental Management Department. Environmental stewardship goals and objectives are integrated into the Miramar Strategic Plan 2020, which states that MCAS Miramar's comprehensive environmental management program will achieve compliance with environmental requirements; reduce waste and waste disposal costs; and enable enduring training and operation capabilities by conserving and enhancing the natural resources aboard the Station. MCAS Miramar has implemented an Environmental Management System (EMS) that fully conforms to Marine Corps Directives and enhances performance and utilization of resources while minimizing impacts to the mission. The EMS, recognized as a model program, is hosted on a website that is accessible to all internet users and is periodically updated with current plans, training, and inspection information. Environmental management is integrated into all day-to-day activities, including environmental planning, project review, compliance auditing, record keeping, and information management. Lessons learned are discussed by ECCs and the EMS Cross Functional Team and incorporated into the installation's Environmental Compliance and Protection Standing Operating Procedures.



2020 Secretary of the Navy Environmental Award Environmental Quality – Non-industrial Installation Marine Corps Air Station Miramar

Environmental Planning

The installation strategic plan recognizes the need for environmental planning and management, and for incorporating environmental considerations into projects and activities; educating the installation community on environmental requirements; and continually assessing and improving compliance from fence line to fence line.

The onboarding of F-35 squadrons requires unique infrastructure and support considerations for successful operations. As such, environmental planning-related requirements were a top priority for EMD in FY18 and FY19. EMD's Environmental Planning personnel supported ambitious F-35 Military Construction execution and airfield optimization ahead the arrival of F-35 squadrons in 2020, as well as ongoing infrastructure development well into the next decade. A Supplemental Environmental Assessment for Miramar-specific F-35 projects and an accompanying Finding of No Significant Impacts determination were finalized in November 2017, and a 2016 update to the Marine Corps Aviation Plan required an evaluation, completed in FY18, of the consequences of replacing up to two planned F-35B squadrons with F-35C squadrons.

Planning efforts included 11 Military Construction (MILCON) projects for which consequences were evaluated individually and cumulatively with ongoing and planned projects, such as implementation of the new station energy security microgrid, ongoing vernal pool mitigation planning and Integrated Natural Resources Management Plan implementation, a new US Army Reserve Center currently under construction; vernal pool mitigation associated with the West Coast basing of the MV-22 Osprey; and City and public utility projects with easements on Marine Corps property. During FY18 and FY19, the EMD also prepared or provided oversight for 103 Categorical Exclusion (CATEX) documents, 43 design reviews, two Real Estate Lease Agreement Environmental Plan reviews, and 84 Multi-Use CATEX consultations.

Natural Resources Management

MCAS Miramar provides important habitat corridors and linkages to adjoining conserved open spaces. Vegetation types include chaparral, coastal scrub, and grasslands adapted to the Mediterranean climate and occasional wildfire. MCAS Miramar also has eleven federally listed threatened and endangered species, thousands of acres of regionally sensitive habitat, and boasts the largest remnant of vernal pool habitat in Southern California, the best portion of which was designated as the Miramar Mounds National Natural Landmark in 1972. In FY18 the station completed a vernal pool and wetland habitat restoration project as mitigation for MV-22-related MILCON projects, and broke ground on a similar project that will continue into FY22 in support of F-35 MILCONs.



Contractors salvage soil from existing vernal pools prior to breaking ground on the parking ramp expansion. The soil was used to “seed” replacement vernal pools constructed elsewhere on station property.



Lessons learned from constructing vernal pools as mitigation for the West Coast basing of the MV-22 were applied to planning the F-35 mitigation project.



2020 Secretary of the Navy Environmental Award Environmental Quality – Non-industrial Installation Marine Corps Air Station Miramar

Natural Resources management in support of the F-35 also includes data interpretation, impact assessment, and ESA consultation associated with the planned development of F-35 construction areas to address impacts to natural resources, including numerous threatened/endangered species and rare vernal pool wetlands which varied greatly within the project areas.

Miramar is working to duplicate its 2009 successful off-installation habitat compensation project by partnering with the San Dieguito River Park Joint Powers Authority at the Sycamore Westridge Preserve to mitigate impacts from F-35 construction. This action preserves installation lands for mission activities rather than using for habitat mitigation/conservation. In FY 18 and FY19, MILCON projects having the potential to affect listed species have had multiple supporting biological monitoring and vegetation management contractors working with construction contractors to minimize impacts to natural resources. In September of 2018, MCAS Miramar developed an F-35 Vernal Pool Wetland Habitat Mitigation Plan that described the methodologies for creating new replacement pools for three listed species. Pools will be constructed in an area of the station where long-term conservation is mission compatible.

In July 2018, MCAS Miramar, with support from the MCIWEST REPI office and NAVFAC Southwest Real Estate and Environmental personnel, executed a \$1.5M agreement with the Endangered Habitat Conservancy for the perpetual management and preservation of 409 acres of undeveloped land acquired with \$4M of REPI and matching partner funds, residing two miles east of the station and under the main aircraft approach corridor. The agreement protects the MCAS Miramar mission by providing credits for relieving on-station field training constraints associated with the federally threatened California gnatcatcher (*Polioptila californica*). This accomplishment is the culmination of five years of work compiling data and coordinating with USFWS, and in future years, collaboration will continue to determine how to apply conservation credits to regulatory relief to ensure sustained training capabilities in critical aviation support missions.

Cultural Resources Management

Buildings at MCAS Miramar over 50 years of age have been evaluated and determined to be ineligible for listing on the National Register of Historic Places, and 188 Archaeological sites have been identified, including 10 that are suggested as eligible for listing on the Register. In FY18 and FY19, the station completed Section 106 NHPA consultation for F-35 related construction, for demolition of two bunkers in East Miramar, and in support of the City of San Diego's Pure Water – North City Project, all of which resulted in a "no historic properties affected" outcome. In 2018 MCAS Miramar shared a draft of the Integrated Cultural Resources Management Plan update, slated for completion in FY20, with local Indian Tribes, SHPO, and other historical groups. All archaeological artifacts continue to be curated at the San Diego Archaeological Center.

Environmental Compliance Evaluation

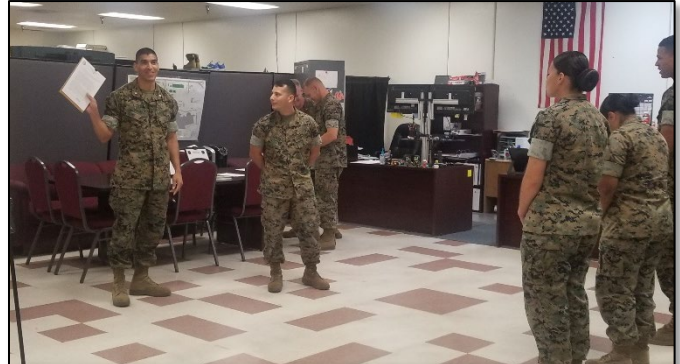
MCAS Miramar implements a rigorous, risk-based inspection schedule that ensures base and tenant compliance with regulations, policy and guidance. In FY19, EMD created a new compliance communication tool to improve leadership's understanding of compliance findings and their potential impact to mission and initiated a new "action items" list for unit Environmental Compliance Coordinators (ECCs) to better identify facility, personnel and environmental requirements and tailor their corrective and preventive actions. EMD streamlined the installation-wide audit schedule and established an unprecedented level of information flow between EMD and other organizations through audits and assist visits, in particular taking the initiative to offer mentoring and support. MCAS Miramar also participated in beta tests of MCICOM-sponsored efforts to implement enterprise-wide compliance monitoring and tracking systems.



2020 Secretary of the Navy Environmental Award Environmental Quality – Non-industrial Installation Marine Corps Air Station Miramar

Comprehensive Environmental Training and Education Program

The Comprehensive Environmental Training and Education Program (CETEP) provides job-specific environmental training courses for Marines, Sailors, and civilians station-wide. During FY18 and FY19 Miramar conducted 32 classroom-based instructional sessions for environmental staff and tenant representatives. A general environmental awareness video is available on the EMS website, and environmental personnel provide live training to Marines and families at welcome aboard briefs, “back in the saddle” training, Earth Day and Marine Corps Community Services-sponsored events, and community expos. During FY19, EMD initiated an internal training needs assessment of station and tenant personnel and updated the training schedule and content to deliver an effective training curriculum to Hazardous Waste Coordinators (HWCs) and Environmental Compliance Coordinators (ECCs). In FY19, MCAS Miramar staff initiated unit-specific training to address the compliance and pollution prevention issues of the receiving unit, incorporating photos and scenarios from the receiving unit’s own facilities and operations.



Environmental Compliance Coordinator Staff Sergeant Peralez of Marine Aviation Logistics Squadron 11 is presented an award from the Commanding Officer, MCAS Miramar, for significant contributions to the station’s compliance posture.

Environmental Compliance Coordinators

ECCs at MCAS Miramar are integral to the success of the station’s environmental programs. They serve as liaisons with EMD, provide deckplate-level training to the Marines, sailors and civilians in their organizations, and provide valuable feedback to EMD staff on the effectiveness of local policies for maintaining compliance. ECCs also conduct spot checks to ensure their organizations are working to close any findings annotated during internal audits, identify emerging compliance issues, and ensure preventive action plans are being followed.

Air Quality

The air quality program maintains compliance and the regulatory relationships critical to remaining responsive to regulatory changes and implementing improvements in energy production and distribution. The EMD manages 115 permits from the San Diego County Air Pollution Control District (SDAPCD) and a registration certificate from the State of California Air Resources Board for more than 350 pieces of Tactical Support Equipment under the Statewide Portable Equipment Registration Program. During both FY18 and FY19, SDAPCD conducted compliance inspections of all permit requirements with no enforcement actions cited. The EMD supported permitting efforts for the new microgrid and Hangar A, both completed in FY19.

Water Quality, Storm Water Management, and Spill Prevention, Control, and Countermeasures

Proactive water quality management ensures continued compliance and improvements to facilities and water distribution. MCAS Miramar holds an Industrial User Discharge Permit and four National Pollutant Discharge Elimination System permits, an Industrial Storm Water Discharge Permit, and a Small Non-Traditional Municipal Separate Storm Sewer System Permit, as well as 22 Food Establishment Waste Discharge permits from the City of San Diego. The Water Quality Program was subject to eleven regulatory inspections during FY18 and FY19, with no violations noted. Marine Corps Community Services implemented Low Impact Development (LID) components into the new Flight Line Mini Mart and Starbucks / Jamba Juice facilities completed in FY18.



2020 Secretary of the Navy Environmental Award Environmental Quality – Non-industrial Installation Marine Corps Air Station Miramar

Bioretention features, grassed swales, and infiltration trenches were incorporated into the projects, which covered a combined 93,000 square feet. MCAS Miramar exercises its response to potential spills through annual Facility Response Plan drills which provide valuable training to first responders, tenant units, and EMD staff.

Sustainability

Creating a resilient, sustainable installation is a critical component of the station's strategy to provide national defense into the next decade. After nearly ten years of planning, development and experimentation in concert with multiple partners, MCAS Miramar is in the final stages of implementing a microgrid that will be capable of supporting more than 100 mission-critical facilities (emergency services, flight line operations, and communications) for three weeks in the event of a grid outage. The system leverages all available resources to provide complete redundancy to the local utility, including two 1.4 megawatt (MW) natural gas generators, two 1.8 MW diesel generators, two 1.6 MW landfill gas-fueled generators, battery storage, and more than 1.2 MW of PV. The microgrid automatically optimizes power generation and sheds load, generating cost savings by offsetting electricity purchases, reducing peak demand charges, and allowing participation in utility demand-response programs. Negotiations continued with the City of San Diego to enter into an Intergovernmental Support Agreement (IGSA), the first in the Navy to enhance energy resilience, to allow the station to procure an additional 1.6 MW of landfill power as part of the City's Pure Water Program and expand MCAS Miramar's landfill gas power to 4.8 MW. MCAS Miramar achieved a 5% reduction in energy intensity versus the 2015 baseline, a 47% reduction in water intensity versus the 2007 baseline, and now sources 52% of total energy consumption from on-site renewable energy sources. Continuing work on utility expansion projects during FY19 converted major irrigation sites on the installation to reclaimed water (RCW), increasing RCW infrastructure by more than 5 miles and totaling a 47% conversion to RCW irrigation. The station is on track to meet its goal of 50% RCW use by 2030.



Station first responders receive feedback from an evaluator following the FY19 Facility Response Plan drill.

Waste Management and Recycling

Reducing the use of hazardous material and subsequent generation of hazardous waste enhances sustainability and reduces costs for the installation and its tenants, while recycling generates revenue that can enhance the quality of life for Miramar Marines and Sailors. EMD works hand-in-hand with tenant and station organizations to ensure the proper disposal and/or recycling of regulated wastes. Hazardous Waste Coordinators (HWC) receive installation-specific HWC introductory and refresher courses and quarterly training from EMD staff and are the EMD's liaisons to each tenant unit on waste disposal issues. In FY18, in response to emerging requirements, Miramar successfully requested an



EMD employees Ms. Inez Sison, Mr. P. Mike Corona, Mr. Erick Osorio and Mr. Luis Romero assist MCAS Miramar personnel during a hazardous waste collection event.

additional permit to store used tires, increasing the station's capacity to process tires by 17%. In FY18, review of hazardous waste disposal contracts resulted in an annual cost-savings of \$96,000. The Station's Qualified



2020 Secretary of the Navy Environmental Award Environmental Quality – Non-industrial Installation Marine Corps Air Station Miramar

Recycling Program generated more than \$240,000 in revenues during FY18 and FY19. These funds were subsequently applied to the operating costs of the program and for morale, welfare, and recreation programs for active duty personnel. EMD extends waste disposal and recycling services to installation employees during its annual collection events to encourage Marines, Sailors and civilians to properly dispose waste year-round.

Collaborative Partnerships and Outreach

Partnering with the community is a critical line of effort for MCAS Miramar, and the installation continually develops and maintains positive relationships with local organizations, schools, community leaders, media, and elected officials, to enhance their knowledge of MCAS Miramar's mission. Partnerships and strengthened relationships with regulators have been essential to maintaining compliance and will increase the capabilities of the EMD to support the mission in the coming years. MCAS Miramar leads the Navy and Marine Corps in using new partnership frameworks such as the IGSA and REPI agreements. Partnerships with the California Energy Commission, California Public Utilities Commission, and University of California, San Diego have been integral to MCAS Miramar's energy initiatives and organizations such as the Endangered Habitat Conservancy have provided invaluable support to furthering conservation efforts that will aid in sustaining the military mission. Collaboration with the Army Corps of Engineers (ACoE) has been essential in addressing permitting challenges associated with CWA permitting at many F-35 MILCON construction footprints. The EMD worked with staff of the local ACoE regulatory office early in design processes to obtain jurisdictional determinations for five of the MILCONs to support final site and permit planning. With some adjustments to siting and construction methods, the installation avoided impact to jurisdictional waters and wetlands that could have required Section 404/401 CWA permitting for all but one MILCON. Notably, in FY19 a collaborative effort by the ACoE, MCAS Miramar EMD and Public Works, and the military construction team personnel, accelerated the permitting process and associated mitigation required under the Clean Water Act well ahead of the standard approval timelines. This action prevented months of construction delays and saved thousands of dollars in contract modification costs. EMD regularly participates in outreach activities on station during events such as Earth Day, base housing presentations, and most recently in fall 2019, EMD worked with the Young Marines on a service project to enhance the MCAS Miramar Conservation Garden. This event will be the model for executing similar projects in the years to come. As part of an ongoing initiative to enhance training and to ensure continued compliance across all environmental programs, MCAS Miramar hosted several visits and opened lines of communication with regulatory agencies, including the SDAPCD, USFWS, and the RWQCB. The station's environmental programs have greatly benefitted from these valued relationships.

Conclusion

MCAS Miramar continues to be a leader in enhancing environmental quality while supporting the Marine Corps Mission. The installation continued to apply innovative technologies, and demonstrated dedication to improving compliance through educating, mentoring and providing oversight and expertise to the units aboard the installation, while maintaining and strengthening collaborative partnerships.



MCAS Miramar Commanding Officer Colonel Charles Dockery stands with Station personnel while receiving recognition for environmental achievements from the office of United States Senator Kamala Harris.