FY2021 Secretary of The Navy Environmental Awards

Environmental Affairs, Sustainability – Non-Industrial Installation

Marine Corps Air Ground Combat Center, Twentynine Palms

INTRODUCTION

Marine Corps Air Ground Combat Center (MCAGCC) is located in the Southern California Mojave Desert. It is the Marine Corps' largest installation, occupying approximately 704,000 acres (1,100 square miles). MCAGCC is home to the Marine Air Ground Task Force Training Command (MAGTFTC) whose primary mission is to train military personnel under live-fire conditions in a manner that enables Commanders and Marines to practice essential skills for combat brigade- and battalion-sized exercises. MCAGCC trains over 45,000 Marines annually and relies upon a civilian and military population of 19,711 individuals, and infrastructure assets of over 1,000 buildings and structures. The southern boundary of the installation is adjacent to the city of Twentynine Palms, California. Other communities within the vicinity of MCAGCC include Joshua Tree, Yucca Valley, and Landers, California. For MCAGCC to successfully meet its training mission, a robust Environmental Management Program is in place. This program oversees base utilization of its finite desert-resource training environment, while enabling the Marine Corps units and tenant commands to achieve and maintain environmental compliance and protection while sustaining resources essential to combat readiness.

BACKGROUND

MCAGCC's primary mission is combined-arms training, where over the course of 69 years, has evolved into a national priority. The Combat Center is a premier desert-training installation. During growth and expansion of the installation in recent years, sustainable approaches were implemented to preserve the longevity of precious resources. MCAGCC's Environmental Management Program (EMP) is a collaborative effort between Environmental Affairs (EA), installation directorates, units, tenant commands, base residents, and adjacent Twentynine Palms community. All of these stakeholders are routinely included in environmental management decisions and outreach activities, and collectively play a critical role in the base's daily operations, expansion issues, and compliance with regulatory requirements.

Through rigorous implementation of sustainable initiatives, significant improvements have been made to water conservation, energy efficiency, reduction in petroleum use, recycling hazardous and non-hazardous materials and reductions in solid waste entering the Combat Center landfill. Outreach activities (e.g., Earth Day events, Bike Month events, Water Conservation campaigns, and Recycling Outreach campaigns) targeted at the Combat Center population and the local community, are important information dissemination tools supporting sustainability efforts at MCAGCC.

Environmental Management System (EMS)

EA has management responsibility for the MCAGCC base EMS. The EMS, which is in full conformance with all applicable requirements, tracks and improves the overall operational performance and efficiency of environmental programs, as well as generates cost savings and improves relations with regulatory agencies. EA is reviewing a mobile, web-based application for environmental compliance inspectors, which improves accuracy, reduces time, and eliminates paper. This tool, called the EMS compliance Tool, is used to track sustainability and environmental practices at MCAGCC.

SUMMARY OF ACCOMPLISHMENTS - PROGRAM MANAGEMET

Sustainability Master Plan

The Installation Sustainability Action Plan (ISAP) is a comprehensive plan designed for MCAGCC to make improvements in energy efficiency, renewable energy use, vehicle fleet management, potable and non-potable water conservation, solid waste and chemical waste management, greenhouse gas emissions, high-performance and sustainable buildings, sustainable acquisition, environmental management system, and more. To comply with sustainability metrics established by the Department of Defense (DoD), the ISAP presents background information, status in achieving the various metrics, and recommendations for future sustainability initiatives. Overall, this management tool provides a road map for MCAGCC to continuously improve non-industrial installation sustainability. Since its implementation in 2011, the ISAP has facilitated improvements in sustainability master planning and achievement of DoD-mandated sustainability goals. The following describes the fiscal year (FY) 2019 to FY 2020 activities and accomplishments from the most recent iteration of the ISAP.

Technical Merit

Improve Energy Efficiency

MCAGCC continued its progressive efforts to improve energy efficiency through optimization of energy systems, increasing renewable energy usage, active alternative vehicle fleet utilization, and actively promoting transportation via bicycling. Key accomplishments included:

MCAGCC Bike Month Logo "Join-Ride-Track" encouraging participants to pedal vice drive to reduce carbon footprint.

- FY 2020: Implementation of microgrid controls to further optimize MCAGCC's energy systems. The Combat Center is testing reliability and resiliency and has the ability to island the base and manage loads for long term in cases of a major power loss. The installation can sustain itself for up to 14 days or longer with the use of standard power with reserve fuels, and renewable power if natural gas is lost as well.

- On-going Effort: Utilization of high-efficiency cogeneration facility technology to provide on-site electricity, heating, and cooling production for Mainside. This offsets the need for a significant portion of grid-supplied electrical power and improves mission resiliency.

- FY 2019 and FY 2020: EA coordinated and promoted several biking events, including annual Bike Month. This event utilized the tagline "Join. Ride. Track." and was designed to encourage Combat Center personnel to participate in this alternative means of transportation.

Renewable Energy Implementation

Renewable energy is an essential source of clean and sustainable power aboard MCAGCC and the instillation has focused on performance capabilities for 13 systems via maintenance and repair projects:

- On-going Effort: Leadership and innovation in efficiently and cost-effectively providing total Photovoltaic (PV) production capability of 9.3 MW with total generation of about 25 MW of cogeneration and solar PV capacity combined. This allows MCAGCCs to produce its own energy, significantly increasing mission security.

- FY 2020: Production of 5.1% of MCAGCC's energy was generated from renewable sources.

- On-going Effort: The installation is working to be able to export power. PV power would be exportable; the Combat Center will utilize all self-generated power during summer and could export power in winter months.

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Water Consumption Reductions

The Combat Center is in an arid desert environment, resulting in reliance on groundwater aquifers as its only source of potable water. Due to water-level subsidence in Surprise Springs over the last 75 years, combined with slow recharge rates in the Southern California Mojave Desert, EA has established a robust water resources program to ensure water quality needs of MCAGCC are met now, and into the future. EA's Water Resources Office provides a central point for collection and dissemination information related to water quality, usage, availability, and general status. This is accomplished through comprehensive water quality monitoring, analysis, and assessment, as well as applied research and a rigorous water quality assurance and control program. Every effort is made to prevent potential negative impacts on surrounding watersheds and ecosystems.

Other key accomplishments for FY 2019 and FY 2020 include:

- Finalized programming for the development of a new waste water treatment plant (WWTP). The new WWTP will maximize the amount of treated and recycled water

produced from wastewater.

- Construction of a new drinking water treatment facility. This facility will provide MCAGCC the ability to ensure water quality is achievable into the future.

- Construction of two additional wells in Deadman Aquifer. These wells allow MCAGCC to balance water use across both aquifers to ensure resource sustainability.

- Completed additional studies supporting future implementation of an Advanced Metering Infrastructure to better track and control water usage across the installation.

Potable water consumption intensity is a major focus of the installation conservation program and reductions are imperative to ensure continued improvements in water conservation that will promote the long-term training mission and resiliency of MCAGCC and the Marine Corps. Water conservation is a dynamic process and new projects are under development and implementation to optimize utilization of this highly-critical resource.

Recycling and Waste Diversion

In FY 2019, MCAGCC achieved 50.15% non-hazardous solid waste landfill diversion (not including construction and demolition debris). As such at the time, the Combat Center achieved the 50% diversion target presented in the DoD Strategic Sustainability Performance Plan (SSPP). MCAGCC continues to enhance upon the diversion of solid waste in the landfill and is currently pursuing multiple initiatives to strengthen this metric. Key accomplishments achieved throughout FY 2019 and FY 2020 included:

- Diverted food waste from landfill disposal utilizing commercially-available grinder and digester technologies which converts all food waste to grey water.

- Cost effective technological solution for handling contaminated soils through aerobic bioremediation of hydrocarbon contamination via Biopile Operations. The bioremediation facility provided an estimated $800,000 cumulative cost savings and has reduced pollution by diverting roughly 2,500 cubic yards of hydrocarbon contaminated soil from off-site disposal.

- Produced materials to promote education and awareness among Combat Center personnel, tenants, and military families.

EA worked on developing multiple logos as part of MCAGCCs recycling outreach campaign to promote increase environmental awareness at the Combat

- Continued efforts to process wood and green waste onsite and beneficially reused throughout MCAGCC; current use includes alternative daily cover at the landfill and dust suppression on tank trails.

For FY 2020 the Hazardous Material Re-Utilization Program receipted for, catalogued, and issued approximately $900,000 in new and unused hazardous material to tenant and visiting commands aboard the installation. Through its hazardous waste reduction and P2 initiatives, approximately, 121 tons of Resource Conservation and Recovery Act (RCRA) and Non-RCRA hazardous waste was recycled and sorted or diverted, thereby eliminating these waste streams from off-site waste disposal, resulting in $174,000 in disposal cost avoidance fees. Approximately 2.1 million pounds of ordnance debris and range residue were receipted for, inspected, and demilitarized; 1.7 million pounds of industrial and non-industrial materials were collected and processed during the preceding fiscal year. These P2 initiatives resulted in a total of 1.6 million pounds of recyclable materials being sold in FY 2020, thereby generating approximately $869,000 in revenue.

The Eco Warrior concept was developed as part of MCAGCC's recycling outreach campaign to promote increased recycling at the Combat Center.

Orientation to Mission—Transferability

Education and Community Outreach

Personnel awareness and preparation is a crucial component to achieving environmental quality objectives. This initiative is accomplished by EA through a constructive proactive Comprehensive Environmental Education and Training Program (CETEP). The curriculum offers general environmental awareness and realistic training at the organizational level to ensure that all personnel aboard the Combat Center conduct their duties in a way that minimizes environmental impact. The core curriculum uses installation-specific Environmental Standard Operating Procedures (ESOP) developed and maintained by EA media managers, supported training in the classroom, such as Hazardous Waste Operations and Emergency Response, Introduction to Hazardous Waste Generation and Handling, Department of Transportation, and other onsite presentations. Awareness is reinforced and validated via unit level compliance inspections. The program is aimed at identifying and providing all explicit and implicit levels of training to ensure staff maintain the highest level of compliance.

The installation pursues various avenues for outreach and community awareness. For FY 2019 This includes EA's active participation in community clean-up projects, Earth Day festivities and CG's Welcome Aboard briefs. We expanded our Earth Day observance activities by attending local community Earth Day fairs; base-wide beautification that

During the MCAGCC's 2020 Earth Day festivities an on base photo competition was held. All photos were taken on the installation.

included hazardous material and e-waste collections; school poster and photo contests; a Earth Day high school essay competition; promoting outdoor activities in the form of mountain and road bike rides; a 55 mile bike ride through Joshua Tree National Park, which is a partnership between the national park, the city of Twentynine Palms, and the Marine Corps Air Ground Combat Center; a 3k fun run event; a golf tournament; a Petroglyph and Tortoise Research and Captive Rearing Site visit; and our Earth Day Extravaganza Community Fair in partnership with the installation's Public Private Venture, Lincoln Military Housing, which had over 30 vendors and over 2,000 participants for FY 2019. At the Extravaganza, there was information and technology booths and presenters promoting environmental topics and earth conscience behaviors. Our local theme was "Conserve Our Resources, Protect Our Future" to promote and highlight conservation and environmental quality goals with a focus on water conservation for the health and welfare of our Marines, families, and civilians.

Environmental Affairs partners with the City of 29 Palms and the Joshua Tree National Park Annually to host the Joshua Tree 55 cycling event.

IMPACT AND OUTCOMES

The program management, technical, mission orientation, and stakeholder engagement aspects of MCAGCC provide an easily transferrable framework that demonstrates resource conservation and mission readiness and resiliency are not mutually exclusive but highly intertwined. Well educated staff, robust systems, and technology applications are the cornerstone of the program and will allow for additional process improvements. Furthermore, funding remains in place to support leadership, ongoing initiatives, and new projects that allow for continued execution and enhancement of sustainability efforts at MCAGCC. Overall, MCAGCC has put the Combat Center in an excellent position to fully adhere to mandated sustainability metrics outlined in the current DoD SSPP. The most recent iteration of the ISAP demonstrates that MCAGCC is a leader in sustainability, which is a top priority at the installation. Innovative staff at EA, PWD, and other organizations across the installation will ensure that solutions are continuously developed to address the complex challenges associated with maintaining long-term sustainability, and therefore, mission readiness.

During the Earth Day Celebrations in 2019 the base held an Earth Day Extravaganza.