

2010

HAPUTO ECOLOGICAL RESERVE AREA GENERAL MANAGEMENT PLAN, NAVAL BASE GUAM



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ACRONYMS and KEY TERMS

| | |
|-----------------|--|
| AAFB | Andersen Air Force Base |
| ac | Acre |
| ACE | Army Corps of Engineers |
| BTS | Brown treesnake |
| CA | Cooperative Agreements |
| CNO | Chief of Naval Operations |
| CO | carbon monoxide |
| CO ₂ | carbon dioxide |
| COMNAVMAR | Commander, U.S. Naval Forces Marianas |
| CZMA | National Coastal Zone Management Act of 1972 (16 USC 1451 et seq.) |
| DLNR | Division of Land and Natural Resources |
| DoD | Department of Defense |
| ENSO | El Niño/Southern Oscillation |
| ERA | Ecological Reserve Area |
| ESA | Endangered Species Act of 1973, as amended, 16 USC 1531 et seq. |
| ft | feet |
| GCWCS | Guam Comprehensive Wildlife Conservation Strategy |
| GDAWR | Guam Division of Aquatic and Wildlife Resources |
| GHG | greenhouse gases |
| GHPO | Guam Historic Preservation Officer |
| GIS | Geographic Information System |
| GMP | General management plan |
| GNWR | Guam National Wildlife Refuge |
| GovGuam | Government of Guam |
| ha | hectare |
| HSC-25 | Helicopter Sea Combat Squadron Two Five |
| HERA | Haputo Ecological Reserve Area |
| in | inch |
| INRMP | Integrated Natural Resources Management Plan |
| IUCN | International Union for Conservation of Nature and Natural Resources |
| km | kilometer |
| km ² | square kilometer |
| kph | kilometer per hour |
| m | meter |
| m ² | square meters |
| Marianas | Mariana Islands |
| MBTA | Migratory Bird Treaty Act of 1918 [16 USC §§ 703-712] |
| MGD | Million gallons per day |
| mi | miles |
| mi ² | square miles |
| MLD | Million liters per day |
| MLLW | Mean lower low water (line) |
| MMPA | Marine Mammal Protection Act of 1972, as amended [16 USC 1361-1421] |
| MOU | Memorandum of Understanding |
| mph | Mile per hour |
| MSA | Munitions Storage Area |
| MSFCMA/SFA | Magnuson-Stevens Fishery Conservation and Management Act/Sustainable Fisheries Act |
| MSL | Mean Sea Level |
| MU | Marine Unit |
| NAVCAMS WESTPAC | Naval Communication Area Master Station, Western Pacific |
| NAVFACMAR | Naval Facilities Engineering Command Marianas |
| NBG | Naval Base Guam |
| NCTS | Naval Computer and Telecommunications Station |
| NEPA | National Environmental Policy Act |

| | |
|------------------|--|
| NGLA | Northern Guam Lens Aquifer |
| NMFS | National Oceanic and Atmospheric Administration, National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration Fisheries Service |
| OPERA | Orote Peninsula Ecological Reserve Area |
| OPNAVINST | Chief of Naval Operations Instruction |
| PACDIVNAVFACENGC | Pacific Division Naval Facilities Engineering Command |
| PTWC | Pacific Tsunami Warning Center |
| Pugua Patch Reef | Double Reef |
| SCUBA | Self-contained Underwater Breathing Apparatus |
| SDZ | Surface Danger Zone |
| Sikes Act | Sikes Act of 1960, 16 USC §670a et seq. (1996) |
| SUV | Sport Utility Vehicle |
| T/E | Threatened and Endangered |
| TU | Terrestrial unit |
| US | United States |
| USDA-WA | U.S. Department of Agriculture Wildlife Services |
| USFWS | U.S. Fish and Wildlife Service |
| WPWP | Western Pacific Warm Pool |
| WWII | World War II |

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1.0 EXECUTIVE SUMMARY

The Haputo Ecological Reserve Area (HERA) was established by the Chief of Naval Operations (CNO) on March 15, 1984 under authority of Chapter 15, OPNAVINST 5090.1; Chapter 17 of the NAVFAC P-73 Real Estate Manual; 36 CFR 251.23; 40 FR 38; and HR 5602, The National Heritage Policy Act of 1979. The HERA serves as one of several mitigation measures proposed by resource agencies of the Federal Government and Government of Guam (GovGuam) for the construction of Kilo Wharf at Adotgan Point in Outer Apra Harbor. The creation of the ERA is arguably a keystone mitigation that allowed for the construction at Kilo Wharf's location. The HERA (total acreage: 252 acres [102 ha]) was established to protect two biological units; (1) the 180 acre (73 ha) terrestrial unit encompassing a remnant native limestone forest that provides habitat for native forest species, and (2) the 72 ac (29 ha) marine unit, which includes Pugua Patch Reef (more commonly known as Double Reef), a valuable fringing reef, providing a nursery for marine species of commercial and recreational fishery value.

Since its establishment, numerous concerns over potentially conflicted uses have arisen within the HERA. These conflicts between recreational and visitor use, and habitat preservation are expected to become more acute in light of the increased military build-up scheduled to take place over the next five years (JGPO 2009). The pending relocation of 8,000 US Marines and their dependents to new facilities being planned for the Finegayan area starting in 2010 provides an impetus to revise the HERA management plan so that effective management guidance will be in place to protect the natural resources of the HERA and uphold the original intent of the ERA.

The Naval Facilities Engineering Command Marianas (NAVFACMAR) has an overall objective to ensure that the natural resources within the HERA is protected from physical, biological and human induced stressors that result in adverse changes to the ecological characteristics that made it eligible to be an ERA. Interest in the reserve's use for the protection of endangered species, mitigation requirements, urban encroachment and public recreation interests has increased in recent times. In response, NAVFACMAR EV has instigated the creation of a General Management Plan (GMP) for HERA. This GMP aims to:

1. provide a document that can be modified and updated regularly based on adaptive management outcomes;
2. provide direction for the preservation and management of the ERAs and their natural resources;
3. provide guidance to prioritize and seek opportunities for preservation and management;
4. identify stakeholders and public users;

5. describe potential threats or destructive activities; and
6. list activities and/or projects for the protection and maintenance of healthy ecological systems that integrate typical native flora and fauna over geologic, pedological and/or marine aquatic features and/or processes.

This GMP should help in complying with the terms of the Army Corps of Engineers (ACE) permit for allowing Kilo Wharf.

The HERA contains a wealth of natural and cultural resources including federally listed and locally protected sea turtles, birds, reptiles, invertebrates, plants, and unique marine and terrestrial environments. These resources require carefully planned management to ensure they persist. The following management objectives are recommended to assist in achieving the goals of the HERA GMP. These recommended management objectives apply to both the terrestrial and marine units of the HERA and were developed given the physical and land use settings of the reserve, as well as the known condition of the HERA.

Objective 1: Control and Eradicate Invasive Species

- Control and eradicate feral ungulates such as Philippine deer and wild pig
- Control feral cats and dogs
- Control and eradicate invasive flora and invertebrates
- Implement brown treesnake control
- Adopt adaptive management strategy for the control of crown of thorns starfish, and other harmful marine species
- Develop an early detection and rapid response plan
- Establish protocols for monitors and researchers

Objective 2: Prevent Harvest of Coconut Crabs

Objective 3: Maintain and Restore Valuable Habitat

- Prohibit all forms of fishing
- Implement ecological restoration
- Maintenance of habitat without restoration

Objective 4: Support Monitoring Surveys and Research

- Implement systematic baseline and regularly scheduled flora and fauna assessments and monitoring
- Monitor impacts of outdoor recreation and visitor use
- Execute long-term monitoring of Threatened or Endangered species

Objective 5: Fence the Reserve Boundaries

- Prevent entry of unauthorized individuals
- Prevent damage by ungulates
- Promote public safety

Objective 6: Develop an Outdoor Recreation and Use Plan

- Develop a visitor access policy for periods of range closure
- Access maintenance plan
- Signs for terrestrial and marine boundaries
- Develop natural resources educational programs
- Establish a boat permit program
- Establish a No-Drop-Anchor Policy Requiring Use of Mooring Buoys
- Develop a scuba dive permitting/reservation system
- Develop a tsunami warning and evacuation plan

Objective 7: Minimize Risks from Oil Spills and Hazardous Waste

Objective 8: Incorporate Adaptive Management Practices

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2.0 INTRODUCTION

The Navy has jurisdiction over approximately 18,000 ac (7,300 ha) of land on Guam in addition to 36,000 ac (14,600 ha) of submerged lands (JGPO 2009). It is the policy of the Navy that the Natural Resources under its jurisdiction be managed to support and be consistent with the military mission, while protecting and enhancing resources for biological integrity, sustainable yield and multiple use (OPINVINST 5090.1C). This is achieved by incorporating ecosystem management as the basis for planning and management of Navy installations. Furthermore, the Navy is responsible for complying with Federal environmental and natural resources laws and regulations that apply to the marine environment. This includes (but is not limited to) the National Environmental Policy Act (NEPA), the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Magnuson-Stevens Fishery Conservation and Management Act/Sustainable Fisheries Act (MSFCMA/SFA), the Sikes Act (10 U.S.C. 670), and Executive Order 13089 on Coral Reef Protection (Appendix 1).

Incorporated within Navy lands on Guam are Ecological Reserve Areas (ERA). An ERA is defined as an area dedicated primarily or exclusively to preserving examples of ecosystems and genetic diversity while providing opportunities for scientific research and education (OPINVINST 5090.1C; 24-5 § k (5)). Recognizing the national and international need to maintain areas in natural and near-natural conditions, and to have available such areas for baseline research and scientific manipulation, natural areas on Navy lands that warrant special conservation efforts may be identified as ERAs. These special natural areas should include characteristic or outstanding botanical, ecological, geological, and scenic features or processes.

There are currently two ERAs situated on Naval Base Guam (NBG) property; Haputo ERA (HERA) and Orote Peninsula ERA (OPERA). This document focuses on the HERA (see Appendix 2 for a legal description of HERA).

The HERA is located on the northwest coast of Guam in the Finegayan area of Dededo municipality about 2.5 mi (4.0 km) north of the village of Dededo and within the boundaries of the Naval Computer and Telecommunications Station (NCTS) (Figure 1). The HERA extends from Haputo Beach to just north of Pugua Patch Reef (more commonly known as Double Reef) offshore of the Naval Reserve. The 252 ac (102 ha) HERA consists of a Terrestrial Unit (TU) area of 180 ac (73 ha) from the cliff boundary line to the mean lower low water (MLLW) line and the remaining 72 ac (29 ha) are the submerged Marine Unit (MU) from the MLLW seaward including the Double Reef area (Figure 2). The MU of the ERA is listed as being part of the "U.S. Marine Managed Area". Although managed by the U.S. Navy, the entire TU lies within the Guam National Wildlife Refuge (GNWR) Overlay.

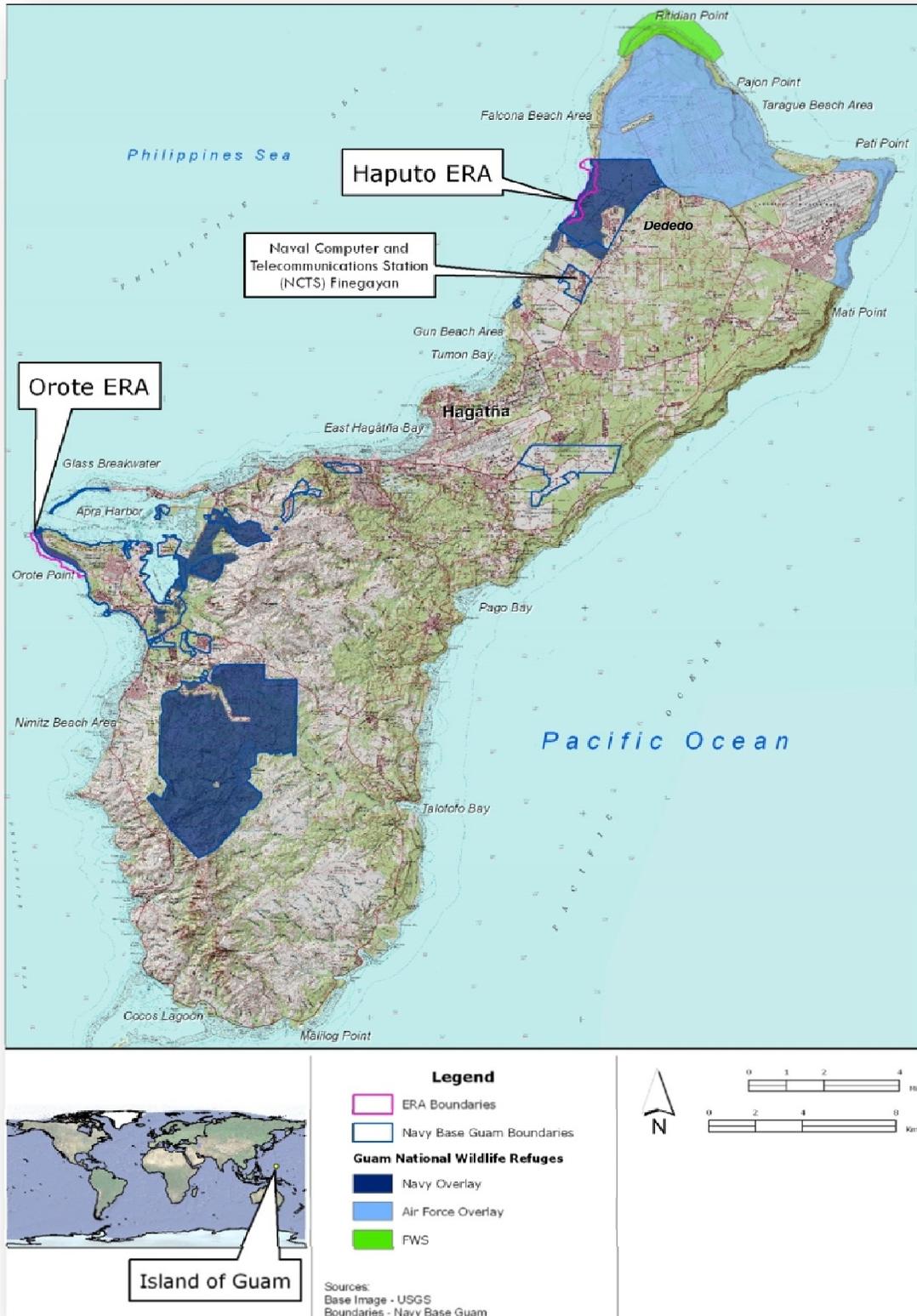


Figure 1. The island of Guam showing location of Haputo and Orote Peninsula Ecological Reserve Areas.

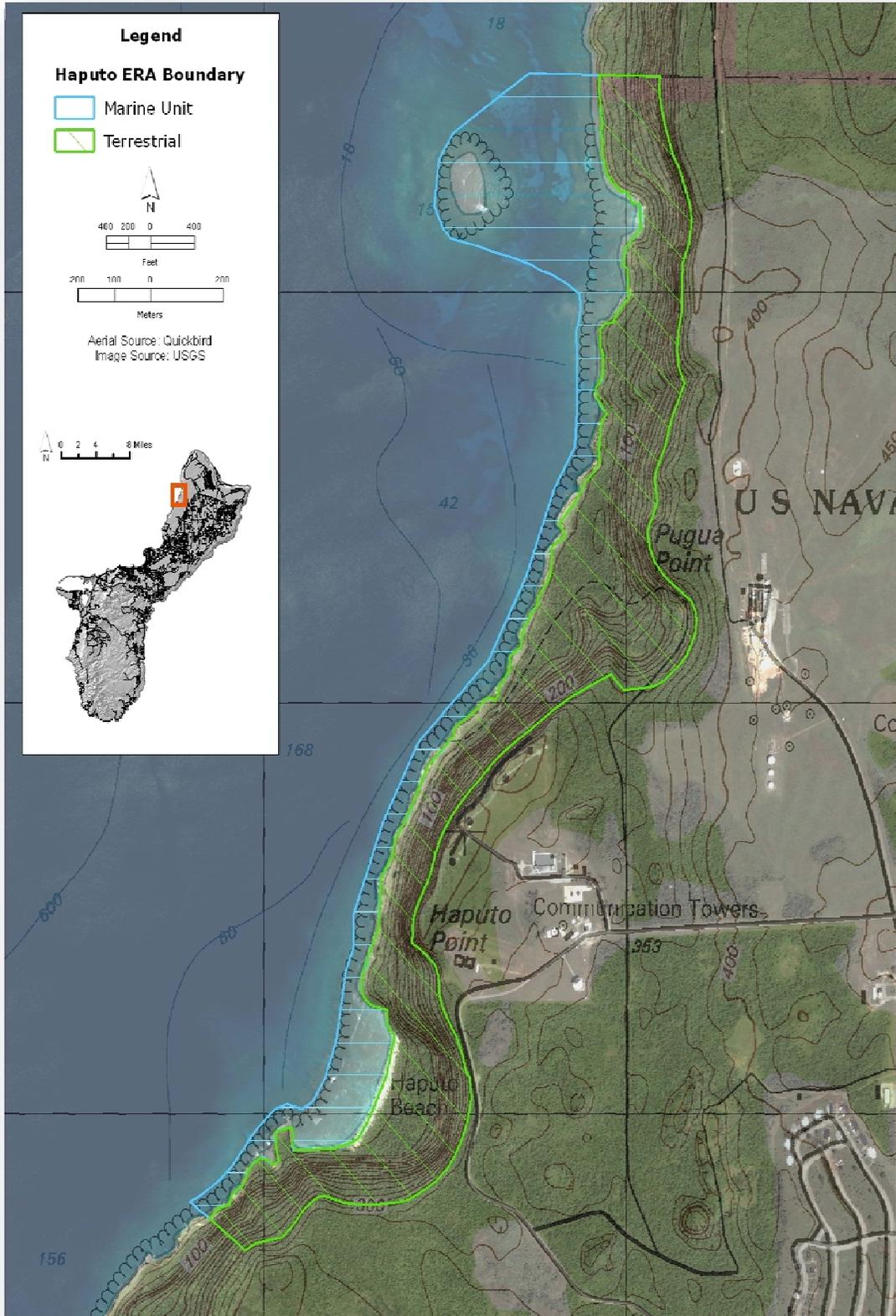


Figure 2. Marine and terrestrial boundaries of the Haputo Ecological Reserve Area, Guam.

The HERA was established by the Chief of Naval Operations (CNO) on March 15, 1984 under authority of Chapter 15, OPNAVINST 5090.1; Chapter 17 of the NAVFAC P-73 Real Estate Manual; 36 CFR 251.23; 40 FR 38; and HR 5602, The National Heritage Policy Act of 1979. The reserve was initially created as compensation mitigation for construction of an ammunition wharf (Kilo Wharf) at Adotgan Point in Outer Apra Harbor (GDAWR 2006). Creation of the HERA was key to gaining approval from various Federal and Government of Guam (GovGuam) entities for the wharf's construction (U.S. Navy 1986). Kilo Wharf would not exist without the creation and ongoing management of OPERA. The ERA is on the U.S. Marine Managed Area Inventory and has the potential to be designated as a Marine Protected Area under Executive Order 13158 in the future. Since its establishment, the HERA has remained essentially unmodified.

The HERA encompasses a variety of terrestrial and marine habitats and is intended for limited research, education, and recreational purposes. The first management plan for HERA, prepared by the Pacific Division, Naval Facilities Engineering Command in January 1986 (U.S. Navy 1986), allocated management responsibilities among the Commanding Officer NAVCAMS WESTPAC, PACDIVNAVFACENGCOM, the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and GovGuam. It provided for natural resource surveys, boundary identification, control measures, habitat protection and improvement, and maintenance of HERA. The management plan also identified access procedures for permitted activities. Marine resource investigations funded by the Navy were conducted by the USFWS and NMFS in 1986 and 1988, Amesbury et al. (2001), and SWCA (2009) to establish baseline conditions and monitor populations of fishes, corals, and macroinvertebrates within HERA. A terrestrial vegetation survey and an archeological inventory of the Haputo Village are currently being conducted within HERA by SWCA and University of Guam respectively. Both surveys are approximately 12 months duration and are due for completion in 2010.

2.1 Purpose and Objectives

The overall management objectives of NBG are to ensure that the natural resources within each ERA are protected from physical, biological and human induced stressors that result in adverse changes to the ecological characteristics that made them eligible to be an ERA. After 24 years, the 1986 Management Plan is in need of an update to reaffirm original management objectives while addressing current management needs in terms of the evaluation of impacts to the HERA and the application of modern techniques. The HERA continues to be of interest for the protection of endangered species, mitigation requirements, urban encroachment and public recreation.

In response, NAVFACMAR EV has instigated the creation of a General Management Plan (GMP) for HERA. This GMP is designed to:

1. provide a document that can be modified and updated regularly based on adaptive management outcomes;
2. provide direction for the preservation and management of the ERAs and their natural resources;
3. provide guidance to prioritize and seek opportunities for preservation and management;
4. identify stakeholders and public users;
5. describe potential threats or destructive activities; and
6. list activities and/or projects for the protection and maintenance of healthy ecological systems that integrate typical native flora and fauna over geologic, pedological and/or marine aquatic features and/or processes.

This GMP will provide the tools for long-term compliance assurance with the ACE permit for the construction of Kilo Wharf at Adotgan Point in Apra Harbor by providing lasting management strategy options designed to allow opportunities for updating as management projects are completed or in need of reevaluation. Under adaptive management strategies, the GMP will provide a document that can be modified and updated as the need arises.

2.2 Management Responsibilities

Management of the HERA calls for protection against activities that directly and/or indirectly impact normal ecological processes. Joint Region Marianas (JRM) has ultimate management jurisdiction for the ERA, with regulatory and/or programmatic authority or input from Naval Facilities Engineering Command Marianas (NAVFACMAR) including NAVFACMAR Environmental Business Line (EV). Input can also be sought from:

1. U.S. Fish and Wildlife Service (USFWS)
2. National Oceanic and Atmospheric Administration Fisheries (NOAA)

Final approval for all actions within the ERA, including access, is determined at the discretion and guidance of JRM.

NAVFACMAR provides technical expertise to JRM on various management aspects of the ERA including resource management (cultural and natural) and development of maintenance, security and visitor use plans. Additional responsibilities of NAVFACMAR include future planning, advising, approving and/or monitoring research projects and serving as the point of contact for other Federal, Territorial, and private natural resource agencies desiring use of the

HERA. Within the HERA, NAVFACMAR also provides technical assistance to JRM on all aspects of archaeological and historic site resource management.

The terrestrial unit of the HERA is part of the Navy Overlay Unit (total area 4,855 ha; 12,000 ac). The overlay unit is managed in cooperation with the USFWS to protect federally threatened and endangered species and their habitat (USFWS memo dated March 25, 1994). The following purposes for the Overlay Units are specified in Cooperative Agreements (CA) with the U.S. Navy and U.S. Air Force, dated March 4, 1994, and March 10, 1994, respectively (see Appendix 3 for March 10, 1994 CA).

- a. "...to conserve (A) fish or wildlife which are listed as endangered species or threatened species...or (B) plants...(C) the ecosystems upon which endangered species and threatened species depend..." (Endangered Species Act of 1973, 16 U.S.C. 1534);
- b. "...shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements...and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon..." (Fish and Wildlife Coordination Act, 16 U.S.C. 664);
- c. "...for the development, advancement, management, conservation, and protection of fish and wildlife resources" (Fish and Wildlife Act of 1956, 16 U.S.C. 742f(a)(4));
- d. "...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude, if such terms are deemed by the Secretary to be in accordance with law and compatible with the purposes for which acceptance is sought."
- e. (Fish and Wildlife Act of 1956, 16 U.S.C. 742f(b)(1));
- f. "...(1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species and threatened species" (Refuge Recreation Act, 16 U.S.C. 460k-1);
- g. "...the Secretary...may accept and use...donations of...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by the donors..." (Refuge Recreation Act, 16 U.S.C. 460k-2); and
- h. "To ensure that [Air Force and Navy] lands within the Guam National Wildlife Refuge remain available for the use of the [Air Force and Navy] to carry out its responsibilities

to organize, supply, equip, train, service, mobilize, demobilize, administer, and maintain forces" (10 U.S.C. 8013).

The USFWS is responsible for implementing and enforcing some of our Nation's most important environmental laws, such as the Endangered Species Act, Migratory Bird Treaty Act, Marine Mammal Protection Act, North American Wetlands Conservation Act, and Lacey Act. The Service fulfills these and other statutory responsibilities through a diverse array of programs, activities, and offices that function to protect and recover threatened and endangered species, monitor and manage migratory birds, and restore nationally significant fisheries. The USFWS is responsible for conservation and management programs for primarily terrestrial and freshwater threatened, endangered, or otherwise protected species. They ensure actions conducted on federal lands or waters do not jeopardize the continued existence of and listed species. Implementation measures include issuing appropriate research permits, managing species, and providing technical review of projects potentially impacting protected wildlife. The USFWS may conduct flora and fauna surveys on a reimbursable basis. Although the principal area of responsibility for the USFWS is the TU, assistance in MU management may also be provided.

NOAA is dedicated to protecting and preserving the nation's living marine resources through scientific research, fisheries management, enforcement and habitat conservation. The organization works within the Magnuson-Stevens Act, the Marine Mammal Protection Act and the Endangered Species Act to fulfill its mission of promoting healthy ecosystems. NOAA is the lead federal agency responsible for the stewardship of the nation's offshore living marine resources and their habitat. They are specifically responsible for the stewardship of living marine resources within the United States' Exclusive Economic Zone (three to 200 miles offshore), including implementation and management of Marine Mammal Protection Act programs. NOAA works closely with other NOAA offices to protect and conserve marine resources. Specifically, NOAA's Office of Oceanic and Atmospheric Research explores and investigates ocean habitats and resources. NOAA's National Ocean Service provides maps and other data to help fishers and managers and also maintains a network of Marine Sanctuaries and Estuarine Research Reserves to help protect important resources. NOAA's Office of Marine and Aviation Operations provide a fleet of ships and boats to support the agency's marine operations. The primary area of responsibility for NOAA in the ERA is the MU.

The Guam Department of Agriculture's Division of Aquatic and Wildlife Resources (GDAWR) is the lead agency in the management of Guam's natural resources. They are involved in management activities associated with aquatic and terrestrial species, hunting and fishing programs, monitoring and assessment, and captive rearing and propagation programs for the recovery of endangered species. GDAWR is the primary Government of Guam agency

responsible for local consultation in relation to the HERA. This agency may provide fish and wildlife management recommendations or conduct monitoring surveys of the areas as funds permit. In 2006, GDAWR developed the Guam Comprehensive Wildlife Conservation Strategy (GCWCS), the primary goal of which was to provide information for the effective management, preservation, protection, and restoration of the island's natural resources, especially those considered of greatest conservation need.

Although JRM employs a cultural resource specialist, the Guam Historic Preservation Officer (GHPO) can serve as the liaison for historic preservation matters. The GHPO has been consulted for proper management actions of known historic and pre-historic sites at the HERA in the past and will be called upon where appropriate for any subsequent site discoveries during future archaeological work at HERA.

2.3 ERA Access

Access to the HERA is at the discretion and guidance of the Commanding Officer of NBG. Terrestrial entrance to the HERA is controlled at NCTS. All visitors to the TU are required to log in at the security office prior to entering and upon exiting the reserve. Access is for day use only (except cases of emergency or when approval is granted) and generally restricted to military personnel (active duty and retirees), their family members, sponsored guests and actively employed Department of Defense (DoD) civilian employees, and to other federal and territorial agency staff and their contractors having legitimate research or related business.

Visitors can enter the HERA by foot or boat only. No motorized vehicles are allowed for terrestrial access, except in the case of emergency, maintenance, or when otherwise approved. Access is unregulated with the exception of periodic closures when the Haputo small arms range is open and special training events occur. As a result of unregulated access, commercial tour diving and fishing companies have almost complete and unfettered access to the HERA MU. Navy management of HERA has generally been passive and largely focused on protecting the ERA from encroachment and overuse. However, DoD has used Government of Guam's fishing regulations and enforcement. Since its establishment in 1984, the Navy has permitted a wide range of scientific investigations.