

# Natural Resources Strategy 2012

## *Guam Buildup*

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**Prepared for:**

**Bureau of Statistics and Plans  
Guam Coast Management Program**

**and**

**Natural Resources Subcommittee  
Civilian Military Task Force**



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## LIST OF ACRONYMS

### Acronym or Abbreviation

### Full Phrase

|                    |                                                                        |
|--------------------|------------------------------------------------------------------------|
| AAFB               | Andersen Air Force Base                                                |
| AFB                | Air Force Base                                                         |
| AG                 | Attorney General                                                       |
| BMPs               | best management practices                                              |
| BRAC               | Base Realignment and Closure                                           |
| BSP                | Bureau of Statistics and Plans                                         |
| BTS                | brown tree snake                                                       |
| CCP                | Comprehensive Conservation Plan                                        |
| CMTF               | Civilian Military Task Force                                           |
| CNMI               | Commonwealth of the Northern Mariana Islands                           |
| COMNAVREG Marianas | Commander Naval Forces Region Marianas                                 |
| Corps              | US Army Corps of Engineers                                             |
| GDAWR              | Guam Division of Aquatic and Wildlife Resources                        |
| DoD                | Department of Defense                                                  |
| EA                 | Environmental Assessment                                               |
| EIS                | Environmental Impact Statement                                         |
| EIS/OEIS           | Environmental Impact Statement/Overseas Environmental Impact Statement |
| ERA                | Ecological Reserve Areas                                               |
| GCMP               | Guam Coastal Management Program                                        |
| GCQA               | Guam Customs and Quarantine Agency                                     |
| GCRICC             | Guam Coral Reef Initiative Coordinating Committee                      |
| GCWCS              | Guam Comprehensive Wildlife Conservation Strategy                      |
| GIS                | Geographic Information System                                          |
| GNWR               | Guam National Wildlife Refuge                                          |
| GNWRO              | Guam National Wildlife Refuge Overlay                                  |
| GRHP               | Guam Register of Historic Places                                       |
| Guam EPA           | Guam Environmental Protection Agency                                   |
| GVB                | Guam Visitors Bureau                                                   |
| GWA                | Guam Waterworks Authority                                              |
| HPO                | Historic Preservation Office                                           |
| ICRMP              | Integrated Cultural Resources Management Plan                          |
| IDIQ               | Indefinite Delivery, Indefinite Quantity                               |
| IGIA               | Interagency Group on Insular Affairs                                   |
| INRMP              | Integrated Natural Resource Management Plan                            |
| JGPO               | Joint Guam Program Office                                              |
| LAS                | Local action strategies                                                |
| MOU                | Memorandum of Understanding                                            |
| NAVFACMAR          | Naval Facilities Marianas                                              |
| NEPA               | National Environmental Policy Act                                      |
| NGO                | nongovernmental organizations                                          |
| NISC               | National Invasive Species Council                                      |
| NMFS               | National Marine Fisheries Service Habitat Protection Policy            |
| NRS                | Natural Resources Subcommittee                                         |
| PILN               | Pacific Invasives Learning Network                                     |

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**LIST OF ACRONYMS**

| Acronym or Abbreviation | Full Phrase                                           |
|-------------------------|-------------------------------------------------------|
| RICRMP                  | Regional Integrated Cultural Resource Management Plan |
| SAMP                    | Special Area Management Plan                          |
| SGCN                    | Species of Greatest Conservation Need                 |
| SHPO                    | State Historic Preservation Office                    |
| USACE                   | US Army Corps of Engineers                            |
| USAF                    | US Air Force                                          |
| USDA                    | US Department of Agriculture                          |
| USDA WS                 | US Department of Agriculture Wildlife Services        |
| USEPA                   | US Environmental Protection Agency                    |
| USFWS                   | US Fish and Wildlife Service                          |
| USGS BRD                | US Geological Survey, Biological Research Division    |

## OVERVIEW

The Guam Natural Resources Strategy outlines priority natural resource management goals and planning information that will be used by Guam natural resource agencies and community partners to guide development leading up to and through the critical first half of the Guam Buildup. "Guam Buildup" refers to the cumulative physical, social and economic development that is expected to occur across all community sectors, including military, commercial, federal and local government and private sectors over seven years to 2014. The military component of the buildup is by far the largest driver of growth. The strategy recognizes that the Guam Buildup will involve natural resource impacts during the construction of new military bases, training areas, industrial, commercial, transportation, and residential facilities, and supporting infrastructure. Impact avoidance is the preferred strategic approach to achieving long-term sustainability. When avoidance is not possible, development activities should be guided and designed to minimize resource degradation relying on the best available information to make decisions.

The Natural Resources Subcommittee of the Civilian Military Task Force has oversight responsibility for developing effective management guidance that addresses coral reef ecosystems and associated biological communities, terrestrial ecosystems, cultural and archaeological resources, invasive species, watershed ecosystems, birds, wildlife, endangered species and their habitats, protected species, and marine life, among others. Members of the Natural Resources Subcommittee represent a broad cross section of local and federal resource agencies. The natural resource management community on Guam is a small and well-networked group of professionals. Most of the members serve concurrently on several working groups, committees, and other partnering efforts. Their input and guidance is crucial to the success of this strategy as well as ongoing work to assess and mitigate impacts under requirements of the National Environmental Policy Act of 1969.

This strategy was developed in large measure from existing planning documents such as the Guam Comprehensive Wildlife Conservation Strategy, the Comprehensive Historic Preservation Plan for Guam, as well as interviews and Subcommittee discussion on priority management concerns related to the Guam Buildup. The goals and activities from both the US Navy's and US Air Force integrated cultural and natural resource management plans and the timely development of the Guam National Wildlife Refuge Comprehensive Conservation Plan are summarized. Three of the four existing DoD resource management plans are being updated at this time.

The strategy addresses issues associated with biodiversity, legal frameworks, financing, resource agency capacity, and cultural and historic resources. The key issues identified in the strategy were taken from documents developed by resource agencies, including community input and leadership perspectives regarding the broader buildup context.

Key goals include maintaining a strong posture and focus on the National Environmental Policy Act development and review work, ensuring that Guam develops a comprehensive mitigation policy with monitoring protocols to ensure accurate resource assessments, and developing mitigation plans and implementing mitigation projects. The strategy also outlines ways that new funds can be obtained or existing funding sources expanded to help pay for management and expand agency capacity to carry out work through 2014. The strategy also outlines ways that legal and regulatory mechanisms should be improved, such as implementing the Guam Seashore Reserve Plan, updating the zoning requirements

and procedures, developing a northern Guam master plan and several priority watershed management plans for southern Guam. A summary of the thirty-eight strategy goals is found in Appendix 1.

The strategy is intended to serve as a guide to prepare Guam for development. The priorities presented herein should be continuously evaluated and refined based on new and evolving plans from the military, private investors, and government plans and operations. Appropriately, the strategy does not address management needs beyond 2012 because the immediate and critical challenges of planning for and overseeing the initial phases of the Buildup are fully within the acceptable five-year planning horizon. A focus on planning will serve all stakeholders well when the intensity of development is in full effect and the demand for all resources—natural, human and financial—is pressed upon the community. Additionally, many of the details of the buildup are still being formulated. This strategy should be updated as often as is deemed appropriate over the next five years. At a minimum, the strategy should be reviewed annually preceding both federal and local government budget calls to formulate and specify projects and secure funding.



## 1. INTRODUCTION

The Civilian Military Task Force (CMTF) is responsible for planning and guiding the development of Guam through a period of extraordinary economic growth driven by a number of United States (US) military expansion activities through 2014. This growth will also have a strong private-sector investment component, including expanding the island's tourism industry. Guam will accommodate an increase in military personnel from present levels of approximately 14,100 active duty personnel and dependents to an estimated 38,160, with the addition of 17,000 active duty and dependents from US Marine units in Okinawa, Japan, 1,580 for a US Army Ballistic Missile Defense task force, 8,380 US Air Force, 10,880 for US Navy expansion plans, and 320 for US Coast Guard. The increase in population, including estimated civilian population growth of 20,000, of 58,070 represents a 28 percent growth rate over seven years (USPAC 2006 and CMTF 2008).

The Natural Resources Subcommittee (NRS) of the CMTF is tasked with formulating a strategy to manage natural resources for sustainability through this period of growth, thereby ensuring the viability of natural resources for future generations. The NRS has oversight responsibility for coral reef ecosystems and associated biological communities, terrestrial ecosystems, cultural and archaeological resources, invasive species, watershed ecosystems, migratory birds, wildlife, endangered species and their habitats, protected species, marine mammals, direct, cumulative, and secondary impacts to the natural environment, oversight and participation in the Department of Defense (DoD) Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS, hereinafter EIS) process, and required mitigation plans for the loss of natural resources resulting from construction associated with all development.

The subcommittee will also be responsible for developing monitoring protocols to ensure that mitigation projects meet stated objectives and that construction projects do not unnecessarily impact protected resources. The NRS is guided by the following vision statement:

*Guam natural resource agencies are dedicated to strengthening and developing key policies, legal frameworks, and essential programs that guarantee the sustainability of Guam's fragile and limited natural and cultural resources now, during the Guam Buildup to [2012], and beyond by setting the groundwork for future strategies needed to effectively confront emerging conservation challenges.*

The following four local agencies have primary management oversight responsibilities for land, water, wildlife (marine and terrestrial), and cultural and historic resources:

- Bureau of Statistics and Plans, Guam Coastal Management Program (GCMP)
- Guam Department of Agriculture, Division of Aquatic and Wildlife Resources (GDAWR)
- Guam Department of Parks and Recreation, Historic Preservation Office
- Guam Environmental Protection Agency

The NRS is closely supported by a number of federal agency counterparts that provide collaborative professional, programmatic and financial assistance to local agencies. The input and contribution of these agencies is critical to successful planning, coordination, and eventual implementation of strategic natural resource management initiatives. In many cases, the



strategic initiatives identified in this document are an extension and continuation of important long-term working relationships between federal agencies, including the environmental, natural resource and cultural resource management units of DoD services and local natural resource agencies. Discussions and planning for the Guam Buildup have resulted in a sense of heightened concern and urgency. Networked agencies have begun to strengthen ties and have been facilitated by the US Navy through Environmental Partnering meetings and cooperating agency status under the National Environmental Policy Act (NEPA) process. Federal and local partners are reprioritizing near-term management efforts to address the potential impacts of the rapid and extensive physical development of Guam.

The Strategy is also supported by members representing academia, the 29<sup>th</sup> Guam Legislature, community and non-government organizations (NGOs). These partners are critical to fostering and maintaining community stakeholder input and support in the shaping of natural resource management efforts.

## 2. GUAM'S NATURAL RESOURCE MANAGEMENT CONTEXT

### 2.1 POST-WWII TO PRESENT

Over the past 65 years Guam has grown steadily, primarily through post-war military development and tourism-driven investment. Principal among the factors that make both types of development possible are the island's location in the Western Pacific and a tropical climate within convenient travel distances from large Asian population centers and markets. Other factors less cited, yet critical to sustaining a significant level of development are the island's deepwater port and a major freshwater aquifer lens system. The people of Guam have always been gracious hosts and in the path of rapid change have found ways to adapt and prosper. In recent years, Chamorros have rekindled a deep sense of cultural identity with strong ties to marine and coastal resources, forests, streams, rivers, and the wildlife with which they share these resources.

Guam is poised to surge ahead again with an economic boom driven by US defense spending on new military bases and relocation of more than 38,160 active duty, dependents, and civilian workers. Another 20,000 people may move to Guam to take advantage of new and expanded job markets in government, visitor industry, and military sectors. This population growth and physical development will draw heavily on existing infrastructure, housing, and the full range of public services. As occurred in the late 1980s and early 1990s, much of the growth will take place in undeveloped or low-density/rural areas, with their lower costs of land acquisition, and on available coastal properties, with their prime locations. This may happen even if the costs associated with extending infrastructure and services are relatively high or if connecting to marginally adequate infrastructure can be negotiated. These newly developed areas will be cleared of forest cover, wetlands will be modified and flood-prone areas developed, and without proper nonpoint pollution control, will result in increase land-based pollution to marine ecosystems.

*The central purpose of this strategy is to help mitigate the extreme pressures of rapid development by providing a framework to manage resources based on their vulnerability to development impacts and a host of related sustainability considerations.* Guam actually has a number of diverse laws aimed at conservation and environmental protection, but they have not been fully implemented or utilized. The island's historical lack of success in resource management stems from two primary deficiencies: 1) a lack of social and political will and financial support; and 2) a lack of any substantive and enforceable growth management policy.

### 2.2 TERRESTRIAL CONSERVATION AREAS

Approximately 22 percent of Guam has been designated as local or federal conservation lands. Notwithstanding earlier natural resource mandates to protect and preserve Guam's natural resources, the Department of Agriculture's mission to oversee Conservation Reserves, in cooperation with the Department of Parks and Recreation, was granted in 1982 under Article 4 of Public Law (PL) 16-62. The two agencies developed a draft Master Plan for Park and Conservation Lands in 1999, but the plan was never adopted. Presently, three areas are identified as conservation areas—Anao, Bolanos, and Cotal—under Department of Agriculture administrative jurisdiction. These areas contain habitats that are critical to native species

restoration efforts identified by the Guam Comprehensive Wildlife Conservation Strategy (GCWCS). Appendix 2 contains general conservation area figures.

The federal government has also identified and established conservation areas on lands it governs in Guam. In 1993, the 24,000-acre Guam National Wildlife Refuge (GNWR) was established. Most of the refuge is an overlay refuge on lands administered by the US Air Force and US Navy. Although the military mission comes first on these lands, the US Fish and Wildlife Service assists in protecting native species and habitats through a Memorandum of Understanding (MOU) established between the three agencies. The MOU established a number of long-term management objectives for overlay units. These federal agencies, the MOU, and valuable ongoing management and interest in natural resource management constitute a major component of Guam's natural resource management context (GDoA 2005).

### **2.3 DEPARTMENT OF DEFENSE RETURNED LANDS**

From the late 1970s through the early 1990s, DoD underwent an extensive process of identifying and disposing of defense properties through various Base Realignment and Closure (BRAC) actions across the world. The DoD presence in Guam decreased when BRAC 93 and 95 actions resulted in the closure of Naval Air Station Agana and the Navy Ship Repair Facility. Under these BRAC actions, approximately 6,600 acres of land were returned to the government of Guam and original land owners, 4,000 acres of which included forest and wetland areas of potentially significant conservation value and habitat function (GEPA 1999). Significant areas were returned to the government of Guam in Finegayan, Barrigada, Nimitz Hill, and Sasa Valley/Tenjo Vista (USPAC 2006). Although much of the BRAC process involved identifying appropriate reuses of the land, the actual reuse implementation has deviated from those plans under pressure to maximize economic benefits after the lands were transferred from the government of Guam to the original landowners.

One example of unacceptable impacts stemming from the BRAC transfer process involved the presence of squatters and semi-permanent habitation of the remote Lost Pond and Sharks Hole area along the coast northeast of the former Naval Computer and Telecommunications Station (NCTS) beach and Tanguisson Power Plant in Dededo. Vehicles were driven on the inner-reef flats and some were later abandoned in the area, illegal dumping was the norm, historic artifacts were taken, and unauthorized land clearing resulted in resource degradation at this sensitive resource area. At the time, the US Navy and the government of Guam chose not to intervene. The unofficial reason given for this hands-off stance was heightened sensitivities to Chamorro activism, which made enforcement politically unacceptable.

Generally, Guam's zoning and other land management laws are firmly established and would be effective with proper monitoring and enforcement. However, Guam has not completed a comprehensive land use master planning effort in over 40 years. Attempts have been made to plan for conservation in the context of master planning but unfortunately, these attempts have failed.



## 2.4 MARINE CONSERVATION AREAS

The establishment of marine preserves (MP) signaled a significant natural resource policy shift from largely unregulated taking to managing fisheries for sustainability. Under local law, over 10 percent of Guam's coastline has been set aside in five MP—Tumon Bay, Piti Bomb Holes, Sasa Bay, Achang Reef Flat, and Pati Point. According to the Division of Aquatic and Wildlife Resources, a decrease in reef fish stocks was the primary reason for establishing the preserves in 1997. Full enforcement did not begin until 2001.

MP are managed for limited fishing activities, mainly for cultural take in three of the preserves. The Pati Point MP is the largest of the five preserves, with approximately 4,900 acres of reef environment. The preserve was set up by the US Air Force in 1973 as a federal conservation area, and the government of Guam recognized the area as a MP in 1997. The preserve is characterized by narrow reef flats with steep fore reef slopes and a fairly extensive variety of coral species. Access to the Pati Point MP is limited, as it is located entirely on Andersen Air Force Base. By sea there are no boat landings or harbor facilities, and windward sea conditions limit intensive year-round off-shore fishing to approximately four months. The sand beaches, which stretch from west of Pati Point to Tarague Beach, are important green sea turtle (haggan, *Chelonia mydas*) nesting areas (GDoA 2005). The Sasa Bay MP includes valuable mangrove resources, the Tumon Bay MP are important recreational and tourist areas in addition to having rich coral reef resources and seasonal permits allow the community of Merizo to fish important cultural species in Achang MP.

The submerged lands of the War in the Pacific National Historic Park and marine component of the Guam National Wildlife Refuge at Ritidian are also important marine conservation areas. Appendix 2 contains a figure identifying the location of marine conservation areas.

## 2.5 FRESHWATER CONSERVATION AREAS

Fena Reservoir and its watershed represent extensive river, wetland, and surface water habitat in Guam. The Fena Watershed is largely inaccessible given its location within the Naval Ordnance Area, which contributes to the quality of resources, including nesting areas for the endangered Mariana common moorhen, Island swiftlet, and likely a number of goby, eel, and freshwater crustacean species of greatest conservation need (SGNC). The Sasa Bay Marine Preserve's freshwater wetland complex is another important designated conservation area that supports moorhen nesting (GDoA 2005).

## 2.6 MICRONESIA CHALLENGE

In early 2006, the Chief Executives of the Commonwealth of the Northern Mariana Islands, the Republic of Palau, and the Territory of Guam signed the Micronesia Challenge (MC), a shared commitment to effectively conserve at least 30 percent of the near-shore marine resources and 20 percent of the terrestrial resources across Micronesia by 2020. The MC was conceived as a result of the deep commitment of these five leaders to ensure a healthy future for their people, protect their island cultures, and sustain the livelihoods of their island communities, by sustaining the island biodiversity of Micronesia.

Each of the jurisdictions is designing their own strategies to implement the MC involving partnerships between Government agencies, NGOs and local communities, Guam is currently



exploring a variety of strategies, including strengthening the effectiveness of current marine conservation areas and implementing infrastructure improvements to reach the goal of 30 percent of nearshore marine resources under effective conservation. At the present time Guam has over 22 percent of its terrestrial resources under various forms of conservation management; however this condition may change significantly as a direct result of current and planned military development within the Guam National Wildlife Refuge (GNWR) Overlay on military lands. Both local and military conservation lands and near shore marine conservation areas make up the Guam conservation inventory for meeting the MC according to the MC Action Plan of 2006.

## **2.7 OTHER CONSERVATION AREAS**

The Guam Territorial Seashore Reserve Park was established by Governor Ricardo J. Bordallo in the 1970s under executive order and includes over 8,885 acres of land and 6,276 acres of water encompassing southern mountains and bays (GVB 2008). The government of Guam has not actively managed this expansive park since its establishment. Likewise, the Navy's Orote Peninsula and Haputo Ecological Reserve Areas represent important terrestrial and marine habitats, but they are not actively managed at this time.

## **2.8 INVASIVE SPECIES**

According to the US Department of Agriculture (USDA), "invasive species are organisms that are non-native to an ecosystem and whose introduction causes economic, social, or environmental harm. Nearly every terrestrial, wetland, and aquatic ecosystem in the United States has been invaded by non-native species, with economic losses estimated at \$137 billion per year. Invasive species constitute one of the most serious economic, social, and environmental threats of the 21st century." The USDA Wildlife Services (WS), US Department of the Interior (DOI), US Geological Survey (USGS), US Department of Commerce (USDOC), US Department of Transportation (USDOT), US Environmental Protection Agency (USEPA), and other federal, state, and local agencies are actively engaged in research, prevention, and control management of invasive species throughout the United States and its insular areas. A number of methods and strategies are employed to protect Guam from invasive species and to prevent the spread of established species, especially the brown tree snake (BTS), to other locations. The USDA WS works to control the spread of BTS from Guam to other Pacific islands. Prevention efforts at military and seaports and commercial warehouses are the focus of much of the current effort. The USDA WS uses Jack Russell terriers, which are trained to inspect departing cargo for snakes and employs specially designed snake traps along the perimeter of cargo areas. Since the BTS program began in 1993, more than 5,000 snakes have been removed from Guam's ports each year (USDA 2006). Complimentary to federal agency efforts, the Guam Department of Agriculture, Customs and Quarantine, and other local and federal agencies operate programs for plant and animal inspection and cargo inspection at Guam's ports of entry.

USDA Wildlife Services also plays an important role in a number of initiatives under development by the Federal Invasive Terrestrial Animals and Pathogens Committee (ITAP). ITAP facilitates information gathering, planning, and action implementation among various federal, state, public, and private entities that are actively engaged in invasive species management and control of terrestrial animals and pathogens.

The National Invasive Species Council (NISC), which is composed of key federal natural resource agencies and co-chaired by the Secretaries of the Interior, Agriculture, and Commerce, was created in 1999 by executive order to oversee the development of invasive species programs, to develop a national Invasive Species Strategy, and to advise on efforts to control invasive species. An update of the original National Invasive Species Management Plan of 2001 was made available in draft form for public review and comment in December 2007. This draft plan outlines a five-component framework for invasive species management from 2008 to 2012. The framework involves prevention, early detection, rapid assessment and rapid response (EDRR), control and management, and organizational collaboration (NISC 2007).

The USDA Cooperative State Research, Education, and Extension Service (CSREES) is actively engaged in the battle against invasive species. The major components of this engagement include a leading role in implementing the National Invasive Species Management Plan, funding from Section 406 of the Agricultural Research, Extension, and Education Reform Act of 1998 for Pest Management Programs, and others in the National Research Initiative (NRI) Program. In addition, CSREES established the National Animal and Plant Diagnostic Laboratory Networks, provides annual Hatch Act funding of Agricultural Experiment Station projects, and administers special grants related to invasive species (USDA 2008).

The Pacific Invasives Learning Network (PILN) is a network of country teams comprised of multi-agency/sector representatives working to share expertise in the area of invasive species management. The PILN initiative launched in 2005 and includes more than dozen organizations from sixteen countries, states and territories in the Pacific. PILN's participating teams determine the invasive species management priorities based on individual and shared interests. One of the greatest benefits of the network is its capacity to share skills, expertise, information, and innovation across vast areas of the Pacific. The founding participants of the PILN are the Nature Conservancy, Secretariat of the Pacific Regional Environments Program (SPREP), the Cooperative Island Initiative on Invasive Species, IUCN Invasive Species Specialist Group, National Park of American Samoa, Conservation International, the Palau Office of Environmental Response and Coordination, University of the South Pacific, and US Forest Service and South Pacific Commission (SPREP 2006).

## **2.9 DECADE OF NATURAL RESOURCE PLANNING**

Over the past ten years several key natural resource management plans have been developed; these plans provide much of the basis of this strategy. The Department of Agriculture completed the GCWCS in 2005, which guides conservation efforts for a number of SGCN. The GCWCS recognizes that species recovery efforts cannot succeed without habitat protection and that any serious threat to habitat loss and major modification must be addressed soon.

Additionally, the Guam Coastal Management Program and Guam EPA partnered to ensure compliance with Section 6217 of the Coastal Zone Act Reauthorization Amendments and with Clean Water Act Section 319 program upgrades for nonpoint pollution prevention. The agencies successfully obtained approval of the Coastal Guam Nonpoint Source program and a strategy to control nonpoint pollution in late 2007.

Recently the Guam Historic Preservation Office completed an update of the 1997 historic preservation plan. The new plan provides direction for historic preservation and emphasizes



connecting the community to its past. The plan provides preservation goals and objectives necessary to fulfill the stated vision that communities be "actively involved to ensure that historic resources are protected and available in the future." Critical trends, issues, threats, and opportunities that affect historic preservation efforts are identified and linked to goals and objectives.

From 1997 through 2007, Guam's natural resource agencies accomplished many objectives and engaged the public and other natural resources stakeholders in many progressive programs and planning projects. Land management issues prevailed, as did a concerted effort to restore wildlife and water resources, protect coral reefs, and establish marine preserves. Watershed-based and ecosystem approaches to planning offered a means to accomplish integrated natural resource management, implemented first under DoD planning and management initiatives and then to a lesser extent in local government. Other natural resource planning efforts were successfully initiated, including the International and US Coral Reef Initiatives, which were fully embraced by local natural resource agencies. A number of the more significant natural resource management planning documents for Guam and their status are list in Table 1.

Much remains to be done, however. The Guam natural resource management partnerships must identify, undertake, and complete priority initiatives in the next few years under the pressures of a major economic buildup that will stress federal and local management capacity across physical and jurisdictional boundaries. The natural resource management context is changing quickly as priorities shift to support buildup activities. The test of Guam's collective efforts and knowledge base will be to take the gains of the past decade into the next seven or eight years of work, with two primary objectives: first, Guam has a responsibility to effectively implement resource plans and conservation initiatives; and second, Guam needs to identify and pursue with purpose opportunities to advance resource sustainability that would not otherwise be possible without the tremendous focus on military and civilian development.

**Table 1. Status Guam Natural Resource Management Plans**

| <b>Plan/Strategy</b>                                                      | <b>Lead/Responsible Entity</b>                                                                                     | <b>Status<br/>Date Approved</b>                   |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| <i>A Comprehensive Historic Preservation Plan for Guam 2007-2011</i>      | <i>Guam Department of Parks and Recreations, Historic Preservation Division</i>                                    | <i>Current<br/>Approved Spring 2008</i>           |
| <i>Guam's Strategy to Control Nonpoint Sources of Pollution July 2006</i> | <i>Guam Environmental Protection Agency and Guam Coastal Management Program<br/>Bureau of Statistics and Plans</i> | <i>Current<br/>Approved September 2007</i>        |
| <i>Guam Comprehensive Wildlife Conservation Strategy</i>                  | <i>Guam Division of Aquatic and Wildlife Resources, Department of Agriculture</i>                                  | <i>Current<br/>Approved September 26, 2005</i>    |
| <i>Guam Wetlands Conservation Plan</i>                                    | <i>Guam Environmental Protection Agency</i>                                                                        | <i>Out of date<br/>Approved 2000</i>              |
| <i>Brown Tree Snake Control Plan</i>                                      | <i>BTS Control Committee, Aquatic Nuisance Species Task Force</i>                                                  | <i>Out of date<br/>Approved June 28, 1996</i>     |
| <i>National Invasive Species Management Plan</i>                          | <i>National Invasive Species Council</i>                                                                           | <i>Currently under revision<br/>Approved 2001</i> |

|                                                                                        |                                                                        |                                                       |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------|
| Andersen Air Force Base Integrated Natural Resource Management Plan (INRMP)            | Andersen AFB 36 <sup>th</sup> Air Base Wing Civil Engineering Squadron | Currently under revision<br>Approved 2003             |
| Andersen Air Force Base Integrated Cultural Resources Management Plan (ICRMP)          | Andersen AFB 36 <sup>th</sup> Air Base Wing Civil Engineering Squadron | Currently under revision<br>Approved January 24, 2003 |
| COMNAVREG Marianas Integrated Natural Resources Management Plan (INRMP)                | Commander Navy Region Marianas and NACFAC Marianas                     | Current<br>Approved December 2005                     |
| COMNAVMARIANAS Final Integrated Natural Resources Management Plan for Navy Lands, Guam | Commander Navy Region Marianas and NACFAC Marianas                     | Currently under revision<br>Approved November 2001    |



### **3. LEADERSHIP COMMITMENT AND COMMUNITY PARTICIPATION**

#### **3.1 GUAM AND THE DEPARTMENT OF DEFENSE**

Guam has a long history of support for US military activities, including the development of bases, training, and support for global conflicts, especially post-World War II. The Korean and Vietnam Wars, and the conflicts in Iraq and Afghanistan, are all part of Guam's extensive military history and collective community experience. A little known fact is that Guam hosted refugees at the end of the Vietnam War, and when Iraq took control of Kurdish-held areas in northern Iraq in the 1980s, the island community willingly accepted Kurdish refugees. Notably, Guam's citizens boast one of the highest per capita military enlistment rates in the nation. Although tourism is a major economic driver, Guam's overall development character and orientation clearly illustrates that it has been a military community for much of the past century.

The task ahead for Guam and its leaders is to strategically plan for an unprecedented level of economic growth spurred by the military buildup of forces into an island-wide Guam Buildup, which will bring more than 40,000 new residents to the island and infuse billions of dollars into the local economy. In 2004, the island anticipated hosting an aircraft carrier task force, but that has been eclipsed by the proposed permanent stationing of 8,000 US Marines and 9,000 dependents from Okinawa, Japan; a transient aircraft carrier wharf facility; US Army Ballistic Missile Defense task force, and other US Air Force and US Navy expansion plans (USN 2007).

#### **3.2 ENVIRONMENTAL IMPACT STATEMENT FOR THE RELOCATION OF US MARINES, TRANSIENT US NAVY NUCLEAR AIRCRAFT CARRIER, AND US ARMY BALLISTIC MISSILE DEFENSE TASK FORCE**

A Notice of Intent (NOI) to prepare an EIS for the Relocation of US Marine Corps Forces to Guam, Enhancement of Infrastructure and Logistic Capabilities, Improvement of Pier/Waterfront Infrastructure for Transient US Navy Nuclear Aircraft Carrier at Naval Base Guam, and Placement of a US Army Ballistic Missile Defense Task Force in Guam was published in the Federal Register on March 7, 2007 (USN 2007). The NOI described the Department of Defense's proposed actions, including its intent to hold public scoping meetings. The Joint Guam Program Office (JGPO) held public scoping meetings to gather information on Guam, Saipan, and Tinian during April 2007 (USN 2008). In May 2008, the JGPO presented the draft master plan for the anticipated military buildup at four village meetings.

#### **3.3 CIVILIAN MILITARY TASK FORCE**

Governor Felix P. Camacho signed Executive Order 2006-10 on April 26, 2006. The executive order established the Civilian Military Task Force and requires the development of an integrated comprehensive master plan that would accommodate the expansion of military personnel, operations, assets, and missions and maximize opportunities resulting from this expansion for the benefit of all the people of Guam. The Governor's vision for the CMTF is that it should address both the positive and negative impacts on the community, including the positive impacts of increased employment and entrepreneurial opportunities, a stronger economy, and opportunities for an improved quality of life, as well as the potential negative impacts both social and environmental, associated with such a large population increase in civilian sector of the community.

On May 27, 2008, the Governor signed Executive Order 2008-09 (EO 2008-09), which restructures the CMTF, formally establishes the Guam Buildup Office (GBO), and identifies the functions of that office with the expressed intent of more effectively monitoring and managing all of the affairs of the executive branch through the GBO. The GBO is also responsible for developing a Guam Buildup Master Plan. EO 2006-10 and 2008-09 are provided in Appendix 3.

The CMTF recognized that the island's population will grow to approximately 210,000 in just a few years, and that growth will place additional strain on services to the local population. Other critical considerations included the following:

- The demands on the Government's infrastructure as well as services it provides the community must be able to meet the expectations of the anticipated growth;
- Most government entities have in place long-range plans to accommodate the growth of the local population, but these plans do not include the massive movement of military personnel, namely the deployment of approximately 17,000 marines, dependents, and support staff, as well as increases of Navy and Air Force personnel;
- The additional strain on the local infrastructure could greatly affect the delivery of these services. In order to ensure that the demands of the growing community are met, detailed plans must be adopted and implemented to curtail any lapses in services to the community; and
- Immediate and long-term issues to be addressed should be identified in a comprehensive plan, to include infrastructure needs, funding needed to address concerns, personnel requirements, and required legislation (local and federal) (CMTF 2006).

The CMTF is functionally organized around major development issue areas that represent most, if not all, of the concerns the community may have about the Guam Buildup. These functional areas are under the management and coordination lead of key department heads as CMTF subcommittee chairs. These subcommittees are Health and Social Services, Public Safety, Education, Labor, Ports and Customs, Economic Development, Infrastructure, Housing, Social and Cultural, Government Services, Environment, and Natural Resources.

In response to the Navy's EIS scoping effort, the CMTF led a comprehensive effort to compile concerns and comments on the proposed military development actions, which culminated in a scoping document that was submitted to the JGPO, entitled *Guam Civilian-Military Task Force Contribution for Inclusion in "Scoping Process" for the Environmental Impact Statement /Overseas Environmental Impact Statement (EIS/OEIS), May 2007* (CMTF 2007). The CMTF and its subcommittees presented a broad range of issues related to the relocation of US Marine Corps forces to Guam, improvement of pier/waterfront infrastructure for transient US Navy Nuclear Aircraft Carrier at Naval Base Guam, placement of a US Army Ballistic Missile Defense task force on Guam, enhancement of infrastructure and logistics capabilities, social, cultural, and economic implications, and the effects upon Guam's environment.

The CMTF underscored its delineation of issues with the expressed desire that the EIS/OEIS include a comprehensive treatment of all socioeconomic impacts, including quantitative and qualitative metrics of the impacts of the proposed development and ways to mitigate the impacts. The socioeconomic issues to be addressed included the following:



- Changes in population;
- Changes in community demographics;
- Retail sales/services and housing market analysis;
- Demand for public services;
- Demand on Guam's utilities and transportation infrastructure;
- Demand for education, health care, and social services;
- Changes in employment income; and
- Changes in the allocation of fiscal resources to address new demands that will be placed upon Guam's government sector and changes in the aesthetic quality and character of the island and its communities.

The CMTF also clearly stated that the task of compiling the comments and input was difficult, because information about the location, size, and intensity of proposed military development was largely unknown.

The Camacho Administration is advancing the CMTF mission through the creation of a formal CMTF Office as part of the Governor's Office. A manager position and dedicated staff will be appointed and assigned to operate the new office and expand capacity to complete and begin implementation of the Guam Comprehensive Master Plan. The CMTF Office will serve as the primary point of contact and interface with the DoD and other stakeholders.

### **3.4 PRESENTATIONS TO THE FEDERAL GOVERNMENT/KPMG**

The Interagency Group on Insular Affairs (IGIA) was created by presidential executive order to identify and address issues unique to US Insular governments and to make recommendations to the President regarding those issues. The IGIA Working Group on Military Expansion established in March 2007 has met three times in Washington, DC over the past year to hear presentations and to consider the pressing development, capacity, and financial issues facing Guam and the Commonwealth of the Northern Mariana Islands over the next five to seven years. Working group meetings have been an important stage for Guam Buildup discussions and have focused on both Guam and the federal government's master plan efforts for the military buildup. Both the JGPO and the Governor's Office have provided critical information for other federal partners to consider.

Governor Camacho has clearly stated to the IGIA that there are many challenges that are Guam's responsibility that Guam is addressing with the resources available. However, there is the expectation that the Department of Defense and the federal government will help underwrite the costs to Guam that are directly and indirectly associated with Department of Defense requirements for the 3rd Marine Expeditionary Force relocation to Guam. Guam has also participated in five working group sessions to discuss plans of action, milestones, and costs for the needs and processes of the Guam Buildup in fiscal years 2009 and 2010.

Governor Camacho led the Guam team at the quarterly meeting of the federal working group created to focus specifically on the challenges that the military buildup presents for the people of Guam. The purpose of this working group was to identify potential funding sources to meet near-term requirements to improve service levels as Guam prepares for the military's buildup efforts. The Federal Regional Council is a subset of working group agencies directly responsible



for implementing programs and assistance for the Guam Buildup. The group meets in San Francisco after each IGIA meeting.

The government of Guam through the Guam Economic Development and Commerce Authority hired the consulting firm KPMG to prepare preliminary assessments of the impact of military buildup on Guam's infrastructure, economy, environment, and social issues. The assessment documents were used by the government of Guam in its unified approach to inform military buildup authorities and Congress. The assessment includes a governance strategy and public information program for the government of Guam's efforts in the military buildup (Governor 2008). These preliminary documents have since been expanded and incorporated into ongoing CMTF master planning efforts.

### **3.5 CMTF VILLAGE MEETINGS AND OUTREACH (RADIO)**

In December 2007 the CMTF held three regional meetings to inform the community of the CMTF's purpose and approach to assisting in the Guam Buildup, with an emphasis on ensuring the greatest public benefit with the least adverse impact. The meetings were an opportunity for residents to provide input and share their impressions, concerns, and perspective on the Guam Buildup. The meetings were held at community centers in the villages of Dededo, Agaña Heights, and Santa Rita. The format involved an overview presentation of the CMTF followed by breakout stations for each CMTF subcommittee, where representatives were available for one-on-one and small group discussions with residents. Additional community meetings are planned in the near future, and residents are welcome to join subcommittees, attend meetings, and generally stay in contact with subcommittees.

Another component of the ongoing effort to inform and engage the public is a monthly CMTF talk radio program on K57 News Talk Radio. The CMTF is represented by the Director of the Bureau of Statistics and Plans, and guests include government, military, and private individuals who have insight into the buildup process and the work being done to prepare for all aspects of development.

### **3.6 NRS TARGETED STAKEHOLDER CONSULTATIONS**

In addition to direct contact with and membership on the NRS, village meetings, and opportunities to participate in talk radio, representatives of the NRS will undertake a targeted stakeholder consultation with several organizations to address proposed strategic goals and action plans. Targeted stakeholder organizations include but are not limited to the Guam Chamber of Commerce, the Guam Fisherman's Cooperative, the University of Guam Water and Environment Research Institute of the Western Pacific (WERI) and University of Guam Marine Laboratory. Representatives will have an opportunity to learn what the main proposals are to manage resources and how natural resource agencies will be involved in the Guam Buildup over the next five years. It is inevitable that strong sentiments in favor of economic growth will run contrary to resource sustainability, especially in certain geographic locations. The underlying message to all stakeholders should be that sustainability goals can be met with responsible development, which ultimately requires growth decisions with stronger provisions for community interest in resource stewardship. The challenge is finding common ground, committing to mitigation and making difficult decisions about growth on Guam with its limited land and coastal resource base. Targeted stakeholders will be provided a public comment draft

of the strategy and will then be interviewed one-on-one to address issues and concerns in detail.

### **3.7 DRAFT MILITARY BUILDUP EIS REVIEW**

A critical juncture in the Guam Buildup management effort will be the review and formal comment on the Draft EIS/OEIS. The NRS and other stakeholders will likely have this one opportunity to comment on the DoD's plans for the buildup, and the opportunity to review and comment on the EIS must be handled effectively. Some of the major concerns about natural resource management will be addressed while developing the draft, as key federal agencies are participating in the NEPA process as cooperating agencies, affording them an opportunity to guide the EIS development on issues related to natural resource. As mentioned above, three critical areas are socioeconomics, cumulative impact analysis, and impact mitigation.

## **4. NATURAL RESOURCE ISSUES: FROM SCOPING TO NEW COMMUNITIES**

This Natural Resource Strategy is based on and driven by issues identified by resource agencies and other Guam-based stakeholders. Issues were identified from existing and formative documents aimed at characterizing and communicating the natural resource concerns. Some issues were developed from focused discussions and meetings over the course of several months from January to April 2008.

The strategy does not list all natural resource issues and concerns identified in previous natural resource-type management documents. The objective is to review existing and new issues, prioritize and draw out those of highest interest, and decide which will garner management commitment. A number of Strategy reference documents cover a broader range of issues. Some of these documents addressed the Guam Buildup, while others identified long-term management goals before the DoD revealed plans for the buildup. Many natural resource issues were identified during NEPA scoping and will require diligent tracking to resolution as new military communities develop. The pressures of rapid growth will adversely affect adjacent communities and natural resource if not effectively mitigated.

### **4.1 ISSUE 1: BIODIVERSITY**

Biodiversity is the variability among living organisms in given region, including the variability within and between species and within and between ecosystems. Guam's biodiversity has been severely impacted by invasive species, development, over-harvesting, and other human activities on land and in coastal areas over the course of many decades. In the past 30 years the island's natural resources have been subject to pressures resulting from weak growth management policy, which is particularly evident in the lack of a comprehensive land use plan. The challenge for Guam today is to develop, focus, and reprioritize natural resource management programs to ensure resource protection and sustainable use as the community begins to deal with the development pressures resulting from the Guam Buildup.

Nine biodiversity-related challenge areas, outlined below in no particular order, have been identified by natural resource agencies in various documents related to the Guam Buildup. These challenges will significantly affect Guam's ability to maintain biodiversity if they are not effectively managed in the near term. Under this strategy these challenge areas are the strategic targets that must be addressed over the next five years to maintain or improve the condition of the island's resources.

#### **Invasive and Exotic Species**

The constant threat of exotic species introduction and the ongoing impact of species that have successfully invaded the island remain a major resource protection challenge. This challenge will only intensify as demand for imported goods and materials increase to the greatest volume of cargo in Guam's history to support the Guam Buildup. In just the past few months there have been media reports of exotic species introductions, including the rhinoceros beetle and the Giant Sensitive Plant. It may be necessary, among other options, to consider implementing stepped-up efforts substantially above historical levels of border control (GDoA 2007).



**Coral Reef Ecosystem Protection**

Coral reef protection remains a very high management priority. Guam's reef systems function in a variety of important ways that benefit its economy and culture, enhance quality of life, and make up a large part of the geological structure of the island. Too often the importance and value of reef systems is overlooked or taken for granted by development planners. Buildup activities will require shoreline facilities, training areas, tourism expansion, and greater reliance on nearshore waters to support economic growth. Some of the development pressure on reef systems will include dredging, placement of fill for wharves and shoreline protection, the direct impact of training, new coastal structures, expanded recreation operations, and nonpoint source pollution (GEPA 2007).

**Marine Mammal Protection**

Increased military surface and submarine vessel operations in Guam waters in conjunction with other factors could result in adverse effects, including the death of marine mammals. Under certain conditions, sonar technology is believed to cause acoustic trauma, including hemorrhages in ear and other issues that may affect navigational ability in beaked or toothed whales and dolphins. Recent investigations point to mid-range tactical sonar technology use as a possible significant cause of trauma in marine mammals, resulting in shoreline stranding (USDOC and USN 2001). It will be important to examine and prescribe measures to prevent injury to marine mammals and to avoid temporary or permanent displacement of marine mammals that frequent nearshore waters (GDoA 2007).

**Species of Greatest Conservation Need**

The 2005 Guam Comprehensive Wildlife Conservation Strategy should be the basis upon which wildlife conservation priorities are identified for the Guam Buildup. Both federal and local programs are based on the significant volume of documentation and study that supports species listings, habitat assessments, intervention methods, and recovery strategies. Ongoing work will require additional technical support and financial resources as well as new funding initiatives for priority species. A number of approaches could be implemented to integrate proactive measures, from development planning to site-specific or habitat conservation. The major challenge is to overcome a long history of poor development planning, growth management, and general resistance to mainstreaming environmental and conservation practices into development planning (GDoA 2005).

**Terrestrial and Inland Aquatic Resources**

Forests, wetlands, inland surface waters, soil, and other physical and geologic resources will be subject to increased development impact and use. All preliminary indications point to military and civilian development that has a strong emphasis on property reuse. However, undeveloped land areas will certainly be sought in an effort to minimize costs. This will mean that largely rural, open, and previously undeveloped land areas will be converted to residential, commercial, industrial, and related military uses (GEPA 2007).

The government of Guam does not have adequate program capacity to develop and effectively implement the essential range of environmental best management practices (BMPs) for a development boom of the scope and intensity expected over the next seven to eight years. Some resource protection advances have been made over the past ten years, but more needs to

be done to advance practices and standards into enforceable requirements and effective growth management policy.

#### **Marine Preserves**

The Sasa Bay Preserve is an area that may be considered for development by the US Navy. Some level of recognition of the biological function and value of the area should be acknowledged, and concrete steps should be taken to ensure its protection to the greatest extent possible. In the larger context, marine preserves must continue to be managed to meet original objectives. Additional pressure will be placed on these areas as overall fishing pressure increases. The original and underlying purpose for having marine preserves is and will continue to be challenged either openly or from unauthorized activities. Managers should take into account the range of influences and demands on marine preserves and set the framework within the limits of acceptable change to effectively guide future policy and management (GDoA 2007).

#### **Fisheries Management**

Fisheries management, including addressing unsustainable fishing methods, decreasing access to shorelines, historically disproportionate impacts, cultural identity concerns, and direction and emphasis of local and federal management efforts, is at a critical juncture. It is entirely possible that the island's fisheries carrying capacity will be exceeded at all accessible shorelines and that more restrictive fishing regulations will be necessary to ensure viable populations. The pressure on fisheries compounded by a 15,000-person temporary labor force and high steady population growth of up to 58,000 people over seven years could devastate fisheries if they are not properly managed (GDoA 2007).

#### **Mitigation Policy**

A Guam Compensatory Mitigation Policy (CMP) is needed to guide mitigation planning, design, implementation, and long-term project management. Mitigation is required for unavoidable development impacts to natural resources, primarily coral and wetlands; however, similar emphasis is needed for other marine, terrestrial, and fresh water resources. At the local level, compensatory mitigation may be required when resources are damaged accidentally or as a result of negligence. The policy, practices, and especially the legal framework for mitigation requirements need to be strengthened at the local level and ultimately guide federal mitigation to include local perspectives on sustainability in a context that considers a comprehensive and integrated approach to biodiversity management (BSP 2007).

#### **Mitigation Monitoring Protocols**

Mitigation monitoring protocols need to be developed at the earliest possible time to manage existing and near-term projects. Monitoring standards exist to track and evaluate reef mitigation effectiveness over time. Guam resource agencies should develop monitoring protocol guidelines for mitigation and other monitoring and investigative work in the marine environment. There is a sense of urgency to address this issue due to ongoing construction projects and mitigation, namely Kilo Wharf (BSP 2007).

## **4.2 ISSUE 2: CULTURAL AND HISTORIC RESOURCES**

It will be a major challenge to continue to achieve broad-based cultural awareness, protection, and preservation of historic resources while the island undergoes large-scale development. In order to promote the island's culture and rich history, the Guam Historic Preservation Office of



the Guam Department of Parks and Recreation initiated the development of *A Comprehensive Historic Preservation Plan for Guam* (GDPR 2007). The plan takes preliminary Guam Buildup information into consideration with the recognition that the buildup will require the most intensive construction activity and population expansion in Guam's history. The plan identifies five key preservation goals that must be attained or substantially advanced in order to achieve an appropriate preservation-development balance for the community. The plan's goals will not be met without a significant and sustained collaborative effort between various preservation stakeholders, including government, NGOs, individuals, business, the military, and developers. If approached strategically, there should be opportunities to significantly enhance historic preservation efforts and promote cultural awareness, even in the midst of the buildup.

#### **4.3 ISSUE 3: RESOURCE AGENCY CAPACITY**

Resource agencies do not have the in-house capacity to manage or oversee the Guam Buildup, a fact that has been stated consistently over the past year and a half. Even the ability to administer contracts (i.e., outsourcing) would present major challenges for most local resource agencies. While outsourcing is a useful tool, the quality of contractual work can suffer for lack of astute contract administration and oversight.

As with most development cycles, government revenue from increased economic activity lags behind the immediate demand on government managers and technical staff for development proposal review and approval. This problem can be attributed partly to the fact that a smaller percentage of project costs are associated with feasibility planning, design, and permitting; front-end development costs are typically less than 10 percent of total project costs.

Ideally, resource agency capacity needs should be met at the outset of a major development boom. Unfortunately, adequate funding is often unavailable for up to three years after major development commences. Capacity will likely only be met through subsidies or unique short-term stopgap management methods. There are also pitfalls to guard against when this mode of management prevails, as stopgap measures can result in compromises that result in greater resource impacts than at any other time during a period of high growth. Some capacity requirements could be met, without major compromises, by hiring DoD dependents and through closer working relationships with natural resource NGOs.

Some resources will suffer from diminished management effort, and other resource protection objectives will fade from the mainstream of activity as priorities shift. Another potential pitfall associated with stopgap and crisis management occurs when certain procedures set precedence and persist long after originally intended. Policy should clearly delineate when to transition back to comprehensive review and decision-making procedures by government agencies.

#### **4.4 ISSUE 4: LEGAL FRAMEWORK**

At least four legal issues have been identified that have hindered effective local-federal natural resource management collaboration. If at all possible, these issues should be resolved prior to the buildup in order to prevent future problems. There are many more issues and goals on which local and federal agencies agree than disagree; these few problem areas should not be allowed to persist and detract from or de-energize the positive commonalities.



The first issue surrounds military and local resource and regulatory roles. There are several legal or policy positions that call into question very basic regulatory and stewardship roles, particularly under the federal Clean Water Act and with regard to federal consistency review, and management under concurrent jurisdiction.

The second issue of contention involves the ownership and jurisdiction of certain submerged lands around Guam, and the third issue is that Guam law prohibits local government from assisting or actively participating in certain federal wildlife management programs such as the operation of the Guam National Wildlife Refuge Ritidian Unit. Finally, a recurring theme among resource agency personnel is the lack of adequate and consistent enforcement and prosecution of natural resource laws. There is a long history of imbalance between environmental education, outreach, and technical assistance and effective enforcement.

Legal framework also refers to the various ongoing efforts to assess natural resource programs and mandates to strengthen policies, incorporate or adopt new approaches, and facilitate cooperative initiatives. The Guam Coastal Management Program (GCMP) of the Bureau of Statistic and Plans consistently fills the role of legal framework steward by heading projects that advance and improve natural resource agency management and regulatory functions—leading the development of this strategy is one example of this stewardship.

## 5. MANAGEMENT GOALS, OBJECTIVES, AND ACTION PLANS

The following chapters outline natural resource-related issues to be addressed during the Guam Buildup. Chapter topics are as follows:

- Chapter 6, Species of Greatest Conservation Need, addresses biodiversity in the context of species of greatest conservation need, including terrestrial and inland aquatic resources, marine mammal protection, and coral reef protection, as outlined by the Department of Agriculture.
- Chapter 7, Invasive Species, discusses the management context, community interest, and goals and conservation actions surrounding invasive species management.
- Chapter 8, Marine Preserves, discusses the management context, community interest, and goals and conservation actions surrounding marine preserve management.
- Chapter 9, Impact Mitigation, outlines the management context, community interest, and goals and objectives surrounding impact mitigation.
- Chapter 10, Monitoring Protocols, provides the management context, community interest, and goals and objectives to implement monitoring protocols.
- Chapter 11, Agency Capacity, provides the management context, community interest, and goals and actions to address agency capacity issues.
- Chapter 12, Historic Preservation, provides the management context, community interest, and goals and preservation actions surrounding historic preservation management.
- Chapter 13, Wetlands and Watersheds, provides the management context, community interest, and goals and conservation actions surrounding wetlands and watershed management.
- Chapter 14, Legal Framework, describes legal issues and concerns surrounding natural resource management, policy issues, and agency coordination, and presents goals and action plans to address the legal framework challenges.
- Chapter 15, Department of Defense, summarizes integrated and cultural resource management plans developed by the US Navy and US Air Force.
- Chapter 16, Guam National Wildlife Refuge, describes the creation and management of the GNWR and the Comprehensive Conservation Plan being developed for the refuge.
- Chapter 17, Financing Natural Resource Management, presents strategies for funding natural resource management activities.
- Chapter 18 presents references used in the development of this report.

### 5.1 COMMUNITY INTEREST

Community interest in the Guam Buildup NR issues is described mostly in broad terms for each issue area described in Chapters 6 through 13. One of the more critical components of community interest is the community's ability to access and participate in programs, policies, and activities that are developed to address the Guam Buildup. Unfortunately, government can sometimes work in ways that inadvertently make community participation difficult. It should be the goal of each working group, task force, committee, or other governmental entity engaged in collaborative planning efforts to accommodate and include community input.





## 6. SPECIES OF GREATEST CONSERVATION NEED

The 2005 GCWCS should be the basis upon which wildlife conservation priorities are identified for the Guam Buildup. Both federal and local programs are based on the significant volume of documentation and studies that support species listings, habitat assessments, intervention methods, and recovery strategies. Ongoing work will require additional technical support and financial resources as well as new funding initiatives for priority species. A number of approaches could be developed and implemented to integrate proactive measures, from development planning to site-specific or habitat conservation considerations. The major challenge is to overcome a long history of poor development planning, growth management, and general resistance to mainstreaming environmental and conservation practices into development planning.

### 6.1 COMMUNITY INTEREST

The following is a list of considerations that take into account some of the primary interests the community may have concerning the issue(s). The interests include both broad and specific considerations; however, no attempt has been made to identify all of the interests. This list is intended to briefly describe why the community is or should be concerned about the various issues.

- Native species enrich Guam's landscape, support diverse flora, offer opportunities for research, and add significant value to the unique Guam experience, which visitors and residents demand. The community has been and will continue to be well served by conservation areas that preserve habitat necessary to allow species protection and restoration.
- The island's cultural identity and historical heritage are connected to the natural environment. The restoration and management of native species and conservation lands is an important part of the continued resurgence of cultural practices and community pride necessary for cohesive community values and diverse cultural expressions in a modern and rapidly growing economy.
- The economic impact of degraded resources can be significant or conversely, the economic contribution of viable and healthy resources is significant. A recent economic study illustrates how approximately \$127 million in the local economy is derived from coral reefs alone (van Beukering, et al. 2007). The economic value of terrestrial resources such as forests, rivers, and wetlands would logically add to this inventory of value.

### 6.2 MANAGEMENT CONTEXT

The GCWCS is based on eight key conservation elements, including a description of the status of species determined to be of greatest conservation need, important habitats and their condition, conservation actions, monitoring of these species, and gauging conservation success.

The GCWCS identifies 20 groups and 63 SGCN, including 31 terrestrial, 7 fresh water, and 25 marine organisms. Information is provided for each species summarizing their status, conservation goals, objectives, and action plans to advance efforts to meet conservation goals. Additionally, conservation actions that affect general groups of species were identified and

subsequently included the development of memoranda of understanding, rehabilitation of habitats, public education, and law enforcement. The GCWCS also groups native organisms that need conservation management attention. This grouping helps to differentiate between those that meet species of greatest conservation need status and those that do not.

The protection, maintenance, and recovery of species cannot be achieved without the maintenance and recovery of their habitat. The GCWCS includes 23 maps of habitat types and conservation areas important to the conservation and recovery of species of greatest conservation need.

Conservation areas that are managed or under local control, including the Anao, Cotal, and Balonos conservation areas, as well as conservation areas under federal control are prime areas for terrestrial species recovery projects. Similarly, there are five marine preserves under both local and federal control in northern, central, and southern Guam that provide refuge habitat for many marine species.

Guam's native species have been under tremendous pressure from predators and other invasive or exotic introduced species. One bird species has become extinct (Guam Broadbill), and most of the remaining species have declined significantly or are extirpated. To address this critical issue, the Department of Agriculture has charted and implemented an approach that is identified in the GCWCS as follows:

"The brown tree snake (*Boiga irregularis*) and predatory flatworm must be controlled and be part of implementation of the habitat recovery. While in situ programs are occurring, captive breeding programs must be implemented to build a stock of captive native forest birds, lizards, and snails. This program would build a population of organisms for release in conservation areas ready to receive them, i.e., appropriate measures that were limiting in the first place have been remedied. In other cases, such as the island swiftlet and Mariana common moorhen, where populations continue to persist in the wild on Guam, brown tree snake control programs will protect the resource. Guam's rivers and streams and organisms within are vulnerable to introductions of exotics species that could easily threatened native aquatic species. Introduction of exotics, man-made dams, and erosion threaten this highly fragile environment and its native organisms."

### 6.3 GOALS AND ACTIONS

The GCWCS identifies fifteen (15) goals that can be effectively combined and summarized as four (4) management goal categories for all SGCN. The GCWCS is a five-year strategy that involves completing Priority 1 actions and subsequently elevating other actions until goals and objectives are met.

**SGCN Goal 1**

Re-establish species on Guam from either captive breeding programs or wild population on other Mariana Islands or from small remaining population on island.

**SGCN Goal 2**

Increase and recover species populations to target levels and specified locations on Guam.

**SGCN Goal 3**

Locate, Determine, or Survey species status or relative importance to ecosystems and regional population dynamics.

**SGCN Goal 4**

Protect, Preserve, Maintain, or Prevent species from further decline in populations and their distribution.

**Table 2. SGNC Grouped by Conservation Goal**

| <i>Re-establish</i>                                                                                                                                                                                                                                                                                            | <i>Restore</i>                                                                                                                                                                                                                                                                                       | <i>Determine Status</i>                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pacific sheath-tail bat<br>Guam rail<br>White-throated ground dove<br>Mariana fruit dove<br>Guam Micronesia kingfisher<br>Micronesia honeyeater<br>Nightingale reed-warbler<br>White-tailed tropicbird<br>Brown booby<br>Azure-tailed skink<br>Pacific tree snail<br>Forest flicker<br>Marianas rusty          | Mariana fruit bat<br>Micronesia starling<br>Island swiftlet<br>Mariana crow<br>Mariana common moorhen<br>Migratory shorebirds<br>Snake-eye skink<br>Slevin's skink<br>Moth skink<br>Tree fern<br>Frederico nut<br>Faniok<br>Fire tree<br>Bumphead Parrotfish<br>Green Sea Turtle<br>Hawksbill Turtle | Pacific reef heron<br>Micronesia gecko<br>Mariana Islands tree snail<br>Bryde's Whale<br>Sei Whale<br>Humpback Whale<br>Cuvier's Beaked Whale<br>Sperm Whale<br>Dwarf Sperm Whale<br>Pygmy Sperm Whale<br>Melonheaded Whale<br>Killer Whale<br>Shortfinned Pilot Whale<br>Risso's Dolphin<br>Spinner Dolphin<br>Striped Dolphin<br>Dugong |
| <i>Protect</i>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                           |
| Mariana Islands fragile tree snail<br>Ufa halomtano (tree)<br><i>Tabernaemontana rotensis</i><br>Stream goby<br>Redbellied goby<br>Marianas goby<br>Flagtail<br>Giant Marbled Eel<br>Atyid shrimp (> 6 species)<br>Tahitian prawns (2 species)<br>Fresh water crabs (>3 species)<br>Nerite snails (12 species) | Thiarid snails (5 species)<br>Water fern<br>Pond weed (preserve habitat)<br>Emperors<br>Groupers<br>Rabbitfish<br>Snappers<br>Goatfish<br>Butterflyfish<br>Angelfish<br>Hawkfish                                                                                                                     | Humphead Wrasse<br>Surgeonfish<br>Parrotfish<br>Wrasses<br>Jacks and Trevallies<br>Giant clam ( <i>derasa</i> )<br>Giant clam ( <i>maxima</i> )<br>Triton's trumpet<br>Spiny lobster<br>Sea grasses (3 species)<br>Hard coral<br>Soft coral                                                                                               |



GCWCS identifies several categories of conservation actions to advance objectives and eventually meet stated goals. The conservation objectives include the following:

1. Legal protection of conservation lands and interagency agreements;
2. Restoration of conservation lands to a state useful for native animals;
3. Removal or at least control of limiting factors;
4. Public education and compatible public use of these areas; and
5. Law enforcement.

The need to implement or maintain captive breeding efforts while areas are prepared for reintroduction of native species is an overarching and ongoing activity. Conservation actions were carefully considered and then designated as Priority 1 (high), 2 (medium), or 3 (low). Eventually each action would be elevated in priority as higher priority actions are accomplished. For the purposes of this strategy, only Priority 1 actions are identified for implementation during the planning/NEPA phase of development; most Priority 2 actions are assigned to the second or construction phase, and Priority 3 actions come under the post-construction or operational phase of the Guam Buildup. In the cases where an action category does not have a Priority 1 action, the Priority 2 action(s) are elevated to Priority 1.

The following section is taken directly from Chapter 4 of the GCWCS, with only minor format changes.

## **6.4 CONSERVATION ACTIONS**

### **6.4.1 Legal Protection for Habitats and Wildlife**

Guam has several local laws providing protection for native flora and fauna. The Department [of Agriculture] has the authority to enforce and submit changes for adjudication of the laws that govern Game, Forestry, and Conservation (5 GCA, Chapter 63, PL-6-85). In addition to ensuring the authority to enforce these laws, Guam code also provides a list of species that are to be protected (5 GCA, §63121 and §63101-63117). The Endangered Species Act, 5 GCA, §63208 allows for the adjudication of an endangered species list for Guam. The responsibility to promulgate the Endangered Species List falls to the Department, who then provides the list to the Attorney General of Guam and the Legislature for adjudication. In an effort to provide maximum legal protection for the habitats for preserving and enhancing the recovery and/or restoration of wildlife to Guam (Priority 1), the following objectives will be implemented:

#### **Priority 1 Conservation Actions**

- To develop cooperative agreements with [US Fish and Wildlife Service] USFWS, [Andersen Air Force Base] AAFB-[US Air Force] USAF, and Navy to include federal and Guam Conservation Lands as part of the Guam Wildlife Refuge Overlay. Develop cooperative agreements for management, research and protection of endangered species and species of greatest conservation need.
- Develop Memorandum of Understanding with the [Commonwealth of the Northern Mariana Islands] CNMI to facilitate the conservation restoration measures of shared (historically) fauna and plants.

**Priority 2 Conservation Actions**

- To determine boundary lines for all the Conservation Lands, and to further pursue the possibility of incorporating previously proposed conservation areas.

**Priority 3 Conservation Actions**

- To develop Safe Harbor Agreements with private landowners in other areas adjacent to Conservation Land where wildlife may benefit.

**6.4.2 Habitat Assessment and Rehabilitation**

Guam is approximately 48 percent forested 14 percent of which is native forest with few large areas of uniform vegetation (Donnegan, et al. 2002 and Fosberg 1960). The need to assess the state of habitats throughout the island is vital to the rehabilitation of these areas before any reintroductions of native fauna can be done. This assessment will be done in conjunction with predator and ungulate control. The following objectives will be pursued to assess the current state of the habitat, develop and implement plans to take appropriation actions to improve the habitat, or else maintain habitat as native forestland:

**Priority 1 Conservation Actions**

- To develop plans to improve habitats in conservation areas, to include reforestation, fire prevention, and control of invasive plants. Assist the Forestry and Soil Resources Division in developing forest recovery plans to include reforestation programs for Guam's Conservation Lands to include the control and removal of invasive, noxious plant species, replanting of native species, and protection of these areas with firebreaks.
- To determine the status of plants listed as a SGCN.

**Priority 3 Conservation Actions**

- To improve man-made habitat at Masso Reservoir for the Mariana common moorhen, and other wetland species.
- To protect native trees and plants from human destruction.
- To develop regulations controlling the harvest of medicinal plants and wood within the Conservation Lands.

**6.4.3 Captive Breeding and Translocation**

Captive breeding and translocation are and will always be an essential management tool for natural resource managers who work with small populations. Currently, GDAWR captive propagates two species of birds, the Guam rail and Micronesian kingfisher. The facility also holds and hand-rears Mariana crows collected as eggs and chicks from the wild on Guam and Rota. The GDAWR facility can house and support 144 rails, 10 crows, and 16 kingfishers. The Department envisions the creation of a new larger facility that would support conservation efforts on Guam and throughout Micronesia. Guam has the infrastructure that would support such a facility and could be the "hub" of Micronesia for captive propagation. Most of Guam's SGCN would benefit from a large facility that would have facilities for mammals, birds, reptiles, gastropods, and other invertebrates that may be in need of captive propagation. The progeny from captive breeding efforts would be released back into the wild. In addition to the benefits

for Guam's SGCN, the new facility could serve the region as a refuge and breeding center for all terrestrial species in peril throughout Micronesia.

The beginning and/or continuation of captive breeding (propagation) and translocation efforts of regional endemics and indigenous species for Guam and Micronesia will be addressed by the following objectives:

**Priority 1 Conservation Actions**

- To construct a new captive propagation facility on Guam by 2010 that would serve the needs of Guam's SGCN and Micronesia.
- To determine the need to captive breed other SGCN. Implement captive propagation of endemic species of animals and plants for release into the wild, continue captive breeding of Guam rails and Micronesian kingfishers, and hand rearing efforts for the Mariana crow.
- To protect plants in the wild from insect infestation and other maladies.

**Priority 2 Conservation Actions**

- To determine the feasibility of translocation of shared SGCN from the CNMI.
- To provide an adequate number of SGCN plants for planting in Conservation Areas. Collect seeds and seedlings from the wild for transplantation to Conservation Areas.

**6.4.4 Control of Limiting Factors**

**Snake barriers** A combination of both techniques may be employed considering the uneven substrate characteristic of much of Guam's northern limestone forest. As birds settle into territories and begin to breed, electrical barriers then can be used to protect their nests.

Guam DAWR, US Department of Agriculture, Wildlife Services, US Geological Survey, Biological Research Division (USGS BRD), and several other government and private investigators made advances in the use of traps and barriers to control brown tree snakes. Area-wide snake control, using both removal and exclusion methodologies, was tested at Area 50 Northwest Field and demonstrated the possibility for successfully reintroducing Guam rails and other native forest birds in the near future. Such reintroduction efforts utilized methods originally developed for introduction of rails on Rota. Feral cat control remains a major obstacle to the establishment of a small population of rails. Given the significant advances in brown tree snake control, it is appropriate to continue activities toward the recovery of the Guam rail and establishment of a population in the wild on Guam.

Methods for eradicating snakes from remote locations in the wild need to be applied to protect swiftlet colony sites, such as Mahlac Cave, from snake predation. Currently, snake traps using a live mouse as an attractant are used to reduce snake abundance around island swiftlet caves. This method is labor intensive, especially when applied at remote sites. More cost-effective techniques need to be developed.

The endemic Guam Micronesian kingfisher can also benefit from large-scale snake control. Application of barriers and area-wide snake removal will assist in efforts to repatriate kingfishers back into the wild. Releases of other indigenous birds no longer found on Guam but still found in



the Mariana Islands may follow as large areas are controlled for snakes. The following objectives will be pursued to control limiting factors affecting SGCN:

**Priority 1 Conservation Actions**

- To control brown tree snake abundance in Conservation Areas and selected sites for release of SGCN species. Guam DAWR, USDA WS, NWRC [National Wetlands Research Center], and USGS BRD will determine what appropriate snake control measures may be used for each of the areas. In addition, predator control measures will include the control of dogs, cats, and rodents.
- To develop and implement a program for reducing abundance of ungulates in the conservation areas.

**Priority 2 Conservation Actions**

- To establish snake control around caves for the reintroduction of vertebrates, including island swiftlet and Pacific sheath-tailed bat.
- To develop plans to combat the impacts of invasive species and to prevent the introduction of new invasive species.

**Priority 3 Conservation Actions**

- To establish snake control around caves for the reintroduction of vertebrates, including island swiftlet and Pacific sheath-tailed bat.
- To develop plans to combat the impacts of invasive species and to prevent the introduction of new invasive species.

**6.4.5 Reintroduction and Restoration of SGCN to Designated Habitats**

The reintroduction and restoration of SGCN to designated habitats is the ultimate goal of all the management and conservation efforts put forth in the GCWCS. The following objectives will be implemented for particular species and for all SGCN:

**Priority 1 Conservation Actions**

- To inventory conservation areas for caves and identify other potential cave sites for brown tree snake control and translocation of *A. vanikorensis bartchi* and *E. semicaudata rotensis*.
- To determine the status of wildlife in each of the conservation areas. Inventory fauna within each conservation area, including birds, mammals, reptiles, and insects and to reintroduce native wildlife identified as SGCN into conservation lands, GNWRO [Guam National Wildlife Refuge Overlay], and other areas (i.e., Safe Harbors).

***Aquatic***

Early aquatic management efforts by DAWR were influenced by the USFWS and equivalent temperate zone state fish and wildlife agencies, focusing on individual species or groups of species that were important fishery resources. In the 1970s, DAWR management decisions reflected the views and values of the times, and DAWR was responsible for a number of introductions of nonnative freshwater organisms for aquaculture and sport fishing. However, beginning in the mid 1980s, due in part to an estimated 70 percent decline in catch per unit of

effort of inshore coral reef fish over a 15-year period, the aquatics section began to shift its focus. In the mid-1990s, DAWR resurrected the freshwater program, shifting from a focus on aquaculture and sport fish introductions to monitoring representative watersheds. During this time, DAWR also took its first step in ecosystem-based management of marine fisheries resources by creating the territory's five marine preserves.

### ***Freshwater***

Most aquatic organisms on Guam use rheotaxis (i.e., they generally turn to face into a current) to find their way upstream. If these organisms are able to bypass or ascend obstructions like dams, they reach an area of little or no current (reservoir) and are unable to continue their upstream migration. The organisms end up in the reservoir, where they are much more susceptible to predation and are less likely to find suitable areas for feeding or spawning. Some organisms are able to pass the reservoir and breed. Young are passively carried downstream to the ocean for the marine portion of their life history. If the young are prevented from reaching the marine environment within a critical first few days of birth, they do not survive. Young born above a dam can become caught in the reservoir formed behind the dam and perish. Studies by GDAWR indicate the diversity of native organisms is much lower in the three rivers feeding into the reservoir than in three control rivers located outside the Fena watershed, as well as the control river leading from the Fena dam. To address these issues and the threats previously mentioned, the following will be pursued:

#### **Priority 1 Conservation Actions**

- To determine the impacts of dams and other manmade structures that may have an impact on freshwater aquatic organisms.
- To conduct a biological inventory of freshwater organisms for Guam.
- To determine the extent and impact invasive species have on native freshwater species.

### **6.4.6 Coral Reef Fisheries and Habitat**

Guam is near the center of biodiversity for coral reefs, with over 5,000 species of marine organisms recorded on Guam's reefs. Hundreds of these are important fishery resources, while hundreds more are components of essential fish habitat. Faced with such complexity, DAWR began to implement ecosystem-based management actions. One of these actions was the creation of Guam's five marine preserves in May 1997. The law creating the preserves called for setting aside areas restricting the take of all marine organisms and protecting associated habitat. That same year, Governor Carl T. C. Gutierrez signed Executive Order 97-10, adopting the Guam Coral Reef Initiative and creating the Guam Coral Reef Initiative Coordinating Committee (GCRICC), of which DAWR is a member (GCRICC undated).

As part of the GCRICC, DAWR helped to identify the top five priority threats impacting Guam's coral reefs: land-based sources of pollution, over-fishing, lack of public awareness, recreational misuse and overuse, and climate change/coral bleaching/disease. The GCRICC then selected local navigators to guide the development of 3-year local action strategies (LAS) for each of these priority threats. These LAS are described in greater detail in Appendix 7 [of the GCWCS]. The following objectives will be implemented:



**Priority 1 Conservation Actions**

- To continue the implementation of LAS, to include the determination of land-based sources of pollution, implementation of coral reef fisheries management actions, fostering of education and outreach programs, and management of recreational use, climate change, and coral bleaching and disease.
- To maintain established Marine Preserves.

**Priority 2 Conservation Actions**

- To implement management actions to protect and improve the status of marine SGCN within Guam's jurisdiction.

**6.4.7 Sea Turtles**

Three species of sea turtles visit Guam's waters: green sea turtles, hawksbill sea turtles, and leatherback sea turtles. Only two of these species, the green and hawksbill sea turtles, use the beaches of Guam as nesting grounds. Little is known about the habits and life histories of sea turtles in Micronesia. They are threatened by the loss of nesting habitat and foraging grounds, consumption for meat and shells, and entanglement in fishing gear, especially nets and long lining. Guam DAWR is taking steps to fill in this knowledge gap by studying both resident and nesting sea turtles in Guam's waters. Currently the focus is on green and hawksbill sea turtles, as they are more frequently observed in Guam's waters and use the beaches for nesting. The objectives for protecting these species are:

**Priority 1 Conservation Actions**

- To develop and strengthen cooperative agreements with the USFWS, [Andersen Air Force Base, US Air Force] AAFBUSAF, and Navy to establish/continue nesting turtle monitoring, protect nesting and foraging habitat, and track migrating turtles.
- To facilitate a volunteer nesting turtle monitoring program, "Haggan-Watch," to involve the community in sea turtle conservation.

**Priority 2 Conservation Actions**

- To track resident sea turtles in order to understand their movements around the island and life history.

**6.4.8 Marine Mammals**

The marine mammals that visit Guam's waters have not been studied. Information is limited to sightings, and for some of the dolphin species, rough estimates of pod size and movements are known. The objectives for these species are described below.

**Development of a Public Conservation Awareness Program**

The need to foster an informed population in regard to conservation and the importance of natural resources to the island is critical to the success of any long-term conservation efforts. Guam DAWR and its partners in the GCWCS have identified a lack of public awareness as a priority threat to many of Guam's conservation actions. Guam has experienced success in creating public awareness for coral reef issues through education and outreach local action strategies (EO LAS) developed by the GCRICC. For instance, the Guam Visitors Bureau (GVB) and



the tourism industry are now working with the natural resources agencies to market Guam's coral reefs, and in particular the marine preserves, to the one million visitors that visit Guam yearly. This new awareness of the economic value of our coral reef resources is beginning to create a sense of stewardship in the industry, absent during the economic boom of the 1980s and the recession of the 1990s. The goal of the EO LAS is to increase awareness of the need to protect Guam's coral reefs through improved efforts in the community, in the classroom, and with policy makers.

Other venues for introducing conservation awareness and outreach are the Island Pride Campaign and publications such as *Man, Land, and Sea*. The Island Pride Campaign is a program that combines educational and environmental activities with fun events to teach children to love the island's resources and instill a sense of stewardship. The quarterly publication of *Man, Land and Sea*, which is published through [the Bureau of Statistics and Plans] BSP and inserted in the *Pacific Daily News*, the island's most widely distributed newspaper, is another outlet for public/private education and awareness campaigns. To increase the awareness of the general public and private industry, the following objectives will be implemented:

#### **Priority 1 Conservation Actions**

- To develop, implement, and utilize existing programs to increase public awareness of natural resources and issues pertaining to them.
- To develop outreach campaigns to educate the public and private industry of the value of preserving Guam's wildlife and habitats.
- To develop a plan addressing public awareness and education of conservation issues through websites, posters, presentations, and public service announcements, and to enhance and facilitate public involvement in conservation efforts. Develop a program to install signage and other forms of public outreach in conservation efforts.

#### **6.4.9 Recreation Activities within the Conservation Areas**

The local Conservation Areas that have been established have limited accessibility for the general public. Hunters and off-road enthusiasts are the main users of these areas. The Anao Conservation Area is a wonderful example of what a limestone forest should resemble. However, many individuals do not know about this terrestrial Conservation Area because there are no signs indicating how to get there. The area is mainly used by the hunting community and must be accessed through private lands. By creating more opportunities for the public to experience these areas firsthand, Guam can educate the public and instill a sense of stewardship for its natural resources. Providing greater accessibility by creating trails into and campsites on conservation lands will enable future generations to experience and appreciate the wonders of Guam's natural resources.

The GNWR's visitor center at Ritidian Point provides an opportunity for the public to experience nature and culture. This is the direction Guam should take with the conservation lands established by the government of Guam. To assist in creating recreational activities with local conservation areas, the following objectives will be implemented:

#### **Priority 1 Conservation Actions**

- To allow public access to game species in Conservation Areas.

- To develop signage that identifies Guam's Conservation Areas, highlighting key habitat types, important fauna, geologic formations, and other key aspects of the Conservation Area.

**Priority 3 Conservation Actions**

- To allow compatible uses in Conservation Areas.

**6.4.10 Law Enforcement of Natural Resource Laws and Regulations**

As stated previously, the Department and specifically GDAWR's law enforcement section has the authority to enforce laws and regulations pertaining to the natural resources of Guam. The ability of the Department's law enforcement officers to interdict individuals breaking laws and regulations has been hindered by several factors, including shortfalls in manpower and equipment. By far the greatest obstacle for law enforcement is the public's lack of knowledge of the rules and regulations governing natural resources on Guam. The public must be properly educated as to the laws and the reason for the laws that protect natural resources. To aid in the protection and enforcement of natural resource laws and regulations, the following measures will be implemented:

**Priority 1 Conservation Actions**

- To protect Guam's endangered species and SGCN from illegal harvesting or incidental take by enforcing Guam's natural resource regulations and developing regulations for SGCN not protected under GCWCS Page 179 current regulations.
- To protect Guam's Marine Preserves by educating the public of Guam's natural resource regulations.

**Priority 2 Conservation Actions**

- To create and maintain a volunteer conservation officer program to aid with monitoring activities in Conservation and other public lands.
- To maintain and promote Conservation officer law enforcement skills.

## 7. INVASIVE SPECIES

Guam's ability to effectively prevent the arrival of invasive species, and to detect and eradicate or at least control those that do arrive affects every aspect of life on Guam. The constant threat of new invasive species introduction and the ongoing impact of species that have successfully invaded the island remain a major resource challenge. This challenge will only intensify as demand for imported goods and materials increases with buildup to the greatest volume of cargo in Guam's history. In just the past few months, there have been media reports of new invasive species on Guam, including the Coconut Rhinoceros Beetle and Giant Sensitive Plant. In addition, there have been as many as eight species of frogs introduced to Guam in recent years (Aguon 2008). It is imperative that collaborative efforts address invasive species control be increased substantially on Guam and regionally throughout Micronesia. This effort must involve the following three-pronged approach:

- 1) **Prevention:** As a result of the Guam Buildup there will be a massive increase in military and commercial cargo movement. Steps must be taken regionally to prevent:
  - a. The introduction of new terrestrial or aquatic invasive species to the islands of Micronesia.
  - b. The spread of existing terrestrial and aquatic invasive species, including but not limited to the brown treesnake (BTS), to Micronesian or Hawaiian islands via cargo movement or during military training activities.
- 2) **Detect and Eradicate:** When new invasive species are introduced onto Guam, or any other island, it is critical to find the infestation immediately and to eradicate it. Therefore, an established, coordinated and funded system to detect and eradicate incipient terrestrial and marine invasive species is critical.
- 3) **Control and Management:** When eradication of invasive species is not possible, steps must be taken to minimize and mitigate their impacts, and prevent or slow their spread.

### 7.1 COMMUNITY INTEREST

Guam will benefit from expanded work and new initiatives to address invasive species.

- Every single one of Guam's native bird species have been reduced in numbers or have become extinct from BTS predation. Guam still has an opportunity to accomplish significant restoration gains if BTS control or eradication methods are employed in the near future.
- There is enough economic incentive to dedicate sufficient funding and expertise to effectively eradicate some species and achieve strong control over other species, including BTS. The cost of inspections, management procedures, planning research, and a host of other activities to simply prevent invasive species movement over decades is great enough to signal that a new approach is warranted. By far, the most cost-effective means to deal with invasive species is to prevent their introduction.
- Native bird species provide many important social, economic, cultural, and natural resource values. There are many known but not yet considered invasive species threats



to fragile isolated island ecosystems, so efforts must continue to include invasive species prevention as a high priority.

## 7.2 MANAGEMENT CONTEXT

There are three basic approaches that are used to address the threat and impact of invasive species. The first and best approach is to *prevent invasion*. In many ways, the best defense is an effective offense, which requires that Guam work with other jurisdictions to address risk early and far from its ports of entry. The second approach is to eradicate invasive species quickly before they are able to firmly establish a viable population. This requires that early detection, reporting, and response systems be in place and maintained at high levels of readiness and proficiency. Finally, it is important that invasive species that are being *managed* (i.e., species that are established and are not likely to be eradicated any time soon) be prevented from spreading to other areas. Depending on the species, resources under threat are managed and controlled on a priority basis, as not all invasive species present an equally high risk to natural resources or direct negative economic impacts.

The bulk of the invasive species *prevention* work in Guam is shouldered by the Guam Customs and Quarantine Agency (GCQA). GCQA is responsible for inspecting all cargo and persons entering Guam at all ports of entry. Inspection personnel are trained in a variety of disciplines, including the detection, identification, and reporting of suspected invasive species, with species identification assistance from the Guam DAWR.

Rapid response, containment, and eradication efforts are headed by the DAWR, which partners with a number of Guam and federal agencies and community responders. DAWR is able to bring together response teams for limited periods of time and geographical areas to address new introductions; however, this rapid response cannot be maintained over long periods due to limited resources.

The USDA WS provides expertise and technical and direct assistance to Guam to protect human health and safety, natural resources, and property from damage from wildlife conflicts, including the BTS. Over the past fourteen years, Wildlife Services and cooperating researchers have learned much about the BTS that has been applied to effective protocols and technical approaches to manage the species.

USDA WS cooperates with other federal and Guam agencies such as the USFWS, DAWR, and others to protect and restore native species populations. USDA WS identifies seven major assistance activities that it provides in Guam, including: 1) providing interdiction activities to prevent the inadvertent spread of the BTS to other islands and the US Mainland; 2) protecting endangered species, including the Mariana gray swiftlet, Mariana crow, and Mariana fruit bat; 3) undertaking BTS control for species restoration over large tracts of land designated for reestablishing the Guam rail and Micronesian kingfisher; 4) protecting Guam's power system, including control at 17 individual transmission and distribution substations island-wide; 5) conducting surveillance of migratory birds for avian influenza; 6) providing wildlife hazard management activities to prevent birds from striking aircraft; and 7) protecting human health and safety and improving residents' quality of life from BTS impacts. In addition to these major activities, the USDA WS provides ongoing research into BTS trap design and trapping strategies, oral toxicants, and artificial attractants, among others (USDA 2008).

*Island-wide BTS Control* - There is no comprehensive BTS control and management effort on an island-wide scale. Much attention is being given to Guam as the federal government invests in moving military personnel and all of the long-term sustainment services. The opportunity to substantially control BTS over large portions of the island may exist in the context of a massive civilian and military buildup. Guam's invasive species stakeholders should consider how the total investment for the Guam Buildup can be tapped to support an island-wide BTS control project.

In summary, invasive species are managed by Guam and federal agencies as follows:

- DAWR manages endangered species recovery and conservation and provides limited BTS control activities aimed at protecting endangered species;
- USFWS is responsible for all refuge activities at Ritidian Point;
- USFWS Ecological Services in Honolulu manages much of the permitting and process management aspects of wildlife management;
- USGS BRD in Guam conducts research into a natural history approach to BTS control;
- USDA WS in Guam undertake BTS control for species restoration as well as preventing the spread of this species to other locations via Guam's international and domestic transportation system. USDA WS also has a research arm conducting research into control methods; and
- USFWS and National Marine Fisheries Service, NOAA have special agents that are available to enforce federal marine resource and fish and wildlife laws.

### 7.3 GOALS AND CONSERVATION ACTIONS

#### **Invasive Species Goal 1**

Provide enhanced inspection and quarantine facilities and personnel capacity at all Guam ports of entry to accommodate peak passenger, baggage, air, and surface freight volumes over the Guam Buildup period of development.

#### **Conservation Actions**

- Conduct assessments of existing port facilities and determine operational design requirements to support enhanced inspection and quarantine activities for Guam Buildup demand. Proposed new facilities are delineated in the Commercial Port of Guam Master Plan Update Report (PAG 2008).
- Extend the existing program or develop a new cooperatively funded program to cover the initial capital improvements, staffing, and operational requirements of enhanced inspection and quarantine facilities.
- Hire inspection and quarantine personnel, including additional wildlife biologists and invasive species experts, to manage port of entry facilities and provide technical support.

#### **Invasive Species Goal 2**

Permanently establish a core Regional Invasive Species Rapid Response Team program that can be augmented through mutual assistance agreements with other Guam, other Micronesian political entities, federal resource agencies, private industry, and NGOs.



**Conservation Actions**

- Create a small crew of full time employee to form the core of an early detection/rapid response team.
- Modify job descriptions of inspections, agriculture, and other GovGuam employees to include response team duties. If necessary, reclassify critical positions and/or provide for hazard and other premium compensation incentives.
- Develop interagency agreements between federal, Guam, and other Micronesian resource agencies for expanded response requirements based on appropriate skill sets of key personnel and/or provide necessary basic training to develop capacity.
- Develop agreements with NGOs to provide technical support to response teams.
- Provide response equipment and supplies, including trained detection dogs where appropriate, to lead response agencies.
- Develop a response team model for regional invasive species organizations and partner countries and organize regional training to further enhance response effectiveness.

**Invasive Species Goal 3**

Continue efforts to formalize agreements and protocols with cooperating organizations such as the Guam Invasive Species Council (GISC), the Micronesian Regional Invasive Species Council (RISC), the Pacific Invasives Learning Network (PILN), and the Secretariat of the Pacific Regional Environment Program (SPREP) and others, to address Pacific-wide invasive species issues and activities.

**Conservation Actions**

- Provide funding support for regional meetings, workshops, training, and other capacity-sharing/building activities.
- Provide funding for developing and maintaining a Micronesia Invasive Species Web site to provide a forum for invasive species education, awareness, and networking.
- Explore funding for regional activities through international donor organizations, U.S. Federal grants and elsewhere.
- Work with partners to develop a Micronesian regional invasive species early detection and rapid response team and protocol.
- Work with partners to develop a harmonized regional invasive species biosecurity policy.
- Develop a Guam Invasive Species Management Plan specifying implementation activities in pursuit of effective prevention, early detection, assessment, and rapid response, control and management, and organizational collaboration. Such a plan would be fully complimentary to and compatible with the aforementioned regional plans and policies.



## 8. MARINE PRESERVES

### 8.1 MANAGEMENT CONTEXT

Guam's Marine Preserve system was established in 1997 and includes five preserves—Tumon Bay, Piti Bomb Holes, Sasa Bay, Achang Reef Flat, and Pati Point. A significant decrease in fish stocks and species was the primary reason for establishing the preserves. The overall conservation approach for preserves is to set aside areas of adequate size and habitat structure to serve as safe refuge for fish so as to increase reproduction and ultimately have fish move from preserves to areas outside of the preserve system. Marine preserves are managed for limited fishing activities, mainly for cultural take in three of five preserve areas. The Pati Point Marine Preserve is the largest of the five preserves at approximately 4,900 acres of reef environment.

Public support for the preserves has been strong, although certain special interest groups such as fishermen and commercial and public marine recreation enthusiasts have voiced concerns over the decrease in access to marine resources. Fishermen are concerned about diminishing access to fishing grounds, pollution, and insensitivity to cultural and traditional fishing practices and the needs of subsistence fishing. Two recent meetings, one in Merizo in January 2008 and another in Hagåtña on March 8, 2008, were organized to provide a forum for the fishing community to express concerns about fisheries, marine preserves, and related issues.

Commercial operators desire access for special events and cite the need to support economic growth through tourism as a key concern. There is a perception that when the marine preserves were established, fishermen were disproportionately impacted and that in some cases non-fishing interests began to reap additional benefits from the system. Fishermen benefit mainly from harvesting fish, and marine preserves severely restrict this activity. Commercial activities, especially tourism-related activities, were not similarly restricted when marine preserves were establishment. In one case, a commercial event was permitted in the Tumon Marine Preserve even though it was incompatible with marine preserve management objectives. Tumon has become a major snorkeling asset and showcase marine preserve because fish stocks are very high, which again benefits tourism but does not directly benefit fishermen. Finally, there is the issue of pollution. The perception is that those who contribute the most pollution to nearshore waters are often the same commercial interests that benefit directly from the marine preserves.

Resource managers recognize the importance of using integrated management strategies when managing the preserves. Marine preserves will ultimately be successful if there is a balance of use pressure rather than a simple displacement of pressure from marine preserves to adjacent areas. The current view is that a comprehensive marine resource management approach should include at least three key components: 1) public policy requiring a special use recreational permit system to accommodate commercial events and uses in the Tumon Marine Preserve; 2) managing marine preserves to allow for limited sport or cultural fishing; and 3) developing additional fishing regulations for all areas that would allow fishing through special use permits to balance commercial and conservation interests. Increased pressures from population growth necessitate a broader perspective and approach to fisheries and marine preserve management, including the continuing need to foster good stakeholder relations.

Major challenges to marine preserve management include limited ability to enforce marine preserve rules for lack of 1) personnel, 2) a dedicated vessel, 3) sustainable funding, and 4) follow through with prosecution. Having the authority to issue field citations would be a useful and powerful tool because it would be easy to implement and would quickly send the enforcement message to violators (Gutierrez undated).

Controlling land-based sources of pollution is also a major challenge. Sedimentation, stormwater from developed areas, and wildfires have the potential to increase pollution loading in marine preserves. Recreational impacts or direct damage to coral by users is also a concern. Finally, the overarching and constant challenges of hiring and retaining technicians and managers impacts marine preserve management effectiveness (Gutierrez 2008). The government of Guam personnel system, including compensation and retention incentives, are inadequate to meet resource agency staffing needs. Pay levels for most natural resource positions in the government of Guam have not been adjusted for more than 15 years.

## **8.2 COMMUNITY INTEREST**

Marine preserves provide a range of benefits for fisheries, local economies, and the marine environment in general. The major benefits include conservation of biodiversity and ecosystems; abating and possibly reversing the global and local decline in fisheries and productivity by protecting breeding, nursery, and feeding habitats; elevating the public profile of an area for marine tourism and expanding opportunities for local economic growth; providing opportunities for education, training, and traditional and cultural practices and expression; and providing long-term benefits as reference and baseline research sites (Kenchington et al. 2003).

## **8.3 GOALS AND CONSERVATION ACTIONS**

### **Marine Preserve Goal 1**

Develop and implement Marine Preserve Recreational Use Permit System for all Marine Preserves in accordance with Public Law 27-87.

### **Conservation Actions**

- Draft regulations for the Marine Preserve Recreational Use Permit System have been reviewed by the Attorney General (AG). The next task involves identifying uses that will be permitted. The Department of Agriculture will develop the list of permitted uses.
- Harmonize regulations with the Guam Seashore Reserve Protection Plan.

### **Marine Preserve Goal 2**

Develop and implement new comprehensive fishing regulations for all nearshore fisheries, outside the established MPs, with authority to issue field citations.

**Conservation Actions**

- Develop comprehensive fishing regulations and seek public comment. Ensure that fishing license fees are assessed to cover operational costs and are managed through a special non-lapsing fund account.
- If capacity limitations impede development of draft regulations, consider obtaining contractual services to accomplish this task.
- An education campaign should be developed and implemented to accompany the fishing regulations.
- Harmonize regulations with the Guam Seashore Reserve Protection Plan.

**Marine Preserve Goal 3**

Conduct a Limits of Acceptable Change (LAC) analysis of marine preserves and make recommendations for marine preserve management.

**Conservation Actions**

- Contract for an LAC study to guide marine preserve policy modifications. The LAC must have a strong public participation element.
- Seek appropriate amendments to Public Law 24-21 based on the LAC planning process.
- Develop and implement a user/public information campaign to inform and educate marine preserve users.
- Coordinate marine preserve use and management with the Guam Seashore Reserve Protection Plan.



## 9. IMPACT MITIGATION

A compensatory natural resource mitigation policy is needed to guide mitigation planning, design, implementation, and long-term project management. Mitigation is required for unavoidable development impacts to natural resources, primarily coral and wetlands; however, similar emphasis is needed for other marine, terrestrial, and fresh water resources. Compensatory mitigation is also required when resources are damaged accidentally or as a result of negligence.

### 9.1 MANAGEMENT CONTEXT

Local and federal resource agencies have been working over the past few years to improve the effectiveness of impact assessment and mitigation at the project level. The use of Habitat Equivalency Analysis (HEA) to determine appropriate compensatory mitigation for coral reef impacts is favored by local agencies. The Navy and government of Guam entered into a cooperative agreement addressing Kilo Wharf impact mitigation plan. The final agreement is provided in Appendix 4. The U.S. Army Corps of Engineers (USACE) permit for this project will be issued when the agreement is in place. The Navy was initially hesitant to commit to long-term programmatic-based mitigation mainly due to project funding limitations. Similar buy-in, implementation, and long-term commitment issues will likely be encountered when local government and private sector stakeholders are required to meet the same standards. The Kilo Wharf project success is an important compensatory mitigation milestone for Guam.

The USACE has developed a new rule *Compensatory Mitigation for Losses of Aquatic Resources*, which came into affect on April 10, 2008 to guide mitigation across the nation. The new rule improves and consolidates compensatory mitigation guidance from several federal agencies under the Clean Water Act Section 404 regulatory program. Two other significant components of the rule are that; 1) mitigation plans addressing twelve fundamental components are required; and, 2) a preference hierarchy for mitigation is established for mitigation banking first then in-lieu fee program credits, and finally permittee responsible mitigation.

Resource agencies anticipate the need for a Guam Compensatory Mitigation Policy and the promulgation of mitigation rules that would be administered by local resource agencies. It is anticipated that the policy would add to federal requirements to address local conditions and priorities for resource management. A Guam Mitigation Policy is a policy that will apply to all sectors of the regulated community the way the federal CWA regulatory program applies to all. The discussion here focused on Navy efforts to mitigate impacts largely due to the scope of the Kilo Wharf project and projects anticipated through 2014 to accomplish the military buildup but the same issues will arise with civilian project as well.

The clear trend nationally is to improve the effectiveness of planning for and implementing compensatory mitigation and Guam will be at the forefront nationally as a direct result of the Guam Buildup.

### 9.2 COMMUNITY INTEREST

- Mitigation ensures that the community receives reasonable consideration for the unavoidable loss of living resources.

- A CMP should require that projects be treated consistently with regard to the scientific basis and management approach to decision making, that methods can be replicated, and that opportunities are provided to systematically monitor and evaluate success.
- A CMP will clearly establish long-term interest in sustainable resource management and provides a basis for long-term commitments of funding and expertise from responsible stakeholders.
- Guam is too small to accommodate strict separation along jurisdictional boundaries when planning mitigation. The community will benefit when federal and local management is efficient and synergistic across jurisdictional boundaries.

### 9.3 GOALS AND OBJECTIVES

#### **Mitigation Goal 1: Develop a Guam Compensatory Mitigation Policy**

Develop a Compensatory Mitigation Policy by December 2008. The policy will address all aspects of an effective multi-agency approach to mitigation, be compatible with existing federal policies, and address Guam's unique resource management challenges.

#### **Objectives**

- **Mitigation Memorandum of Understanding (MOU)** – Local and federal resource agencies should jointly draft a Guam Mitigation MOU to guide activities until such time as permanent rules are in place. Federal/Guam MOUs are few, especially in the areas of environmental protection and resource management, despite mandates to work cooperatively. The Sikes Act, Clean Water Act, Endangered Species Act, and Executive Order 13089 on Coral Reef Protection all include provisions for sustained close working relationships between federal and local stakeholders and compliance with local requirements. A good example of an instrument that meets a number of the mitigation objectives is the pending cooperative agreement between the Navy and the government of Guam from Kilo Wharf development impacts.
- **Guam Mitigation Policy** - The GCMP, with support from other natural resource agencies, should draft a Guam Mitigation Policy. In order for the policy to have both immediate relevance to and sustaining influence on local resource management efforts, it must achieve two broad purposes. First, the policy must contain all fundamental elements of contemporary mitigation management. It must communicate that mitigation appropriately addresses impact problems, provides a means to correct or remediate damage, is cost effective, can be consistently and systematically implemented for a variety of resource types, and identifies responsibility and accountability for impacts. Second, the policy must include all of the essential management measures, mitigation protocols, and methods to implement mitigation work. In as much as policy can be considered a forerunner to formal rules, action-oriented provisions are critical.

Policies are typically not enforceable except to the extent that they effectively backstop executive decision-making. Executive decision making can have an important influence and direct bearing on requirements for development plan approval, use or development permitting, access to project financing, and similar management controls.



The initial mitigation policy should include provisions to require basic mitigation for all resources of concern, and in the case of coral reefs and wetlands, it should include detailed mitigation management measures and protocols. Subsequent policy updates could add detailed mitigation requirements for other resources of concern.

- **Mitigation Banking** – The GCMP should initiate an interagency mitigation banking task force to determine the feasibility of developing various types of mitigation banks for Guam. There may be significant benefits from the development of a government of Guam mitigation bank, which might be operated by a NGO or as a public-private partnership venture.

Following is an explanation of mitigation banking taken from the US Environmental Protection Agency Mitigation Banking Fact Sheet (USEPA 2008c):

A federal interagency mitigation bank working group developed Federal Guidance on the Establishment, Use, and Operation of Mitigation Banks in 1995. The 1995 Banking Guidance provided an institutionalized program for the use of this emerging method of offsetting impacts to wetlands and other aquatic resources authorized under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The guidance gave state agencies, local governments, and the private sector the regulatory certainty and procedural framework they needed to move forward on seeking approval to operate mitigation banks. Following its issuance, banks proliferated across the country and became a mainstream compensatory mitigation option.

A mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or (in certain circumstances) preserved for the purpose of providing compensation for unavoidable impacts to aquatic resources permitted under Section 404 or a similar state or local wetland regulation. A mitigation bank may be created when a government agency, corporation, nonprofit organization, or other entity undertakes these activities under a formal agreement with a regulatory agency. The 1995 Banking Guidance established a structure for banking that is characterized by four distinct components:

- The bank site: the physical acreage restored, established, enhanced, or preserved;
- The bank instrument: the formal agreement between the bank owners and regulators establishing liability, performance standards, management and monitoring requirements, and the terms of bank credit approval;
- The Mitigation Bank Review Team (MBRT): the interagency team that provides regulatory review, approval, and oversight of the bank; and,
- The service area: the geographic area in which permitted impacts can be compensated for at a given bank.

The value of a bank is defined in “compensatory mitigation credits.” A bank’s instrument identifies the number of credits available for sale and requires the use of ecological assessment techniques to certify that those credits provide the required ecological functions. Although most mitigation banks are designed to compensate only for impacts



to various wetland types, within the past five years, banks have been developed to compensate specifically for impacts to streams (i.e., stream mitigation banks).

Mitigation banks are a form of third-party compensatory mitigation, in which a party other than the permittee assumes the responsibility for compensatory mitigation implementation and success. This transfer of liability has been a very attractive feature for Section 404 permit-holders, who would otherwise be responsible for the design, construction, monitoring, and ecological success of a compensatory mitigation site for a minimum of five years, in addition to ensuring the site's long-term protection.

Coral mitigation banking is another bank type that could have significant value/utility given the need to mitigate Navy, Port and private marine development coral impacts and to maximize opportunities for direct in-kind mitigation. In all likelihood the government would own such a bank and could elect to outsource operations to private interests and or work with NGOs to operate the bank. The primary mitigation type might involve setting aside marine areas as new conservation areas.

## 10. MONITORING PROTOCOLS

### 10.1 MANAGEMENT CONTEXT

Mitigation monitoring protocols, primarily for marine resources, are necessary to ensure that mitigation objectives are met through agreed procedures and methods, from mitigation design to monitoring plan implementation. These protocols should be developed at the earliest possible date to manage existing and near-term projects. Although monitoring standards exist to track and evaluate reef (coral and fisheries) mitigation effectiveness, Guam natural resource agencies desire to formalize procedures and methods for the duration of the buildup and beyond. Procedures for modifying protocol will be an integral part of the protocol as lessons learned emerge.

Various monitoring methods and plans have been and continue to be developed for marine and other projects requiring permits in Waters of the United States and Guam. For the most part, individual efforts have been good, and much useful information has been obtained. *The main objective of a unified Marine Mitigation Monitoring Protocol should be to monitor and track the implementation of compensatory mitigation actions so the adequacy of coral reef mitigation efforts can be determined* (Bentivoglio 2003).

A number of coral mitigation projects were initiated in Guam. Some of the better-documented projects include the US Navy Ammunition Wharf in Outer Apra Harbor (USN 1984), Pacific Underwater Observatory (PBEC 1995), and Tepungan, Piti Cable Landing (Environmental Services 2001). The most recent major mitigation project stems from the Kilo Wharf extension project's impacts to coral in Outer Apra Harbor. The mitigation plan approval includes specific conditions on monitoring protocols. In 2003 Antonio Bentivoglio compiled a report on compensatory mitigation for coral reef resources in the Pacific. The report outlined a number of key recommendations to improve mitigation project planning, design, implementation, and monitoring.

Mitigation and monitoring of project impacts is governed by federal law, regulations, and policies and by various guidance memoranda. Most impact mitigation or restoration objectives are derived from a complex set of mandates and related federal permit system requirements. The main federal mandates and requirements flow from Section 404 of the 1972 Clean Water Act, subsequent versions of Section 404 (b)(1) guidelines (USEPA 1975), 1969 NEPA, 1978 National Marine Fisheries Service Habitat Protection Policy (NMFS 1978), 1981 US Fish and Wildlife Service Final Mitigation Policy (USFWS 1981), 1990 Memorandum of Agreement (MOA) between USEPA and the US Army Corps of Engineers (USACE or Corps) on mitigation under Clean Water Act Section 404 (b)(1) guidelines (USEPA and USACE 1990), 1998 Executive Order 13089 (EO 1998), and 1999 USACE and USEPA memorandum to the field on coral reef protection under various federal statutes and project authorities, among others.

Various Guam natural resource agencies participate in and are a part of the federal regulatory permitting systems and policy and guidance programs. Major federal actions require Federal Consistency Determinations through the GCMP; water quality certifications for Section 404 permits are administered by the Guam EPA; historic preservation clearances are provided by the Guam Historic Preservation Office (HPO) and State Historic Preservation Office (SHPO); and consultation with DAWR is required for projects with potential impacts on sensitive, threatened,

and endangered species. More importantly, these Guam natural resource agencies are effectively networked with federal natural resource and trustee agencies, which results in a strong partnership approach to impact assessment review, permit clearances, certifications, and ultimately mitigation planning and implementation monitoring.

A related monitoring initiative known as the Guam Comprehensive Long-Term Monitoring Strategy is underway. This initiative is headed by a stakeholder monitoring group that includes government, NGO, and academic interests.

The primary goals of the Guam Comprehensive Long-Term Monitoring Strategy are to determine the status of and track trends in selected coral reef ecosystem indicators to better inform the resource managers' decision-making process and to increase the effectiveness of natural resource management on Guam. The program aims to detect change in the range of 10 to 25 percent in key indicators at a number of sites around Guam. When abnormal change occurs at this level, resource managers should be prompted to develop effective mitigation actions to address the potential for adverse consequences. Early detection and action also offers opportunities to reduce the overall costs of management. The program will employ a hierarchical approach to address changes in reef systems, whereby first-tier monitoring would trigger secondary investigations to establish stronger correlation and causation. The monitoring program will provide important data to better understand the dynamic nature and condition of the island's coastal ecosystems, which will also enable managers to measure progress towards performance goals.

Priority candidate monitoring sites include Tumon Bay, Piti Bay, and sites in Apra Harbor, with a goal of establishing 20 monitoring sites. Critical management issues and questions that should be addressed include, but are not limited to: 1) determining the impacts of existing and future coastal development on nearby coral reef resources, 2) determining the project-specific construction impacts related to the Guam Buildup, 3) determining the impacts of management efforts such as watershed restoration on coral reef resources, 4) determining the capacity of marine preserves to support a greater abundance/biomass, and 5) determining the diversity of fishes and benthic communities compared to similar non-protected areas and other preserve functions. A number of other aspects of marine resource management issues will also be explored.

In order to make progress, the program must be built on a framework that will facilitate the development and implementation of management actions as opposed to simply documenting resource mortality. The program's relevance and effectiveness will depend on establishing an island-wide network of long-term monitoring sites and use of a broad range of resource information, including land use, hydrological, climatological and meteorological, socioeconomic, and other data that can be compiled into a geographically referenced database of monitoring data and relevant references. Program data will be efficiently reported and conveyed in real time about current reef status and change. Program data will be used to develop technical reports describing change and to provide recommendations for management action (Burdick 2008).

## 10.2 COMMUNITY INTEREST

Resources, particularly those in the public domain, must be managed for long-term benefits and sustainability. Good monitoring leads to good stewardship and accountability, which should



ensure that Guam achieves mitigation goals and is not short-changed because it lacks basic information to measure success. Good monitoring also results in useful information for future projects and future generations of scientists. Current managers should strive to pass on accurate and comprehensive information and a legacy that documents a strong interest in sustainability.

Mitigation ultimately leads to benefits, and some of those benefits can quickly result in improved or expanded opportunities and services to resource users.

### 10.3 GOALS AND CONSERVATION ACTIONS

#### **Monitoring Protocol Goal 1:**

Develop a Marine Monitoring Protocol to guide all manner of marine monitoring, to include project mitigation, research, and marine preserve monitoring.

#### **Conservation Actions**

- Develop a Marine Monitoring Protocol using available policies and guidance and employing scientific methods and procedures from federal and local natural resource agencies and research entities. The protocol can be developed by natural resource agencies under various existing working groups, including the Guam Coral Reef Monitoring Group or accomplished under contract with oversight by an appropriate stakeholder group. This conservation action should be undertaken and completed no later than January 2009.

#### **Monitoring Protocol Goal 2:**

Continue the development of the Guam Comprehensive Long-Term Monitoring Strategy.

#### **Conservation Actions**

- Develop the Guam Comprehensive Long-Term Monitoring Strategy under the guidance of the Guam Coral Reef Monitoring Group to build a framework for monitoring that can be initially implemented under a pilot effort by no later than January 2010 to begin gathering data on marine resource impacts.

## **11. AGENCY CAPACITY**

### **11.1 MANAGEMENT CONTEXT**

Natural resource agencies do not currently have the capacity to manage or effectively oversee the Guam Buildup, and a significant change in this regard is not anticipated without fundamental human resource management reform or executive direction making recruitment and retention a top priority of the government of Guam. This capacity issue has been stated consistently over the past year and a half. The private sector can fill some of the capacity shortfalls and gaps through consulting services, but agencies must be prepared to provide additional personnel and time to administer contracts, including working with the contractors, monitoring progress, and ensuring projects are completed accordingly. Presently, agency personnel are fully engaged in routine work, with resources and staffing patterns that reflect years of slow economic growth, inadequate budgets across government, and loss of staff and recruiting difficulties for key technical and program management positions.

Recruiting the best qualified permanent or temporary personnel will be challenging, because agencies have to find ways to compete with federal and private-sector jobs. As the buildup approaches, new civil service positions will be very attractive to career job seekers because federal jobs offer substantially higher compensation and equal if not better benefits packages than does the government of Guam. Similarly, private-sector jobs will be attractive to younger job seekers, especially those coming out of college because wages are higher and private employers can offer the widest range of incentives and benefits to the best-qualified natural resource professionals. Finally, it is worth noting that the government of Guam has adjusted pay scales on a piecemeal basis in job classifications that provide essential services, including healthcare workers, educators, public safety personnel, and select engineering and technical positions at various utility agencies. Pay for biologists, planners, chemists, environmental health specialists, other engineers, and associated technical positions in the government of Guam have not been adjusted since 1991. An individual with a Bachelor of Science degree in biology seeking an entry-level biologist position would receive \$24,656 per annum (\$11.85/hour).

Ideally, resource agency capacity needs should be met at the outset of a major development boom. Unfortunately, adequate funding is often unavailable for up to three years after major development commences. Capacity will likely only be met through subsidies or unique short-term stopgap management methods. There are pitfalls to guard against when this mode of management prevails, as stopgap measures can result in compromises that result in greater resource impacts than at any other time during a period of high growth. Some resources will suffer from diminished management effort, and other resource protection objectives will fade from the mainstream of activity as priorities shift. Another potential pitfall associated with stopgap and crisis management occurs when certain procedures set precedence and persist long after originally intended. Policy should clearly delineate when to transition back to comprehensive review and decision-making procedures by government agencies.

As with most development cycles, government revenue from increased economic activity lags behind the immediate demand on government managers and technical staff for development proposal review and approval. This problem can be attributed partly to the fact that a smaller percentage of project costs are associated with feasibility planning, design, and permitting; front-end development costs are typically less than 10 percent of total project costs.

The government of Guam has not kept pace with contemporary public sector contracting methods. Many of the standard contracting methods and administration practices could be made more flexible and responsive to agency needs. One example is the very common use of Indefinite Delivery, Indefinite Quantity (IDIQ) contracts by the federal government to acquire services. This contracting method is advantageous when the exact quantity or delivery dates are not initially known. In addition, IDIQ contracts are flexible with respect to both quantities and delivery scheduling and when services need to be ordered only after actual needs are known. Acquisition involves the issuance of individual Task Orders to perform work during the period of the IDIQ contract, which is usually multi-year (USDA 2008). IDIQ contracts can be either single or multiple awards. In the case of multiple awards, the IDIQ method tends to force a lowering of cost overall, as award holders compete for Task Orders.

### 11.2 COMMUNITY INTEREST

At the local level, the community depends on the government of Guam to be the main source of natural resource expertise and stewardship. If capacity is inadequate to properly manage resources in held in public trust, then few options exist outside of federal agencies with overlapping jurisdiction. Compensatory mitigation and restoration activities are the last options for addressing development impacts. The preferred approach to management is to prevent impact and degradation. It also tends provide higher economic value per management effort. It's not likely that the residents of Guam will accept an approach to the Buildup that defers relegates management largely to restoration.

Appropriate and responsive natural resource management will lead to better development decisions and activities. Failure to address major issues appropriately and in a timely manner could increase legal risks, slow development, and build animosity among stakeholders that will be difficult to overcome for years as issues of trust and credibility impede good management.

### 11.3 GOALS

#### **Agency Capacity Goal 1**

One of the first steps in securing an increase in fee-based revenue is to provide the proper basis and justification. It's recommended that proposals be supported by cost of service studies of natural resource programs.

- There are two possible approaches to accomplish this goal. Agencies could obtain an appropriate study methodology and conduct the study in-house or they could hire a management consulting company to conduct the study.

#### **Agency Capacity Goal 2**

Continue to pursue new funding directly linked to military development plans.



- The Governor's Office through the CMTF should continue to develop and refine needs assessment information for submission to the IGIA, Regional forums and to Congress for inclusion in federal budgets.

**Agency Capacity Goal 3**

Fill critical natural resource technical and supervisory positions.

- Natural resource agencies should develop a collaborative strategy for recruiting critical positions. Agencies could share information about possible hires and develop a cross-agency mentoring and training program and similar efforts that will increase recruitment success rates and orient new hires into the natural resource family. The strategy should be developed by June 2008 and implemented immediately.

**Agency Capacity Goal 4**

Develop scopes of services for professional services contracts and draft legislative language for Indefinite Delivery, Indefinite Quantity (IDIQ) and other innovative methods.

- Resource agencies should collaborate on developing essential contract scopes of work and task specifications for multi-year contracts. Likewise, federal General Service Agency (GSA) regulatory language is available to draft proposed IDIQ legislation or regulatory amendments to the Guam Procurement Law (5 GCA, Div 1, Chapter 5). Contemporary procurement methods are available for consideration.

**Agency Capacity Goal 5**

Develop a reimbursable Defense-Guam memorandum of agreement program to dedicate resources to DoD projects.

- Resource agencies should propose using a MOA framework for accomplishing Guam-delegated regulatory responsibilities related to Defense projects. If the DoD concurs, the resource agencies should draft a Defense-Guam Memorandum of Agreement (DGMOA) modeled after the Defense-State Memorandum of Agreement (DSMOA) for Superfund, Formerly Use Defense Sites (FUDS) and similar programs (USEPA 2008b and GEPA 2000). The Guam Attorney General should provide legal services to complete and negotiate the agreement.

## 12. HISTORIC PRESERVATION

### 12.1 MANAGEMENT CONTEXT

It will be a significant challenge to continue to achieve broad-based cultural awareness and protection of historic resources while the island undergoes large-scale development. In order to promote the island's culture and rich history, the Guam Historic Preservation Office of the Guam Department of Parks and Recreation initiated and provided oversight for the development of *A Comprehensive Historic Preservation Plan for Guam* (GDPR 2007). The plan takes preliminary Guam Buildup information into consideration with the recognition that the buildup will require construction activity and population expansion on a scale not experienced in Guam's history. The plan identifies five key preservation goals that must be attained or substantially advanced in order to achieve an appropriate preservation-development balance for the community. The plan's goals will not be met without a significant and sustained collaborative effort between various preservation stakeholders, including government, NGOs, individuals, business, the military, and developers. If approached strategically, there should be opportunities to significantly enhance historic preservation efforts and promote cultural awareness, even in the midst of the buildup.

### 12.2 COMMUNITY INTEREST

The benefits of historic preservation come in many forms—the greatest of which is always education. Benefits also accrue to both public and private sectors. Historic preservation safeguards a community's heritage, so it will be available to future generations for community enjoyment and educational activities. Preservation can also serve communities in the following ways:

- Preservation will stabilize and even enhance property values and strengthen local economies.
- Conservation and maintenance of historic resources and scenic areas fosters civic beauty and community pride.
- Historic preservation can be part of an economic strategy to improve business opportunities throughout a community and region.

In addition to these public benefits, the following advantages accrue to individual property owners when historic resources are preserved:

- In addition to stabilizing property values, historic designations can offer financial incentives to owners who actively rehabilitate and maintain their historic property. Some states offer income tax credits for a percentage of the costs of approved restoration work on a designated historic property or a property located within a designated historic district.
- Because Guam's tax code mirrors the federal code, it should be possible to obtain the same incentive, at approximately 20 percent; however, the credit usually only applies to income-producing residential, commercial, and industrial properties. The Guam Historic Preservation Office or the Preservation Assistance Division, National Park Service should be able to provide more information about this incentive.

- There are some public and private grant and loan funds targeted to designated historic properties for their stabilization and restoration. Because of the changes in the federal laws in recent years, the bulk of the federal and corporate-foundation money for historical restoration is only available for structures that are on historical registers and that are operated with non-profit 501 (c) foundations.

### 12.3 GOALS AND PRESERVATION ACTIONS

Listed below are five historic preservation goals and associated objectives supported by SHPO.

|                                                                                                                                                                                                                                                                                                                                                                                    |
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| <p><b><u>Goal 1: Identify, evaluate, and nominate historic properties</u></b></p> <ul style="list-style-type: none"> <li>• Identify historic properties on Guam.</li> <li>• Evaluate the importance of historic properties to the history of Guam.</li> <li>• Nominate historic properties to the National (NRHP) and Guam (GRHP) Registers.</li> </ul>                            |
| <p><b><u>Goal 2: Protect and preserve historic properties</u></b></p> <ul style="list-style-type: none"> <li>• Strengthen local laws and enforcement against destruction of historic properties.</li> <li>• Assess and maintain the physical conditions of historic properties.</li> <li>• Pursue community partnerships to preserve historic properties.</li> </ul>               |
| <p><b><u>Goal 3: Invigorate the public and empower communities to preserve cultural resources</u></b></p> <ul style="list-style-type: none"> <li>• Promote awareness of preservation issues.</li> <li>• Invigorate communities to be involved with historic preservation.</li> <li>• Provide guidance and tools to empower communities.</li> </ul>                                 |
| <p><b><u>Goal 4: Establish strong partnerships</u></b></p> <ul style="list-style-type: none"> <li>• Promote creative funding and sharing of resources between agencies.</li> <li>• Incorporate historic preservation at the land use decision level.</li> <li>• Partner with communities to take action in preservation.</li> </ul>                                                |
| <p><b><u>Goal 5: Improve efficient retrieval of information for research and distribution</u></b></p> <ul style="list-style-type: none"> <li>• Improve access to existing storage and research facilities.</li> <li>• Improve the database and inventory of existing historic properties.</li> <li>• Streamline review processes for cooperating agencies and partners.</li> </ul> |

#### **Preservation Actions**

The following Action Plan elements were taken with permission from the Comprehensive Historic Preservation Plan for Guam 2007-2011 (CHPPG). Minor formatting changes have been made to integrate the plan with this strategy.

Guam SHPO has outlined five ongoing goals to guide Guam's preservation community. Each goal has tangible action items that may be implemented or accomplished within the next five years. Local and federal agencies are not the only organizations that can take action. This plan shares the responsibility of historic preservation with the community and lists actions for non-governmental groups and organizations to take.



**Goal 1: Identify, evaluate, and nominate historic properties.**

***Agency Actions***

**Implement an identification project.**

Develop strategies to update the physical conditions and preservation treatment of historic resources that have been altered due to vandalism, rehabilitation, or natural disasters. Compile Guam SHPO files of documents and surveys to update inventory of properties.

**Seek funding for historic context studies.**

Seek funding for context studies and technical assistance from military, religious groups, various cultural groups, and other industries which were historically associated with particular contexts.

**Distribute historic context.**

Update and publish historic contexts of Guam and distribute to universities, research centers, and the public.

**Continue to nominate historic properties.**

Continue Guam SHPO's focus in preserving historic properties and registering historic sites. Encourage federal agencies such as the DoD, USFWS, and NPS to formally nominate properties on federal lands.

**Focus National Register/Guam Register nominations on under-represented historical context sites.**

Develop strategies to focus identification, evaluation, and nomination of properties in under-represented context areas.

***Community Actions***

**Identify and nominate historic properties.**

Equip communities in the aspects of identification, evaluation, and nomination by providing training. Support historic district organizations in their efforts to preserve historic properties.

**Use guidelines provided by local agencies such as Department of Chamorro Affairs to identify Chamorro cultural artifacts and sites.**

Encourage CRMs who study and write about Guam's Chamorro to use the guidelines to authenticate Chamorro cultural artifacts and sites.

**Goal 2: Protect and preserve historic properties.**

***Agency Actions***

**Strengthen laws.**

Review, develop, and strengthen laws and regulations relating to destruction, vandalism, and looting of historic objects and properties, and preservation of historic properties. Currently, agencies are not held accountable for the loss or damage of historic resources, and vandalism cases are not vigorously pursued. The Guam SHPO should have access to legal counsel for special project purposes to develop model ordinances, guidelines, and case laws for updating or amending existing laws.

**Strengthen enforcement.**

Hire additional and train DPR enforcement personnel. Hire "Historic Rangers" trained in historic preservation and enable them to investigate violations and arrest violators.

**Require contractors to be certified in historic preservation.**

Work with Guam Contractor's Licensing Board (CLB) to certify that all contractors are aware of local historic preservation laws. Contractors would be required to sign a "Declaration and Acknowledgement" every renewal period stating they are aware of and would abide by Guam historic preservation laws. Guam SHPO shall maintain a database of all certified contractors. When a construction project comes to Guam SHPO for building permit clearance, the process shall include clearance of the contractor's "Declaration and Acknowledgement."

**Utilize land swaps for properties rich in historic and cultural value.**

Exchange private property containing historic or cultural sites for other government of Guam parcels ready for development.

**Develop disaster management plans.**

Prepare preservation disaster management plans. Prepare repair and restoration manuals for the treatment of historic structures in tropical climates.

**Educate boards, councils, and commissions.**

Keep elected and appointed officials informed of preservation projects and activities. Inform them of the benefits preservation brings to the community.

**Utilize signage to protect historic resources.**

Expand the historic signage program. Continue to fund and install interpretive signs and warning signs against looting.

**Community Actions**

**Occupy and maintain historic buildings.**

Encourage communities, non-profits, and individuals to take ownership or responsibility of historic properties. Find cooperating partners to occupy vacant historic buildings or transfer the use and maintenance of properties to village mayors. Create incentives and promote adaptive reuse as a viable, beneficial option versus demolishing existing historic structures and building new structures.

**Develop a village stewardship program.**

Develop a program for each village to educate the residents to be aware of the historic properties in their community and become stewards of the properties.

**Establish historic property community watch programs.**

Encourage residents to respect historic sites by leaving them in place as artifacts belonging to the people of Guam.

**View cultural resources as assets.**

Guam SHPO should encourage developers to embrace cultural resources on their site, not to look at them as detriments to development. Artifacts found on a site could be interpreted and



put on display for visitors, school children, and the enjoyment of the local community. Guam SHPO, cultural resource managers, and other preservation planners should be encouraged to find methods to showcase findings in public buildings, hotels, and schools in a positive manner, and view findings as an asset—making cultural artifacts a desirable element for developers to incorporate in project designs to share and showcase Guam's cultural heritage.

**Goal 3: Invigorate the public and empower communities to preserve cultural resources.**

***Agency Actions***

**Raise community awareness of historic site looting.**

Encourage the press to report news stories and other notices of incidents of vandalism and looting, and successful prosecution, and inform the public on preservation issues.

**Provide appropriate direction or training to communities on funding sources.**

Help communities and organizations by providing workshops and tools needed to search and apply for grants or funds.

***Community Actions***

**Promote preservation occupations as a career.**

Present historic preservation as a multiple disciplinary field from archaeology and construction to tourism and business. Participate in "career day" at schools or job fairs to promote historic preservation.

**Educate the community on the importance of historic properties as cultural resources.**

With the increase in Chamorro heritage awareness, communities identify with physical historic properties as cultural resources. Encourage cultural figures such as "elders" to pass down the importance of preservation to a younger generation. Elders and family members are most influential to stress the importance of history in how cultural resources represent the Chamorro culture. The cultural resources are a part of the community, relate to Chamorro identity, and need to be preserved for future generations.

**Promote heritage authenticity and historic accuracy.**

Partner with the Department of Chamorro Affairs to ensure and promote authentic interpretations of Chamorro heritage. Utilize published historic contexts to ensure accuracy.

**Teach and educate school students the importance of historic properties.**

Continue outreach programs in schools and provide hands-on learning. Train teachers and educators to accurately present historic properties. Partner with private and non-profit organizations to bring students to historic sites and present the information.

**Promote the importance of preservation through public awareness campaigns.**

Implement public awareness through advertisements on TV, radio, publications, posters, special events, and the Internet.



**Goal 4: Establish strong partnerships.**

***Agency Actions***

**Provide tools, training and workshops in preservation techniques.**

Continue to provide up-to-date training for preservation professionals, agencies, and individuals.

**Partner with the visitor industry and promote authentic heritage tourism.**

Promote heritage tourism and ensure authentic representation and interpretation of historic sites and properties.

**Find opportunities for archaeological survey and excavation on government or privately-owned sites as educational tools.**

Partner with University of Guam (UOG) and the tourist industry and use archaeological sites for hands-on learning and visitor attractions. Perform archaeological excavations for research and educations and provide demonstrations for tourists.

**Due to funding constraints, support funding between federal agencies.**

Support efforts of federal agencies to jointly fund needed positions such as a combined Cultural Resource Manager for all federal lands in Guam.

***Community Actions***

**Partner with military bases and create "Sister Villages."**

Utilize outreach program of the military commands and volunteer organizations such as Officer's Wives Club and Junior Enlisted Club to work with villages. Currently, these organizations clean up problem areas of local villages. Apply this model to historic and cultural sites with local villages and continue a beneficial relationship.

**Partner with Guam Preservation Trust and civic organizations in an "adopt-a-historic site" project.**

Propose civic organizations take part in restoring and maintaining a historic site for community outreach, such as the "adopt-a-highway" program. This will provide continual maintenance for a site and create positive publicity to the organization.

**Goal 5: Improve efficient retrieval of information for research and distribution.**

***Agency Actions***

**Improve the historic preservation database.**

Guam SHPO is responsible for updating the inventory of historic properties. This update should be used to assist the Guam SHPO in its reviews and is critical in determining properties that are in need of preservation.

**Create digital files of the Guam Historic Property Inventory.**

Create a digital storage of archeological survey reports, inventory files, and other reports and files related to the Guam Historic Property Inventory. Ease the distribution of information. Produce an information booklet on accessing and retrieving documents for public use. Improve access to the existing storage and research facility.

**Streamline the review process.**

Make development information available to cooperating agencies, developers, or individuals before the review process to expedite the procedures. Maintain constant lines of communication with major developers or individuals applying for permits to ensure all development requirements are known from the start of the process. Utilize guidebooks published by local government agencies.

**Consult with Advisory Council on Historic Preservation (ACHP) to create categories of projects for review.**

Guam SHPO and federal agencies should consult with ACHP to create categories of projects that would not be subject to a full review. This could tie in with mapped sensitivity zones and help streamline the review process.

***Community Actions***

**Protect documents.**

Fund and construct a storage facility for records, collections, documents, and other historic documents.

**Construct a certified repository of documents.**

Continue to lobby for construction of the Guam Museum as a certified repository of historic documents and artifacts as mandated by law.

**Create a central location to present cultural artifacts and historic resources.**

Utilize the Guam Museum to present accurate interpretations of historic and cultural resources.

## 13. WETLANDS AND WATERSHEDS

### 13.1 MANAGEMENT CONTEXT

The quality and quantity of water resources is indispensable to natural resource management. The most significant threat to Guam's water quality is development that is undertaken in various stages and forms without adequate management controls and infrastructure support. Three sources of pollution are of particular concern to resource management agencies: 1) physical pollution such as sediment from erosion typically associated with land clearing; 2) chemical pollution from any number of land uses such as agricultural, industrial, and commercial activities that require pesticides, cleaners and solvents, fertilizers, and petroleum products; and 3) wastewater overflows from public sewage works, individual wastewater systems, and livestock, including ungulate populations.

A watershed approach is the most effective framework to address today's water resource challenges. Watersheds supply drinking water, provide recreation and respite, and sustain life. More than \$450 billion in food and fiber, manufactured goods, and tourism depends on clean water and healthy watersheds. A watershed approach is hydrologically defined, geographically focused, includes all stressors (air and water), involves stakeholders, is community based, and includes a coordinating framework. A watershed approach to natural resource management also strategically addresses priority water resource goals (e.g., water quality, habitat) by integrating multiple programs (regulatory and voluntary), is based on sound science, is aided by strategic watershed plans, and uses adaptive management (USEPA 2008a).

Much of the pollutant contribution to natural surface water systems occurs as nonpoint source pollution, which includes surface and stormwater runoff from developed or disturbed areas (Porter et al. 2004). This pollution can adversely affect in-stream flora and fauna, potential drinking water sources, and ultimately nearshore marine ecosystems and coral reef areas. The economic development boom of the 1980s and 1990s resulted in significant nonpoint source pollution from highway, golf resort, and residential construction (GEPA 1998). Some of the other significant sources of pollution include aquaculture facilities, accidental spills, leaking storage tanks, wildfires, off-road vehicle use, leachate, past activities on military lands, recreational (motorized) watercraft, and lack of enforcement (GEPA 1999).

In 1996, USEPA issued new guidance related to its federal nonpoint source programs governed under Section 319 of the Clean Water Act, Nonpoint Source Programs. USEPA required that programs be updated and strengthened to be consistent with "nine key elements" that the states and USEPA agreed were key to a dynamic and effective nonpoint source program. An integrated approach to protecting and restoring Guam's surface waters was developed in 1998-1999 under the Guam Clean Water Action Plan (CWAP) and then under the framework document entitled *Protecting and Restoring Guam's Waters*. The document addressed Guam Environmental Protection Agency's overall approach, with the assistance of partner resource agencies and the Watershed Planning Committee for managing water resources on Guam.

These initiatives are in place, although management activity has been very limited due to capacity challenges and funding constraints. The planning and collaborative initiatives were designed to pursue objectives to improve and maintain water quality throughout Guam by encouraging federal and nonfederal agencies, other organizations, and interested citizens to



work in a collaborative manner to restore Guam's highest priority watersheds (GEPA 1998). Guam EPA and other resource agencies were encouraged to undertake watershed planning and management under Guam Executive Order 99-09 (Watershed Protection). This order affirmed the Watershed Planning Committee's (WPC) work on watersheds and provided emphasis and direction for top government managers to participate in and support the highly collaborative endeavor, recognizing that watershed protection must involve multiple-ownership and use perspectives.

Concurrent with the Section 319 upgrade developments, USEPA and NOAA encouraged implementation of a series of comprehensive nonpoint source management measures for many development activities under the requirements set forth in Section 6217(a) of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA). Guam's Coastal Nonpoint Source Pollution Management Document was approved with all outstanding conditions met in 2007. This critical document was a forerunner to the new CNMI and Guam Stormwater Management Manual (CNMI and Guam 2006), which recommends a full spectrum of management measures and best practices to control pollution and ensure recharge of surface and groundwater resources.

Many of the requirements to control nonpoint source pollution and ensure that the quality of watershed ecosystems and wetlands are protected are carried out by Guam EPA and other resource agencies in the execution of permits, surveillance, and compliance efforts. Much more needs to be done, especially in light of the Guam Buildup construction activities that will steadily increase over the next 36 months (BSP and GEPA 2006).

### 13.2 COMMUNITY INTEREST

Water quality is fundamental to healthy ecosystems and the sustainability of many native aquatic and wildlife resources. It is also critical to quality of life, economic well-being, and most important, essential to all life. The following are just a few of the more significant benefits that the community derives from clean water, healthy watersheds, and well-functioning wetland resources.

- As a remote island, Guam's drinking water resources are critically important to ensuring quality of life and capacity to develop and grow its economy. While surface waters account for less than 25 percent of total water developed, and groundwater is the primary focus of increasing capacity for the Guam Buildup, it is important to protect future surface water sources.
- Guam's economy depends heavily on clean marine waters. The visitor industry derives a significant portion of its product from the coastal and marine natural resources through sightseeing, swimming, diving, and other recreation activities. The economic value of Guam's coral reefs alone to tourism is nearly \$95 million annually (van Beukering et al. 2007).
- Wildlife depend on clean water. Guam's native aquatic and wildlife species have been in decline, and most bird species, including water fowl, are threatened, endangered, extinct, or only found in captive breeding and recovery projects. Wetlands and other watershed features are vital to species protection and recovery with regard to both water quality and available habitat function.

- Natural resource quality and quality of life issues are critically linked in island settings. Island residents have limited options of where they can live, and in most cases water resources are immediately present since the entire island is coastal in nature.
- Land and ocean productivity is linked to wetland and other watershed features. Guam's management of stormwater runoff is directly tied to drinking water, the living landscape (including agricultural production and recreation), and all manner of ocean-related uses. It is public policy that Guam approach planning and natural resource management from an integrated watershed system approach (EO 1999).

### **13.3 GOALS AND CONSERVATION ACTIONS**

#### **Wetlands and Watersheds Goal 1**

Implement CNMI and Guam Stormwater Management Manual as an enforceable regulation.

#### **Conservation Actions**

- Integrate Stormwater Management Manual with the Guam Soil Erosion and Sedimentation Control Regulations or promulgate separate stormwater management regulations that require the manual's implementation.
- The additional cost associated with implementing new rules and standards for new development or for retrofitting existing development will be significant. Guam EPA and DPW should consider a phased implementation approach that takes into account receiving waters and watersheds that have a history of runoff problems or are at risk of developing water quality problems. Targeting high-density development areas in coastal villages and over the northern aquifer should be consideration. Other phasing approaches could involve an emphasis on construction stormwater BMPs, and correcting major long-standing stormwater drainage problems at key locations.

#### **Wetlands and Watersheds Goal 2**

Develop design guidelines for development and integrate stormwater and site design standards.

#### **Conservation Actions**

- At a minimum, use the Better Site Design and Structural BMPs from Volume II of the CNMI and Guam Stormwater Management Manual as a basis for developing user-friendly publications and Web-based guidance for developers and home-builders.
- As an interim measure to stormwater regulations, request the Governor to issue an Executive Order to the Guam Land Use Commission, Department of Public Works, and Guam Environmental Protection Agency to require appropriate stormwater design BMPs and other measures from the manual as conditions of land use permit approvals.

#### **Wetlands and Watersheds Goal 3**

Update the Wetland Conservation Plan and expand public awareness.

#### **Conservation Actions**



- The key or lead agencies should undertake a review of the Wetland Conservation Plan to determine the best way to proceed with the plan update. Key components of the plan include developing a wetland program capable of setting the framework for Clean Water Act Section 404 program assumption and developing wetland water quality standards. Use of the Hydrogeomorphic Method for classifying wetlands and providing accurate assessments of wetland function and value tied wetland water quality standards is proven approach to long-term conservation management.
- The Wetlands of Guam booklet and brochure should be updated and available for wide distribution in advance of major construction.
- Provide additional wetlands and water resource protection education and awareness material aimed at contractor licensing and certification processes. Licensed contractors and their Responsible Management Employees (RMEs) should be required to attend a training course. If possible, new education material should be produced in several major foreign languages.

**Wetlands and Watersheds Goal 4**

Develop Watershed Management Plans for several critical (high-priority) watersheds.

**Conservation Actions**

- Guam's Strategy to Control Nonpoint Sources of Pollution outlines a wetland planning process and a watershed priority list and schedule for undertaking watershed plans. The process should be revisited to find ways to streamline activities and encourage in-house planning. The watershed priority list should be revisited in light of military base development and other civilian development trends.

**Wetlands and Watersheds Goal 5**

Develop a system to establish reference wetlands to serve as a Guam set of baseline information to accurately classify Guam's wetland.

**Conservation Action**

- Use the US Fish and Wildlife Service national classification system to include an adequate peer review component. Similar work has been carried out in the CNMI and good working knowledge and records are available on island to facilitate a comprehensive classification project.



## 14. LEGAL FRAMEWORK

### 14.1 LEGAL ISSUES AND CONCERNS

A number of legal issues have been identified that have and may continue to impede effective local-federal collaboration on natural resource management. If at all possible, these issues should be effectively resolved in order to head-off problems and save time and other resources. There many more issues and goals upon which local and federal agencies agree than disagree. These few problem areas should not be allowed to persist and detract or otherwise de-energize the positive work occurring across all jurisdictions.

The following legal impediments should be addressed:

1. There are issues surrounding military and local resource and regulatory roles. Legal or policy-based opinions call into question very basic regulatory and stewardship roles, particularly under the Federal Clean Water Act and with regard to Federal Consistency review, and the extent to which meaningful participation occurs involving resources under concurrent jurisdiction.
2. Another area of contention involves the ownership and jurisdiction of certain submerged lands. Over the past 15 years, there have been occasions when local and federal positions have differed with regard to submerged land boundaries.
3. The third issue involves Guam Public Laws 23-24 *Termination of the Wildlife Refuge* and 23-25 *Ritidian Point Land – Self Determination*, which prohibit local government from assisting or actively participating in federal wildlife management efforts at the *Guam National Wildlife Refuge Ritidian Unit*. A similar case is emerging involving the introduction of a legislative bill; if passed, it would prohibit using rodenticides and possibly other chemicals for managing and restoring targeted habitat suitable for endangered species reintroduction. The current situation involves the reintroduction of the Koko bird at Cocos Island.

### 14.2 DEVELOPING POLICIES, GUIDING AND COORDINATING NATURAL RESOURCE MANAGEMENT

Each natural resource agency is responsible for implementing the mandates assigned to them. The capacity required to develop new regulatory frameworks and policies is generally lacking at the agency level. Some agencies are more successful than others in obtaining dedicated legal services. Two consequences of not having dedicated or regular access to legal services are: 1) enforcement activities tend to diminish and compliance efforts become relaxed for all but the most serious violations and resource degradation, and 2) regulatory frameworks, including agreements, do not get updated and new rules and agreements are seldom drafted or promulgated through the administrative adjudication or legislative process. Like all default-to-crisis management approaches, circumstances eventually arise that cannot be ignored. Three crisis examples include the noncompliant solid waste situation that required a federal law suit to be filed, the chronic under funding and resulting disregard for public health and the environment at the former Public Utility Agency of Guam, and years of inadequate financing and attention to the very real and constant threat of invasive species.

### **14.3 ENFORCING NATURAL RESOURCE LAWS**

In addition to the enforcement perspective in 6.3.11, a broader issue related to the amount and effectiveness of enforcement, especially in the area of development impact, is often a topic of discussion among NR managers. While resources to conduct enforcement are limited that capacity may be under utilized for a number of any number of reasons. Efforts to link agency-level enforcement programs with the legal system to effectively develop and win cases has been pursued for many years in local government, even to the extend that federal grant funds be dedicated for legal support. Enforcement training has been provided at various times to jump start programs and enforcement personnel seem genuinely committed to implementing more robust enforcement programs. It might be argued that the missing element is part of the support system beyond the program level.

Sometimes law enforcement is displaced in favor of some programmatic direction or policy calling for an emphasis on "education and outreach". A knowledge-based approach to NR management is necessary but only one of several considerations for good resource stewardship. The challenge is to find a better balance between knowledge-based and other stewardship elements, including enforcement. Leadership policy, the role of economics, and even environmental justice are some areas that could be examined for ways to better support enforcement programs.

### **14.4 AGENCY COORDINATION**

Natural resource agencies have three primary incentives to coordinate their work. In many cases, federal grant guidelines require close coordination to leverage limited resources and to create synergistic efficiencies. Another incentive is to build public and political awareness and to unite based on common objectives and overlapping jurisdictions as a means to spur progress in various natural resource management initiatives. The third incentive is that natural resource agency programs are scientifically oriented to managing at a systems level, taking into consideration the health and sustainability of the whole, while meeting the needs of subcomponents under pressure of degradation and the biological and physical linkages between them. The predominant management approach over the past decade has been watershed-based.

The GCMP, more than any other local natural resource agency, is mandated and well versed at promoting natural resource agency coordination mainly at the local government level but also regionally and vertically with federal natural resource counterparts. The NRS of the CMTF is a prime example of natural resource management coordination. Other examples of local coordination include the Guam Watershed Planning Committee, which is chaired by the Guam EPA and funded through Clean Water Act Section 319 program grants, and the Guam Coral Reef Initiative Coordinating Committee (GCRICC), which is under the leadership of the Department of Agriculture and GCMP and funded through the National Oceanic and Atmospheric Administration, with other complementary federal sources (GCRICC undated).

### **14.5 COMMUNITY BENEFITS**

The community is well served by the team management approach to protecting natural resources. No one agency or program has the capacity to implement projects and develop

programs effectively, especially over the long-term, working in isolation. The collective technical and managerial capacity of natural resource agencies can be an effective agent for progressive and responsive management. The community is also well served by leveraged financial resources, especially in austere times.

Well-coordinated initiatives command higher profiles, which translate into better public awareness and demonstrating and delivering tangible outcomes from limited resources.

With regard to the regulatory aspect of natural resource management, coordinated efforts can deliver a transparent, consistent, and level playing field. Regulatory compliance is easier to achieve through clear and consistent requirements, and a consistent overall policy posture among natural resource agencies can effectively bring about progressive change even under adverse conditions.

#### **14.6 GOALS AND ACTION PLANS**

The goals and action plans presented below address the strict legal framework challenges and provide focus and coordination among natural resource agencies as the demands of the Guam Buildup increase.

##### **Legal Framework Goal 1**

Continue to develop effective working relationships between local and federal natural resource agencies and regulated entities both civilian and military.

- The NEPA process currently underway presents a rare opportunity and forum to forge closer working relationships among agencies and regulated entities. Cooperation in the development of the EIS and working toward the Record of Decision enhances the likelihood that key natural resource issues will be adequately addressed. This is crucial, considering the scope and intensity of buildup activity over the next seven years. A secondary benefit of the EIS process is that roles and mandates must be clearly presented and effectively implemented to accomplish Buildup objectives. The demands being placed on natural resource agencies, the DoD requires role delineation and acceptance in order to manage the NEPA process.
- The interdisciplinary and cross jurisdictional membership of the Environmental Partnership initiative should be supported by all parties involved based on commitments of trust and credible actions at each step of the NEPA process.

##### **Legal Framework Goal 2**

Request that the Navy clearly delineate the jurisdictional boundaries for submerged lands as a matter of clearly describing the "affected environment" under the EIS.



- EIS development and associated subsequent technical review of baseline information requires accurate descriptions of all resources, including the geographic extent of potential impact and opportunities for effective mitigation.
- Essential geographic information should be provided as an indirect outcome and benefit of the ongoing EIS process. This information should be digitally transferred or made available to the GCMP, DAWR, Guam HPO, Micronesia Area Research Center and Guam EPA.

**Legal Framework Goal 3**

Public Laws 23-24 and 23-25 should be repealed.

- Public Laws 23-24 and 23-25 have had no meaningful impact on the status or mission of the Guam National Wildlife Refuge (GNWR), the Guam Refuge Overlay system, or any management decision making by federal or local natural resource management entities.
- Local and federal agencies should work to promote broader understanding about the GNWR.

**Legal Framework Goal 4**

Continue to participate on the Guam/CNMI Forward-Basing Regulatory Community/DoD Partnering Team.

- Local natural resource agencies should endeavor to participate in each Partnering Team. The Work Groups are Natural Resources, Executive, Coop Agencies/NEPA, Compliance/Permitting, and Cultural Resources.

**Legal Framework Goal 5**

GCMP should undertake a review of the Guam Zoning, Subdivision, Subdivision Rules, Seashore Reserve, and other related growth management laws and policies.

- The GCMP completed a similar analysis some time in the 1990s entitled *Analysis of Development and Resource Policies and Laws on Guam*. This analysis should be revisited and updated.
- An important component of the review should be to accurately describe the organizational culture of the Department of Land Management, the Guam Land Use Commission (GLUC), and the Application Review Committee agencies. The aim of this review is to open an objective discussion about procedures, roles, and responsibilities, as well as how these issues can be addressed to enhance development review objectives.

**Legal Framework Goal 6**

Assemble an interagency NEPA Review Team specifically tasked to oversee the development of government of Guam natural resource agency review comments on the Draft EIS.

- There are at least three options to accomplish this goal: 1) the government of Guam could development a Review Team internally, with one agency stepping forward to lead the effort in focused workshops and to consolidate comments, 2) the government of Guam could organize the Review Team and retain a NEPA-capable consultant to advise the Review Team on an as-needed basis, or 3) the government of Guam could have the consultant conduct and/or lead in the conduct of the review and present the comment package for endorsement. The DEIS will be available for review and comment for 90 days in Spring 2009. To the extent possible, federal resource agencies should be consulted and encouraged to assist with comments.

**Legal Framework Goal 7**

The GCMP should initiate a Cumulative and Secondary Effects Assessment (CSEA) project that compiles information about private-sector development projects proposed or approved and presents preliminary data on potential cumulative effects on natural resources and mitigation recommendations.

- The CSEA should track information from building permits, GLUC, and Seashore Protection Commission (GSPC) approvals, media, and other information from previously approved projects. This initial assessment should capture all available development information up to the close of the military buildup draft EIS comment period in Spring 2009.
- The CSEA shall incorporate information about land clearing, water use, energy demand, wastewater disposal, transportation requirements, population/occupancy, and proximity to sensitive areas among others.

**Legal Framework Goal 8**

Develop an incentive program that encourages and rewards developers who apply sustainable design for site planning, structural design, and energy efficiency similar to *Smart Growth* planning principals.

- The program should comprehensively address opportunities for green or smart growth design concepts, including preserving native forests and encouraging urban forestry practices, landscape standards, open spaces, and similar concepts.

**Legal Framework Goal 9**

Prepare a Special Area Management Plan (SAMP) for northern Guam in two phases.

- Phase I of the SAMP would gather and assess data of the current or existing conditions relative to land uses, as well as the regulatory framework for development in northern Guam. One of the primary data gaps will likely involve refined aquifer response characteristics to over-pumping and saltwater intrusion, the prevalence of industrial activities, and a revisiting of the mass balance model for nutrient loading. Other important issues will be the standing inventory of native forests and habitat of high function and value for native species restoration.
- Phase II of the SAMP would develop the Management Plan.

**Legal Framework Goal 10**

Evaluate and assess the effectiveness of the new Seashore Reserve Plan.

- An evaluation tool should be developed that takes into consideration the various elements of the Seashore Reserve permit system, public perception, program management concerns, funding levels, and other aspects of plan implementation. The Seashore Reserve Task Force should be actively involved in the evaluation review.

**Legal Framework Goal 11**

Develop alternative methods to reduce shoreline erosion using natural systems.

- A number of local regional and national (environmental) engineering designs should be reviewed, along with traditional methods and local expertise. Key design and mitigation recommendations should be developed and compiled in a shoreline protection manual similar to the Guam and CNMI Stormwater Drainage Manual. It will important to the success of the manual or similar guidance document to have local engineers and architects involved in the process.
- Local natural resource agencies could pursue transitioning the manual into the building permit system as standards and code requirements.

**Legal Framework Goal 12**

Study the impact of development along Guam's shoreline and in hazardous areas.

- Hire a consulting firm with coastal engineering and resource management capacity to properly evaluate impacts and provide recommendations to improve development in the future or mitigate existing problems (BSP 2006a).



## 15. DEPARTMENT OF DEFENSE RESOURCE PLANS

The US Navy (Apra Harbor Naval Complex, Ordinance Annex, NCTS Annex Finegayan/South Finegayan, and NCTS Annex Barrigada) and the US Air Force (Andersen AFB, Andersen AFB Northwest Field, and Andersen South) are responsible for landholdings totaling more than 40,000 acres, or approximately 30 percent of the total land area of Guam (USPAC 2006). These landholdings, together with adjacent submerged lands, include substantial native habitat suitable for protecting and restoring many of Guam's endangered birds, limestone forest, ravine forests, coastal habitat, wetlands, water, and significant cultural/historical resources. In order to ensure mission-essential access and readiness of these lands and coastal assets, the DoD maintains area/installation Integrated Natural Resource Management Plans (INRMPs) and Integrated Cultural Resource Management Plans (ICRMPs).

The DoD through the Civil Engineer Squadron's Environmental Section of the 36th Air Base Wing at Andersen AFB and the Commander Naval Forces Region Marianas (COMNAVREG Marianas) in cooperation with Naval Facilities Marianas (NAVFACMAR) Environmental are responsible for developing and maintaining the INRMPs and ICRMPs. Each environmental unit is staffed with natural resource managers, ecologists, biologists, planners, environmental engineers, and support personnel who provide the technical expertise to manage installation resources in accordance with federal and Guam law and DoD directives, policies, and agreements with resource agencies on Guam and regionally.

A key component of the DoD installation management regime includes several memoranda of agreement and understanding and cooperative agreements with federal and Guam resource and regulatory agencies, including the USFWS, GDAWR, Guam EPA, and Guam SHPO. These agreements frame the necessary parameters for effective and compliant oversight of installation resources, including the following:

- 1) Memorandum of Understanding between the Department of Defense and the US Fish and Wildlife Service for Ecosystem-Based Management of Fish, Wildlife, and Plant Resources on Military Lands (17 May 1999).
- 2) Cooperative Agreement Between the US Air Force and the US Fish and Wildlife Service for Establishment and Management of the Guam National Wildlife Refuge, Guam (10 March 1994).
- 3) Memorandum of Understanding between the government of Guam and the US Air Force and the US Navy and the US Fish and Wildlife Service for the Establishment and Management of the Guam National Wildlife Refuge, Guam (10 December 1993).

The land and resource management efforts associated with military operations and military base expansion will occur adjacent to and within the Guam National Wildlife Refuge Ritidian Unit and overlay refuge. The overlay refuge consists of about 22,500 acres on lands administered by the US Air Force and US Navy in northern and southern Guam. The USFWS assists in protecting native species and habitats with a major emphasis on habitat for the remaining populations of the endangered Mariana Fruit Bat, Mariana Crow, other endangered birds and the *Serianthes nelsonii* tree known on Guam as hayun lågu, which means "northern tree" or "foreign tree." The refuge also protects significant Chamorro cultural resources (USFWS 2008).

Most of the potential adverse impacts associated with the military component of the Guam Buildup will involve refuge wildlife resources and sensitive habitats. The Guam Buildup EIS must address a complex and tightly integrated set of resource protection issues. Although the military mission takes first priority on military lands, these issues are linked to principals, including ecological sustainability, that are at the center of a development context that will pose very basic management conflicts. Managing the buildup is unquestionably difficult from the resource manager's perspective.

Following are goals and objectives identified in the various US Navy and US Air Force resource management plans. These management goals are a major part of Guam's natural resource management context and are linked in many ways to the resource management objectives of Guam natural resource agencies. Together the plans and strategies guide efforts island-wide.

#### **15.1 US NAVY INTEGRATED NATURAL RESOURCE MANAGEMENT PLAN**

The INRMP for Navy lands Guam is a planning document providing Navy planning and operations personnel, as well as natural resource managers, the necessary biological background and management guidance to ensure US Navy mission goals are met without compromising natural resources present on Guam lands.

The Navy INRMP provides the essential capacity to maintain a multi-purpose, sustainable natural resources management program. The program ensures the continued access to land, air, and water resources to accomplish military training while ensuring the sustainability of natural and cultural resources. The Navy INRMP covers the natural resources management program for all COMNAVREG Marianas land on Guam, including Communications Annex – Finegayan, Communications Annex – Barrigada, Waterfront Annex, and Ordnance Annex.

The INRMP describes the Navy's military mission, the existing condition of the natural resources, identifies natural resource issues, concerns, goals, and objectives to guide natural resource management over the required five-year plan period. This INRMP identifies planned management and monitoring actions and provides the installation's overall conservation priorities.

Coordinating the military mission functions and activities with the protection and management of the diverse natural resources on the various Navy installations on Guam is challenging. The Navy owns approximately 18,000 acres of land on Guam as well as the submerged lands offshore from Navy property. The Navy lands total about 12 percent of Guam's total land area.

The natural habitat and nearshore waters of the various Navy installations are important for the military mission, from munitions storage and training areas to communication and waterfront facilities. These areas are also a significant resource base for important wildlife habitat, contribute to the protection of water quality, and provide outdoor recreation opportunities for the people of Guam. Much of the Navy lands are included as refuge overlay lands under the Guam National Wildlife Refuge system. As such, Navy lands provide a major portion of suitable

habitat for a number of animals federally listed as threatened or endangered. Nearshore lands support important coral reef ecosystems and wetlands, including mangrove habitat that regulates the annual hydrological character of streams. Several freshwater rivers and springs, which support native and introduced fish species, are located on Navy lands. Fena Lake (reservoir) serves as a potable water source and provides habitat for the endangered Mariana common moorhen (*Gallinula chloropus guami*).

With some limitation, the current Navy INRMP integrates cultural and historic resources sites and management concerns through literature reviews of geographic information and through consultation with the COMNAV Marianas Cultural Resources Specialist to determine the likely presence of significant cultural and historic sites, the likely presence of significant natural resources that could be affected by resource management programs, and whether or not compliance issues are present. The INRMP also includes recommendations for natural resources management that would avoid, prevent, or minimize adverse impacts to cultural and historic resources or that, conversely, would augment preservation and interpretation of those resources.

The Navy natural resource management approach focuses on ecosystems rather than on individual resources as the preferred strategy for insuring that the interrelated resources are considered when making management decisions. As such, interagency coordination among the Navy and other federal and Guam natural resource agencies is essential to ensuring that ecosystem management is successful. The primary purpose of ecosystem management is to protect the components and functions of natural ecosystems. Ecosystems on Guam can be described as a collection of resources whose capability and potential is characterized by the interaction of four components—plant communities, landform/soils, wildlife, and hydrology.

Strategies for ecosystem management include the following:

- Inventory and monitoring;
- Protection and prevention;
- Soil, water, and vegetation management;
- Wildlife population management; and
- Outdoor recreational use.

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| <b><i>Strategic Goal for Ecosystem Management: Inventory and Monitoring</i></b> |
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| <b><u>Natural Resource Objectives</u></b> |
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| <ul style="list-style-type: none"> <li>a. Estimate with known confidence the current status, changes, and trends in selected indicators of ecosystem conditions. Ecosystem indicators include changes in plant community composition and structure, and evidence of disturbance;</li> <li>b. Identify associations between changes of trends in indicators of ecosystem condition and indicators of natural and human-caused stressors, including changes in ecosystem extent and distribution;</li> <li>c. Provide information on the condition of the ecosystems in annual data calls, statistical summaries, and periodic interpretive reports for use in policy and management decisions; and</li> <li>d. Identify mechanisms of ecosystem structure and function through long-term monitoring</li> </ul> |
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of ecosystem processes at intensively monitoring sites representing major ecosystems.

**Implementation Strategies**

- a. Consolidate existing resource baseline data into a functional Geographic Information System (GIS);
- b. Identify information and data gaps that need to be filled;
- c. Collect statistical valid resource data on selected indicators;
- d. Analyze trends and indicators; and
- e. Continue long-term monitoring.

The Navy's INRMP projects for Guam in 2008 are listed below.

- **USFWS MOU – Wildlife Refuge Management**  
Through the MOU the USFWS will provide a wildlife biologist to perform direct technical assistance to COMNAVMARIANAS for refuge management. The Navy and USFWS have entered into a MOU and Cooperative Agreement to create the Guam National Wildlife Refuge. The Overlay units on Navy Lands total 10,000 acres and in conjunction with the current INRMP provides for an alternative to critical habitat for three threatened and endangered (T&D) species.
- **Soil and Water Conservation**  
The project will implement critical soil and water conservation measures in accordance with the INRMP, conservation plans, and the Wildland Fire Management Assessment for the Fena Reservoir watershed (WFMA Fena), Fuels and Ordinance Annex. The project will implement recommendations identified in the WFMA Fena and Fena Ordinance Annex Plan, including critical area plantings of eroded sites, changing forest fuel characteristics through establishing green forests for fuel breaks, and other soil and water conservation measures. The INRMP, Fena Watershed Resource Assessment, Fena Ordinance Annex Conservation Plan, and COMNAVMARIANAS Wildland Fire Management Assessment have all identified wildland fires as a primary threat to wildlife habitat and Navy facilities and as the primary cause of accelerated soil erosion on Navy property.
- **Species Monitoring**  
This is an annual project which will re-measure one-third of the existing inventory plots to develop long-term trend data on biodiversity and endangered species recovery. In 2002 COMNAVMARIANAS completed a long-term natural resources species survey and monitoring plan for Navy properties on Guam. Recurring measurements are critical to meeting the biodiversity strategies outlined in the COMNAVMARIANAS INRMP, and to be prepared for biological assessments for ESA Section 7 consultation with USFWS.
- **Endangered Species Protection - Mariana gray swiftlet**  
This project entails protecting the last remaining population of Mariana gray swiftlet on Guam, which is a federally listed endangered species, from predation by the BTS. BTS

traps are placed around three occupied swiftlet caves and monitored weekly. This ongoing project has resulted in increased swiftlet numbers in recent years.

- **Protection of Ecological Reserve Areas**

This project includes improved management (conservation, protection, restoration, and enhancement) of the Navy's Ecological Reserve Areas (ERA). Protection and enhancement activities are conducted at the Navy's two ERA, Orote Peninsula and Haputo, in both terrestrial and marine components. Management is based on ecosystem and watershed approaches to protect native and migratory species. Project components include controlling non-native plant and animal species, overharvesting fish and wildlife species, and incorporating a public education program about the ERA.

- **Ungulate Management Control**

This project is an Environmental Assessment and Management Plan for the sustained reduction of introduced ungulates on the Overlay Refuge lands of the Naval Ordnance Annex and naval Communications Station, Guam. Non-native Philippine deer (*Cervus mariannus*), wild pigs (*Sus scrofa*), and feral carabao or water buffalo (*Bubalus bubalis*) continue to cause significant erosion, severely degrading endangered species habitat, and damage to facilities and infrastructure. The primary project goal is to devise a practical long-term reduction program for these species.

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| <b>Strategic Goal for Ecosystem Management: Protection and Prevention</b> |
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| <b><u>Natural Resource Objectives</u></b> |
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| <ul style="list-style-type: none"> <li>a. Identify the potential impacts of Navy actions on the environment;</li> <li>b. Where impacts are unavoidable, identify appropriate mitigation measures to eliminate or reduce adverse impacts; and</li> <li>c. Implement Navy actions according to federal laws, including all mitigating measures.</li> </ul> |
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| <b><u>Implementation Strategies</u></b> |
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| <ul style="list-style-type: none"> <li>a. Ensure that the appropriate level of NEPA is followed for all Navy actions with the potential to affect ecological function;</li> <li>b. Ensure that Navy actions are in compliance with federal laws; and</li> <li>c. Develop recommended Best Management Practices that are suitable to the Navy's mission.</li> </ul> |
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| <b>Strategic Goal for Ecosystem Management: Soil, Water, and Vegetation Management</b> |
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| <b><u>Natural Resource Objectives</u></b> |
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| <ul style="list-style-type: none"> <li>a. Maintain the inherent soil productivity of Navy lands;</li> <li>b. Increase the acreage of native plant communities on Navy lands;</li> <li>c. Reduce the quantity of accelerated erosion originating on Navy lands; and</li> <li>d. Reduce the spread of invasive plant species on Navy lands.</li> </ul> |
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| <b><u>Implementation Strategies</u></b> |
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- a. Identify and quantify the impacts of site-specific sources of nonpoint source pollution;
- b. Identify and describe existing plant communities that are present;
- c. Develop and implement a wildland fire management plan;
- d. Reduce the population of feral ungulates;
- e. Increase the planting of native plants; and
- f. Identify and implement Best Management Practices to reduce accelerated erosion.

**Strategic Goal for Ecosystem Management: Wildlife Population Management**

**Natural Resource Objectives**

- a. Maintain and improve the habitat for federally threatened and endangered species inhabiting Navy property;
- b. Reduce the adverse impact of the invasive species and feral ungulates on native species-dominant habitat and native wildlife populations;
- c. Minimize military impacts to coral reef ecosystems; and
- d. Enforce federal and territorial wildlife laws.

**Implementation Strategies**

- a. Continue close cooperation with the US Fish and Wildlife Service to manage wildlife populations and habitat within the Guam National Refuge, Navy Overlay Unit lands;
- b. Continue close cooperation with other federal and territorial resource agencies to manage wildlife (terrestrial and marine) on all Navy lands;
- c. Conduct military training activities in accordance with the Marianas Military Training Plan;
- d. Reduce the populations of feral ungulates on Navy lands;
- e. Actively implement the Brown Tree Snake Control and Interdiction Plan;
- f. Improve wildlife habitat by manipulating plant community composition and structure; and
- g. Continue close cooperation with trained federal and territorial conservation law enforcement staff by providing access to Navy lands to conduct official business consistent with the Navy's operational, security, and safety policies and procedures, and with applicable requirements of laws and regulations.

**Strategic Goal for Ecosystem Management: Outdoor Recreation Use**

**Natural Resource Objectives**

- a. Provide a diverse range of outdoor recreation opportunities for active duty service members, retired military, and DoD civilians;
- b. Estimate the current use, carrying capacity, and trends in outdoor recreation;
- c. Improve access to key recreational use areas; and
- d. Assess the feasibility of recreational hunting of deer and feral pigs at Communication Annex, Finegayan.

**Implementation Strategies**



- a. Provide Moral, Welfare and Recreation (MWR) with educational and information material to assist in developing awareness of natural resources issues;
- b. Incorporate recreational use baseline data into a functional GIS;
- c. Identify data gaps that need to be filled and collect statistically valid recreational use data; and
- d. Evaluate the feasibility of recreational hunting on Communication Annex, Finegayan.

## 15.2 US AIR FORCE INRMP GOALS AND OBJECTIVES

The Andersen AFB INRMP (USAF 2003) identifies 16 natural resource management goals. Eight goals address endangered species and are supported by 32 species-specific management objectives. Table 3 is a matrix of endangered species goals to management objective. In addition, the INRMP outlines a detailed implementation strategy for each objective, most involving strong implementation coordination elements involving the government of Guam and federal resource agencies. The implementation strategies are found in Chapter 8 of the INRMP. A ninth species-related INRMP goal covers management issues for other locally rare or government of Guam-listed species. This local species goal is supported by eight management objectives and implementation strategies, which are summarized in Table 4.

The remaining seven natural resource management goals in the Andersen AFB INRMP address Air Force mission requirements, other fish and wildlife management (biodiversity), watershed protection, grounds maintenance, outdoor recreation and public access, coastal resources, and geographic information systems. These goals and supporting objectives are summarized in Table 5.

Table 3. Andersen Air Force Base INRMP Goals Matrix

| Management Objectives                                                     | <i>Serianthes nelsonii</i> | <i>Tabernaemontana Rotensis</i> | Guam Micronesia Kingfisher | Mariana Crow | Guam Rail | Mariana Swiftlet | Mariana Fruit Bat | Sea Turtles |
|---------------------------------------------------------------------------|----------------------------|---------------------------------|----------------------------|--------------|-----------|------------------|-------------------|-------------|
| Continue/develop education and awareness                                  | ✓                          | ✓                               | ✓                          | ✓            | ✓         |                  | ✓                 |             |
| Protect and manage existing limestone forests                             | ✓                          | ✓                               | ✓                          | ✓            | ✓         |                  | ✓                 |             |
| Control primary key threat(s)                                             | ✓                          | ✓                               | ✓                          | ✓            | ✓         |                  | ✓                 |             |
| Manage additional Threats                                                 | ✓                          |                                 | ✓                          | ✓            | ✓         |                  | ✓                 |             |
| Continue monitoring populations                                           | ✓                          | ✓                               |                            | ✓            | ✓         |                  | ✓                 |             |
| Study ecology                                                             | ✓                          | ✓                               | ✓                          | ✓            | ✓         | ✓                | ✓                 |             |
| Develop augmentation plans                                                | ✓                          | ✓                               |                            |              |           |                  |                   |             |
| Validate recovery objectives                                              | ✓                          | ✓                               | ✓                          | ✓            | ✓         |                  |                   |             |
| Release first captive-bred individuals on Andersen AFB by 2008            |                            |                                 | ✓                          |              |           |                  |                   |             |
| Continue supporting implementation of captive breeding program            |                            |                                 | ✓                          |              | ✓         |                  |                   |             |
| Monitor new wild population                                               |                            |                                 | ✓                          |              |           |                  |                   |             |
| Improve/develop methods and determine additional sites for reintroduction |                            |                                 | ✓                          | ✓            | ✓         | ✓                |                   |             |
| Investigate disease threats                                               |                            |                                 | ✓                          | ✓            | ✓         |                  | ✓                 |             |
| Determine effects of ungulates                                            |                            |                                 | ✓                          | ✓            |           |                  | ✓                 |             |
| Develop habitat restoration techniques                                    |                            |                                 | ✓                          | ✓            | ✓         |                  |                   |             |

Table 3. Andersen Air Force Base INRMP Goals Matrix (continued)

| Management Objective                                            | <i>Serianthes nelsonii</i> | <i>Tabernamontana Rotensis</i> | Micronesia Kingfisher | Mariana Crow | Guam Rail | Mariana Swiftlet | Mariana Fruit Bat | Sea Turtles |
|-----------------------------------------------------------------|----------------------------|--------------------------------|-----------------------|--------------|-----------|------------------|-------------------|-------------|
| Promote population re-expansion                                 |                            |                                |                       |              |           | ✓                |                   |             |
| Survey for secure and manage potentially suitable caves         |                            |                                |                       |              |           | ✓                |                   |             |
| Develop methods for captive breeding                            |                            |                                |                       | ✓            |           | ✓                | ✓                 |             |
| Monitor existing off-base populations                           |                            |                                |                       |              |           | ✓                |                   |             |
| Continue to prevent poaching                                    |                            |                                |                       |              |           |                  | ✓                 |             |
| Determine geographic use and inter-island movement              |                            |                                |                       |              |           |                  | ✓                 |             |
| Gather data on species' use of food                             |                            |                                |                       |              |           |                  | ✓                 |             |
| Conduct baseline surveys                                        |                            |                                |                       |              |           |                  | ✓                 |             |
| Determine minimum areas of habitat and buffers                  |                            |                                |                       |              |           |                  | ✓                 |             |
| Determine need to sow food plants                               |                            |                                |                       |              |           |                  | ✓                 |             |
| Maintain existing foraging areas                                |                            |                                |                       |              |           |                  |                   | ✓           |
| Continue to stop indirect harvest of eggs                       |                            |                                |                       |              |           |                  |                   | ✓           |
| Eliminate threat of fibropapillomas                             |                            |                                |                       |              |           |                  |                   | ✓           |
| Continue to determine population size and status                |                            |                                |                       |              |           |                  |                   | ✓           |
| Continue to identify and protect primary nesting/foraging areas |                            |                                |                       |              |           |                  |                   | ✓           |
| Eliminate adverse effects of development                        |                            |                                |                       |              |           |                  |                   | ✓           |



**Table 4. Other Locally Rare or Government of Guam-Listed Species****Goal**

Continue to study and protect other locally rare or government of Guam-listed wildlife species, including the Micronesian starling, protect their essential habitat, evaluate their need for federal listing, and prevent listing of the species in perpetuity.

**Objectives**

1. Continue monitoring existing populations and search for new population of the ufa plant, and other locally rare species.
2. Continue monitoring existing populations and search for new population of the Micronesian starling, and other locally rare species.
3. Coordinate with the government of Guam and other agencies to study the ecology of the species and impacts of key threats on the species, especially the BTS, as well as develop new control methods against key threats.
4. Continue support of species propagation programs such as the installation of nest boxes on Andersen AFB.
5. Continue to search for endangered and threatened species that are presumed extinct (e.g., Guam broadbill, bridled white-eye, little Mariana fruit bat). If found, capture donor stock and establish a captive breeding program.
6. Continue to maintain a standardized, up-to-date inventory and GIS map of endangered and threatened species and unique vegetative communities on Andersen AFB that include historic distribution of the species, current distribution species, number of individuals per population or subpopulation, nesting sites or breeding locations, maps of essential habitat, and other status information for effective long-term management.
7. Continue to coordinate military activities that may affect occupied and unoccupied essential habitat for endangered and threatened species with the USFWS according to Section 7 procedures to prevent adverse impacts to the species and their habitats. Emphasize minimization or avoidance of human disturbance during nesting or breeding seasons. Develop standard mitigation measures (such as flagging or signs, buffers, and coordination) to be implemented whenever a project or activity may affect an endangered or threatened species temporarily.
8. Support the reintroduction of indigenous species of birds or other native wildlife as predator-controlled areas are established.

Source: USAF 2003

**Table 5. Land Uses and Military Mission****Goal**

Continue to encourage utilization and management of Andersen AFB's natural resources consistent with its military mission.

**Objectives**

1. Continue to provide effective coordination among multiple programs and agencies, including GDAWR, the USWFS (to include Section 7 consultation when applicable), USGS BRD, and other appropriate internal and external organizations, to ensure full consideration of natural resources protection at the earliest stages of project planning, including the protection of essential habitat.
2. Continue to coordinate with GDAWR, the USWFS, the USGS BRD, and other agencies in their programs to manage and protect terrestrial and marine resources at Andersen AFB.
3. Continue to provide access and escorts to cooperators when necessary to perform management activities for fish and wildlife resources.
4. Continue to provide access and escorts to Special Ecological Areas to prevent poaching, reduce human disturbance to wildlife, prevent habitat degradation and destruction, and prevent overharvesting of the natural resources.
5. Continue to balance the need to disclose the locations of fruit bats or Mariana crows with the need to maintain discretion on the exact locations of sensitive species.
6. Continue to implement public education and native interpretation programs and increase accessibility of the military to information on resources by centralizing natural resources programs in an environmental education center.
7. Continue to participate in the Annual Work Plan meetings of the Guam National Wildlife Refuge and other opportunities to establish and maintain professional contacts with other agencies, exchange information, evaluate ongoing projects, develop and prioritize new management efforts, coordinate efforts, and maximize staffing and funding resources.
8. Continue active participation in the Base Natural Resources Working Group and Environmental Protection Committee.
9. Continue to maintain environmental compliance by completing the annual reviews and 5-year updates to the INRMP.

Source: (USAF 2003)

**Table 6. Other Fish and Wildlife Management****Goal**

Continue to perpetuate native biodiversity while providing for military mission and compatible public use of lands at Andersen AFB.

**Objectives**

1. Continue to participate in the management of the Refuge Overlay Unit by attending Annual Work Plan meetings and coordinating Air Force operations that affect the Refuge Overlay Unit with the USFWS at an early planning stage.
2. Continue close coordination with other agencies, including GDAWR, USGS BRD, USDA, and other agencies.
3. Continue to update Andersen AFB residents and contractors on environmental programs.
4. Conduct a study of sustainable coconut crab harvest levels and locations.
5. Provide for the conservation protection and perpetuation of Guam's native fish and wildlife resources.
6. Continue to provide opportunities for the public to learn about, see, and enjoy natural resources using presentations, brochures, and guided tours of natural areas.
7. Develop and implement a program to manage the harvest of culturally important plants.
8. Continue to control feral animals to promote the natural environment and protect human health and safety.
9. Upgrade Natural Resources Management Staff as needed and authorized.
10. Hire a wildlife biologist.
11. Hire a cultural resources management assistant.

Source: (USAF 2003)

**Table 7. Watershed Protection****Goal**

Continue to protect groundwater and offshore water resources.

**Objectives**

1. Continue effort to identify and protect all groundwater aquifer recharge zones on Andersen AFB.
2. Protect vegetation and primary aquifer recharge areas on the installation.
3. Continue to prevent freshwater runoff from outdoor recreation facilities from entering the nearshore marine environment.

Source: (USAF 2003)



**Table 8. Grounds Maintenance****Goal**

Continue to provide an integrated grounds maintenance program that minimizes costs, protects the environment (particularly the sole-source aquifer and endangered and threatened species), and supports the military mission.

**Objectives**

1. Continue to maintain or convert as much improved grounds to semi-improved grounds as possible.
2. Continue to avoid the use of plants in landscaping and gardens that have the potential to escape into the wild and become pest weeds.
3. Continue to provide landscaping that is functional in nature, simple and informal in design, compatible with adjacent surroundings and complimentary to the overall natural tropical setting of Andersen AFB.
4. Continue to implement the integrated grounds management program to minimize the amounts of chemicals and water needed to maintain grounds and landscaped areas in healthy and attractive conditions.
5. Continue to protect native wildlife and their habitat.

Source: (USAF 2003)

**Table 9. Outdoor Recreation and Public Access****Goal**

Continue to provide opportunities for quality outdoor recreation experiences and for the public to participate in compatible natural resources activities to support environmental programs and to enhance public awareness of and appreciation for the natural environment at Andersen AFB.

**Objectives**

1. Continue to ensure effective coordination between Services and NRP to protect natural resources through full consideration early in the planning process and through consultation to reduce or avoid adverse impacts to wildlife and their habitat in Special Ecological areas.
2. Continue to prevent human disturbance of endangered and threatened species.
3. Continue to preserve and protect high quality essential habitat and coastal areas.
4. Continue to provide opportunities for public access to and enjoyment of natural resources by implementing new interpretive programs that balance mission requirements for outdoor recreation with the need to protect and recover endangered and threatened species, and conserve other elements of native biodiversity.
5. Continue to provide information about natural resources and outdoor recreation activities and services at Andersen AFB to base personnel and the public through the base newspaper, "Commander's Channel," signs, flyers, briefings, and pamphlets.
6. Continue to control feral ungulates by providing recreational hunting to base personnel and the general public.

Source: (USAF 2003)

**Table 10. Coastal Resources****Goal**

Continue to protect, maintain, and improve natural resources in the coastal zone of Anderson AFB.

**Objectives**

1. Assess natural resources management needs for GIS data.
2. Convert ArcView natural resources files into ArcGIS files for use in GeoBase.
3. Develop additional databases and digital maps needed to support the Andersen AFB Natural Resources theme in GeoBase, including mapping of grounds management units on Andersen AFB.
4. Ensure that Air Force data quality and accuracy standards are met.
5. Ensure that sufficient program funds are available for purchasing data and services, software and hardware, and for maintaining the Natural Resources theme in GeoBase.
6. Ensure that natural resource staff have access to GeoBase and adequate training to use GeoBase effectively.
7. Participate in intra- and interagency meetings to optimize data sharing and allow for communication and technical updates.

Source: (USAF 2003)

### **15.3 US NAVY REGIONAL INTEGRATED CULTURAL RESOURCE MANAGEMENT PLAN GOALS AND OBJECTIVES**

The goal of the Regional Integrated Cultural Resource Management Plan (RICRMP) is to preserve and protect significant archeological, architectural, and cultural resources on Guam lands under the control and authority of the COMNAVREG Marianas. Preservation and protection are accomplished in a manner compatible with the installation mission, compliant with legal requirements, and consistent with ecosystem management principals and guidelines. The RICRMP provides a framework for preservation and protection of cultural and historic resources, and the program meets the following five essential objectives:

1. Establishes priorities for cultural resources management that comply with US laws, with DoD and Navy regulations, and with government of Guam laws and regulations.
2. Provides management procedures for the ongoing identification, maintenance, and enhancement of cultural resources.
3. Promotes the use of cultural resources in ways that are beneficial to the military mission, the resources, and other public interests.
4. Integrates cultural resource management concerns and issues with COMNAVREG Marianas development plans, resource management plans, and training needs.
5. Establishes requirements, goals, and targets that can be easily reflected in budget documents and decision-making processes, and can be addressed in conservation self-assessments.

The RICRMP is a five-year plan that serves as a decision document for cultural resource management actions and specific compliance procedures. The COMNAVREG Marianas RICRMP complies with DoD Directive 4710.1 (*Archaeological and Historic Resources Management*, dated

June 1984) and DoD Instruction 4715.3 (*Environmental Conservation Program*, dated May 1996). The RICRMP also follows the guidelines of Chapter 23 of the US Navy Environmental and Natural Resources Program Manual (OPNAVINST 5090.1B), which defines Navy policy, statutory requirements, and management responsibilities for cultural resource preservation and management. The guidelines specify that COMNAVREG Marianas develop and implement an Integrated Cultural Resources Management Plan that accomplishes the following:

- Identifies areas of probability for eligible historic properties based on surveys performed by cultural resources professionals;
- Contains an evaluation and inventory of all known historic properties under its jurisdiction or control;
- Recommends priorities and describes applicable legal compliance strategies that avoid potential conflicts between Navy mission and preservation mandates; and
- Prescribes specific compliance actions to be taken if a Navy undertaking affects eligible historic properties.

The RICRMP also specifies that Navy actions on Guam are governed by the regulations and laws of Guam. Coordination with the Guam Historic Preservation Division of the Department of Parks and Recreation is an important element of the Navy's program for cultural and historic preservation and protection.

The central working section of the RICRMP includes four elements or provisions: 1) management and preservation, 2) standard operating procedures, 3) consultation procedures, and 4) program responsibilities. Key provisions of the RICRMP under the management and preservation section can drive the formulation of projects and activities over the five-year plan implementation period.

The management and preservation section outlines policy, recommendations, and procedures for management of cultural resources. Appendix 5 contains a copy of RICRMP Table II-2 *Summary of RICRMP Management and Preservation Recommendations*. This table refers to subsections of the RICRMP (Chapter II) that specify management objectives that apply to all known or potential cultural and historic resources on Navy lands. These objectives include:

- a. Resource identification;
- b. Resource protection, monitoring, and maintenance;
- c. Resource data management;
- d. Compliance review;
- e. Interpretation and education; and
- f. Administrative actions.

The RICRMP covers Navy lands at five locations that accommodate much of the Navy's operational support functions for the military mission on Guam. These five locations are the Water Front Annex (6,837 acres and adjacent submerged lands), the Ordinance Annex (8,840 acres), the Hospital Annex/Nimitz Hill (approximately 600 acres combined), Communications Annex at Finegayan (2,952 acres), and the Communications Annex at Barrigada (1,848 acres).



For the scope of cultural resource management, geographic information (maps), a review of the relationship of the RICRMP with other mission plans and strategies, and a detailed list of historic and significant properties and sites at all annex locations, please refer directly to the RICRMP COMNAVREG Marianas (COMNAVREG Marianas 2005).

#### **15.4 ANDERSEN AFB INTEGRATED CULTURAL RESOURCE MANAGEMENT PLAN**

The Andersen AFB ICRMP provides a comprehensive framework for protecting and managing the installation's cultural resources compatible with the installation mission, satisfies legal compliance requirements, and is consistent with ecosystem management principles and guidelines. The Andersen AFB ICRMP lays the foundation for a program of historic preservation that achieves the following overarching goals:

1. Establishes priorities for cultural resources management that comply with U.S. laws, with DoD and Air Force regulations, and with government of Guam laws and regulations.
2. Provides management procedures for the on-going identification, maintenance, and enhancement of cultural resources.
3. Promotes the use of cultural resources in ways that are beneficial to the military mission, the resources, and other public interests.
4. Integrates cultural resource management concerns and issues with the installation's long-range development plans, resource management plans, and training needs.
5. Establishes requirements, goals, and targets that can be easily reflected in budget documents and decision-making processes, and can be addressed in conservation self-assessments.

The ICRMP is intended as a five-year plan that serves as a decision document for cultural resource management actions and specific compliance procedures. The Andersen AFB ICRMP complies with DoD Directive 4710.1 (*Archaeological and Historic Resources Management*, dated June 1984) and DoD Instruction 4715.3 (*Environmental Conservation Program*, dated May 1996), and other Air Force instructions.

Presidential Executive Order 13287 promulgated in March 2003 reiterates the national policy to "provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of the historic properties owned by the Federal Government." This executive order further states that "agencies shall maximize efforts to integrate the policies, procedures, and practices of the NHPA and this order into their program activities in order to efficiently and effectively advance historic preservation objectives in the pursuit of their missions."

The ICRMP has five components: 1) program responsibilities, 2) cultural resources, 3) compliance procedures, 4) consultation procedures, and 5) standard operating procedures. The *Compliance Procedures* section of the ICRMP identifies cultural resource issues that affect Andersen AFB from two perspectives—the effects of base operations on cultural resources, and the effects of cultural resource management on base operations. The section also includes preservation and mitigation strategies for addressing these issues. Recommendations range from site-specific management proposals to general program suggestions for encouraging historic preservation among base residents and staff and the local community.

The Andersen AFB INRMP also identifies and discusses cultural resource management objectives in the context of natural resource management. The management areas of overlap include the following:

- Controlling access to Special Ecological Areas, which, in cases where these areas also include cultural resources, could help in site preservation;
- Implementing public education and interpretive programs, providing opportunities for public access to and enjoyment of resources, and increasing accessibility of the military to information resources; this could be combined with cultural resource information to maximize dissemination of resource management information;
- Continuing existing interpretive programs;
- Developing and implementing a management program for harvesting cultural plants; this could be coordinated with the collection of information on traditional cultural uses of the base, including an inventory of culturally important plant species and a study of the ecology of culturally important plants;
- Developing and implementing a Coastal Resources Management Plan;
- Continuing to develop, use, and maintain the Natural Resources theme in the Andersen AFB GIS;
- Upgrading the Natural Resources Management staff, including hiring a cultural resources management assistant; and
- Conducting law enforcement patrols.

Tables 11 and 12 are modified from the Andersen AFB ICRMP. Table 11 provides a summary of the preservation and mitigation strategies established for the installation, and Table 12 covers site-specific recommendations for historic sites on installation lands (USAF 2003). The tables are provided here for contextual purposes. For a broader perspective, it's recommended that the reader examine the Andersen AFB ICRMP directly. For the purposes of this Strategy, it's important that the reader understand the scope of related DoD installation plans and that there are extensive complimentary programs in place for DoD and government of Guam resources. DoD - Guam planning and program management work is dependent involves shared expertise, collaboration and an effective consultative process.



**Table 11. General Preservation and Mitigation Strategies by Program and Budget Priority**

| Priority*   | Recommendation                                                                                                                                                                                                                      | Implemented By | Other Involved Parties                                                    | ICRMP Section Reference                  |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------|------------------------------------------|
| Recurring   | Continue to coordinate with other base organizations and programs to ensure that cultural resources are given full consideration in early stages of project planning                                                                | CRM            | Various                                                                   | IV.2.2.1. Integration with Base Planning |
| Recurring   | Coordinate with the Chief Conservation Officer and with law enforcement personnel in 36 SFS to ensure that historic preservation laws (especially ARPA) are strictly enforced                                                       | CRM            | Chief Conservation Officer, law enforcement personnel                     | IV.2.2.5. Enforcement                    |
| Recurring   | While protecting sensitive site location information, make reports from current and future archaeological projects at Andersen AFB available to the public                                                                          | CRM            | Public library, UoG library, MARC, Guam HPO                               | IV.2.2.6. Public Involvement             |
| Recurring   | Ensure that key staff are offered opportunities for maintaining up-to-date information on historic preservation law; training needs should be evaluated on an annual basis and should be planned and budgeted as appropriate        | 36 CES         | CRM                                                                       | IV.2.2.7. Training                       |
| Recurring   | Ensure that law enforcement and conservation staff undergo cultural resource sensitivity and ARPA training                                                                                                                          | CRM            | Law enforcement, conservation staff                                       | IV.2.2.7. Training                       |
| Recurring   | Actively seek suggestions for improvements to the ICRMP from users and incorporate these ideas into annual updates to the plan                                                                                                      | CRM            | Various                                                                   | IV.2.2.8. ICRMP Distribution             |
| Recurring   | Arrange for periodic discussion sessions on the cultural resources program with the Guam HPO                                                                                                                                        | CRM            | Guam HPO                                                                  | IV.2.2.9. Program Monitoring             |
| Recurring   | Prepare annual reports on cultural resource activities, prior to ESOH CAMP reviews                                                                                                                                                  | CRM            | Chief, Natural and Cultural Resources; Chief, Environmental Flight,       | IV.2.2.9. Program Monitoring             |
| Maintenance | Carry out an ethnographic, traditional places survey of the installation                                                                                                                                                            | CRM            | Contractors                                                               | IV.2.2.2. Resource Inventory             |
| Maintenance | Carry out historical and archaeological surveys and investigations to complete resource inventories                                                                                                                                 | CRM            | Contractors                                                               | IV.2.2.2. Resource Inventory             |
| Maintenance | Submit any cultural resource survey reports, with recommendations concerning identified resources and eligibility, to GHPO for review and eligibility determinations                                                                | CRM            | MAJCOM EPC, MAJCOM History and Legal office, USAF/CEVP, AFEE/EC, Guam HPO | IV.2.2.2. Resource Inventory             |
| Maintenance | Incorporate cultural resources information into installation GeoBase system and ensure that the CRM has access to basic hardware, software, and GeoBase support for use in planning, site monitoring, and impact assessment reviews | CRM            | GeoBase staff                                                             | IV.2.2.3. Site Data Mgmt                 |



**Table 11. General Preservation and Mitigation Strategies by Program and Budget Priority**

| Priority*   | Recommendation                                                                                                                                                                                                                             | Implemented By | Other Involved Parties                                                                                              | ICRMP Section Reference      |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------|------------------------------|
| Maintenance | Coordinate with Outdoor Recreation programs to ensure that activities do not impact cultural resources                                                                                                                                     | CRM            | Outdoor Recreation program, Natural Resource Program                                                                | IV.2.2.4. Interpretation     |
| Maintenance | Incorporate cultural resource information into staff and contractor briefings                                                                                                                                                              | CRM            | Various                                                                                                             | IV.2.2.4. Interpretation     |
| Maintenance | Contact the Guam HPO to identify local groups and/or individuals (off-base) who have interest in the cultural resources of the installation; start a database of such groups to facilitate future consultation and compliance requirements | CRM            | Guam HPO, Public Affairs                                                                                            | IV.2.2.4. Interpretation     |
| Maintenance | Design cultural resource protection signs for areas of high public use and in the EOD/Small Arms Range at Tarague embayment; such signs should state the penalty for disturbing or damaging properties based on ARPA                       | CRM            | Public Affairs, EOD, Judge Advocate                                                                                 | IV.2.2.5. Enforcement        |
| Maintenance | Involve on-base and off-base community groups in the commemoration ceremony for Northwest Field                                                                                                                                            | CRM            | Public Affairs, Wing Historian                                                                                      | IV.2.2.6. Public Involvement |
| Maintenance | At time of ICRMP distribution, brief Wing Commander on the goals and objectives of the ICRMP, and his active support in implementing its management actions should be solicited                                                            | CRM            | Wing Commander                                                                                                      | IV.2.2.8. ICRMP Distribution |
| Maintenance | At time of ICRMP distribution, make formal or informal briefings to organizations that will be most using the plan                                                                                                                         | CRM            | Environmental Flight, offices with planning functions in 36 CES, Judge Advocate, Public Affairs, and Wing Historian | IV.2.2.8. ICRMP Distribution |
| Enhancement | Continue development of interpretive projects at Tarague embayment                                                                                                                                                                         | CRM            | Outdoor Recreation Program, Natural Resource Program                                                                | IV.2.2.4. Interpretation     |
| Enhancement | Expand the current interpretive program to include interpretive activities related to the significance of Andersen AFB in World War II and the Cold War                                                                                    | CRM            | Public Affairs                                                                                                      | IV.2.2.4. Interpretation     |
| Enhancement | Include cultural resource information in newcomer orientation briefings                                                                                                                                                                    | CRM            | Public Affairs                                                                                                      | IV.2.2.4. Interpretation     |
| Enhancement | Incorporate a public outreach component to contracts and permits for archaeological work                                                                                                                                                   | CRM            | Public Affairs, Judge Advocate                                                                                      | IV.2.2.4. Interpretation     |
| Enhancement | Involve on-base community groups in conservation activities such as an "adopt-a-trail" program at Tarague                                                                                                                                  | CRM            | Natural Resources Program, Public Affairs                                                                           | IV.2.2.6. Public Involvement |
| Enhancement | Investigate Internet-based opportunities to maximize staff training costs                                                                                                                                                                  | CRM            | --                                                                                                                  | IV.2.2.7. Training           |

\* Priority descriptions are taken from DoD Instruction 4715.3

**Recurring** - Recurring cultural resources conservation management requirements include activities needed to meet applicable compliance requirements or which are in direct support of the military mission; recurring costs consist of manpower, training, supplies, hazardous waste disposal, operating recycling activities, permits, fees, testing and monitoring and/or sampling and analysis, reporting and record-keeping, maintenance of environmental conservation equipment, and compliance self-assessments.

**Current** - Current compliance requirements include projects and activities needed because an installation is currently out of compliance (has received an enforcement action from a duly authorized federal or state agency, or local authority); has a signed compliance agreement or has received a consent order; has not met requirements based on applicable federal or state laws, regulations, standards, presidential executive orders, or DoD policies; are immediate and essential to maintain operational integrity or sustain mission readiness; also includes projects and activities that are not currently out of compliance but shall be out of compliance if not implemented in the current program year.

**Maintenance** - Maintenance requirements include those projects and activities needed that are not currently out of compliance but shall be out of compliance if not implemented in time to meet an established deadline beyond the current program year.

**Enhancement** - Enhancement actions beyond compliance include those projects and activities that enhance conservation resources or the integrity of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required under regulation or executive order and are not of an immediate nature.

Table 12. Site-Specific Recommendations for Historic Sites on Installation Lands

|            | Description                                 | Property Category;<br>Value;<br>Eligibility Criteria                           | Recommended<br>Inventory Actions                                                                      | Recommended Management<br>Treatment  |                                                                                                      |
|------------|---------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------|
|            |                                             |                                                                                |                                                                                                       | Routine or<br>Updating<br>Management | Sec. 106 Possible<br>Mitigation<br>Actions                                                           |
| PN-5       | Sherd scatters                              | Site, Archaeological;<br>Archaeology, history,<br>culture;<br>Criteria A, D    | Include in resurvey of<br>general area                                                                | -                                    | Data recovery                                                                                        |
| PN-6       | Spanish (?) oven                            | Site, Archaeological;<br>Archaeology, history,<br>culture; Criteria A, C, D    | Locate, record,<br>evaluate; complete<br>survey of area                                               | Monitor for<br>ARPA<br>violations    | Data recovery                                                                                        |
| PN-7       | Spanish Well                                | Site, Archaeological;<br>Archaeology, history,<br>culture;<br>Criteria A, C, D | Locate, record,<br>evaluate; complete<br>survey of area                                               | Monitor for<br>ARPA<br>violations    | Data recovery                                                                                        |
| PN-8+      | Water<br>catchments                         | Site, Archaeological;<br>Archaeology, history,<br>culture;<br>Criteria A, D    | Locate, record,<br>evaluate; complete<br>survey of area                                               | Monitor for<br>ARPA<br>violations    | Data recovery                                                                                        |
| 00014      | Jinapsan<br>Complex, latte<br>site          | Site, Archaeological;<br>Archaeology, history,<br>culture;<br>Criteria A, D    | Determine if on AAFB<br>property; if so, record<br>and manage                                         | Monitor for<br>ARPA<br>violations    | Data recovery                                                                                        |
| 00100<br>+ | Sherd scatters                              | Site, Archaeological;<br>Archaeology, history,<br>culture;<br>Criteria A, D    | Include in resurvey of<br>general area                                                                | -                                    | Data recovery                                                                                        |
| 00200<br>+ | Sherd scatters                              | Site, Archaeological;<br>Archaeology, history,<br>culture;<br>Criteria A, D    | Include in resurvey of<br>general area                                                                | -                                    | Data recovery                                                                                        |
| 01065      | Northwest Field<br>(runway complex<br>only) | Structure;<br>History, culture;<br>Criterion A                                 | Develop management<br>plan per Military<br>Training EIS MOA*;<br>complete and submit<br>NR Nomination | -                                    | Follow<br>management<br>plan to be<br>prepared                                                       |
| 00078      | Mt. Santa Rosa<br>Reservoir                 | Structure;<br>History;<br>Criterion A                                          | -                                                                                                     | A maintained<br>facility             | Place<br>engineering<br>records in site<br>preservation file<br>(Cultural<br>Resources<br>Materials) |
| 09120      | Water Reservoir,<br>abandoned               | Site, Archaeological;<br>History;<br>Criterion A                               | -                                                                                                     | Monitor for<br>ARPA<br>violations    | Place<br>engineering<br>records in site<br>preservation file<br>(Cultural<br>Resources<br>Materials) |
| 09601      | Tarague Well No.<br>4                       | Site, Archaeological;<br>History; architecture                                 | -                                                                                                     | Part of<br>Interpretive              | Retain as a<br>preserved site                                                                        |



| Table 12. Site-Specific Recommendations for Historic Sites on Installation Lands |             |                                                      |                                  |                                          |                                            |
|----------------------------------------------------------------------------------|-------------|------------------------------------------------------|----------------------------------|------------------------------------------|--------------------------------------------|
|                                                                                  | Description | Property Category;<br>Value;<br>Eligibility Criteria | Recommended<br>Inventory Actions | Recommended Management<br>Treatment      |                                            |
|                                                                                  |             |                                                      |                                  | Routine or<br>Updating<br>Management     | Sec. 106 Possible<br>Mitigation<br>Actions |
|                                                                                  |             | Criterion A, C                                       |                                  | Trail; monitor<br>for ARPA<br>violations |                                            |

\* The Memorandum of Agreement implementing the 1999 EIS for military training in the Marianas (Belt Collins Hawaii 1999) stipulates that:

- Andersen Air Force Base will hold an annual commemoration of the last bombing mission during World War II that took off from Northwest Field;
- In consultation with the Guam HPO, Andersen AFB will develop a plan for the long-term management of Northwest Field; and
- The exact location of rapid runway repair (RRR) training exercises proposed in the EIS will be determined in consultation with the Guam HPO so as to avoid areas of historic significance.

**Recommendation:** Prepare a cultural resource project to develop a military landscape history of Northwest Field that integrates all available archaeological, historical, oral, and archival data on this significant portion of Andersen AFB, under authority of Section 110, NHPA, and AFI 32-7065 (USAF 2000).

## **16. GUAM NATIONAL WILDLIFE REFUGE**

### **16.1 GUAM NATIONAL WILDLIFE REFUGE**

The GNWR, headquarters at the Ritidian Unit is adjacent to Andersen AFB at the northwestern point of the island. Most of the western two-thirds of the base, as well as the eastern coastal edge of the base, are designated an overlay unit of the GNWR. The Air Force Overlay Unit, which incorporates approximately 10300 acres, was established in 1994 by a cooperative agreement between the Air Force and US Fish and Wildlife Service. A similar Navy Overlay Unit incorporates 12,000 plus acres and was established by a separate cooperative agreement. The cooperative agreements were provided for in the MOU signed by the Navy, Air Force and Fish and Wildlife Service in 1993.

The GNWR is an integral part of the natural resource management system in Guam. The environmental consequences of the Guam Buildup, especially those development components that involve new and expanded military bases and training areas in northern Guam, will require extraordinary considerations in order to protect and restore threatened and endangered species and their habitat.

The most restrictive requirements apply to any proposed land use change within the Ritidian Unit. Such proposals require special clearances and considerations from environmental authorities (General Plan 2002:2-10). Federal and Guam natural resource agencies responsible for management activities at Andersen AFB include the Guam National Wildlife Refuge, US Fish and Wildlife Service, National Biological Service, National Oceanic and Atmospheric Administration, US Soil Conservation Service, Guam Division of Aquatic and Wildlife Resources, Guam Bureau of Planning, and Guam Environmental Protection Agency (USAF 2003).

GNWR was established to protect and recover endangered and threatened species, protect habitat, control nonnative species with emphasis on the brown tree snake, protect cultural resources, and provide recreational and educational opportunities to the public where possible.

The refuge is composed of 771 acres (401 acres of coral reefs and 370 acres of terrestrial habitat) owned by the US Fish and Wildlife Service and 22,456 acres (mostly forest) owned by the Department of Defense in Air Force and Navy installations that are classified as refuge overlay. The Ritidian Unit of the Refuge, which is owned by the US Fish and Wildlife Service, was created from a small decommissioned, specialized naval installation.

Guam Refuge consists of eight administrative units, five of which are noncontiguous, under two different legal authorities. The overlay refuge contains 22,456 acres in seven Department of Defense units on active military bases where the US Fish and Wildlife Service has consulting rights and management obligations, and a distinct 771-acre fee title area wholly owned and managed by the US Fish and Wildlife Service at Ritidian Point.

Current management activities at the Ritidian Unit focus on controlling invasive species, including the BTS, pigs, deer, and other alien animals. The refuge is also actively involved in a variety of baseline surveys of plants and animals at the Ritidian Unit and participates in established ongoing surveys on the overlay refuge with other federal and local resource agencies. Information from these surveys will be used to develop and implement a public use plan and to develop interpretive trails and educational material. Staff perform native tree, endangered moorhen, and wetland surveys to provide growth, distribution, and abundance information and to manage and implement recovery objectives in Refuge

Overlay units. Other staff activities include participating in recovery efforts for endangered Mariana crows and performing population censuses of endangered island swiftlets with the GDAWR.

Staff lead efforts to control populations of feral water buffalo at the Navy Ordinance Annex in southern Guam to reduce damage to forest, wetland, and riparian habitats (USFWS 2008).

## **16.2 GNWR COMPREHENSIVE CONSERVATION PLAN**

Refuge personnel are in the later stages of developing a Comprehensive Conservation Plan (CCP) and Environmental Assessment (EA) for the refuge. The CCP will guide the long-term management of fish, wildlife, plants, coral reefs, habitats, and public uses within the refuge system. Central to this planning effort is the development of clear goals, objectives, and management strategies for achieving the purposes for which the refuge was established. The CCP will involve a management program that meets the purposes of the refuge and the mission, policies, and goals of the National Wildlife Refuge System (USFWS 2007). The CCP will also be designed to accomplish the following:

- Inform the public about proposed refuge management actions.
- Provide a vision statement that describes desired future conditions for the refuge.
- Ensure that current and future uses of the refuge are compatible with its purposes.
- Provide long-term continuity in refuge management.
- Provide opportunities for public input on management decisions.
- Provide budget justification for operation, maintenance, and facility development requests.

As the CCP is developed, refuge personnel will also be developing an environmental analysis that evaluates the consequences of implementing various management alternatives, in compliance with NEPA.

The CCP development process is at the point where information from public scoping efforts is being compiled and analyzed. Management objectives and implementation strategies are being developed base on this information to guide activities over a 15-year period beginning in 2009. A review of preliminary management alternatives is scheduled in April and May of this year (USFWS 2008).



## 17. FINANCING NATURAL RESOURCE MANAGEMENT

Funding for natural resource management must be expanded to address the additional work load associated with a \$10 billion economic boom. Additional funding will ensure that the increased work load will be addressed and that residents will maintain or improve their quality of life throughout DoD's military buildup. Sustainability and a clean environment are important determinants of quality of life. It is also important that Guam maintain the ability to sustain continued economic growth and social development into the future (Camacho 2007).

The basis for increased funding for the Guam Buildup is presented further on in this section. An expanded description is provided in the document *Civilian Military Task Force Planning for Military Growth: November 2007 Needs Assessment Executive Summary* (Camacho 2007). The following information is taken from the 2007 Needs Assessment with only a few changes to amplify and focus on key points.

In order to provide DoD facilities to accommodate the transfer of personnel and dependents to Guam by 2012, the government of Guam will need to respond immediately to implement protocols to expedite and improve efficiencies in the permitting process, determine mitigation requirements, and respond to an aggressive EIS/OEIS process without harming or sacrificing the island's ecosystem in the process. The government of Guam and federal natural resource agencies are charged with protecting Guam's natural resources and its environment. Impacts from private development and federal projects leading up to the relocation of the 3<sup>rd</sup> Marine Expeditionary Force are already impacting Guam's environment. According to the Water Programs Division of the Guam EPA, the number of building permits from 2007 to date has tripled from approximately 100 to over 300 permits. Similarly, earthmoving permits have doubled in just the past six months (Delfin 2008).

By definition under federal statute, Guam is entirely within the coastal zone. The Bureau of Statistics and Plans, GCMP is responsible for protecting Guam's coastal zone. Administering the Federal Consistency Determination program is also part of the GCMP work program. Consistency Determination applications for federally funded projects have increased. During 2006 there were 150 applications. Development applications through the GLUC have also increased significantly, driven by Guam's anticipated economic growth from the buildup.

The GCMP will have additional pressure to manage development when the Seashore Reserve Plan is approved. The GCMP works within the parameters of the Seashore Reserve Plan to ensure Guam's coastal waters are not negatively impacted by military or private-sector development.

Because DoD has instituted an aggressive timetable that will adhere to the minimum requirements set forth in federal statutes, GCMP has had to immediately respond by identifying and addressing issues at the beginning of the EIS process. Program capacity is inadequate to continue providing rapid and comprehensive responses to the EIS process over the next year and a half.

GCMP will need to draw on specialized professional services to manage the complexity of DoD's development plans. Research studies will need to be conducted to provide baseline data to ensure that mitigation, monitoring, and enforcement are effectively implemented. These studies will be used to determine the best methods of assessing cumulative and secondary impacts of DoD and private development projects.

### 17.1 NEPA REVIEW AND MONITORING TEAMS

To ensure flora and fauna are protected, especially those species identified as being in need of conservation, Guam will need a team of technical and biological staff exclusively dedicated to the EIS/OEIS process to develop mitigation design and monitoring so that Guam's native flora and fauna are not impacted. Proactive efforts will be needed to ensure new invasive species are not introduced to Guam and that any detections result in a rapid response to immediately eradicate the invading species. The capacity to handle increased inspection and response demands must be in place prior to the bulk of the military construction phase in 2010. A plant inspection station will need to be constructed and staffed with trained inspectors, and robust quarantine program will need to be implemented to prevent the introduction of invasive species.

The team of technical and biological specialists must have appropriate expertise and knowledge of the marine, wildlife, and terrestrial ecology of Guam to conduct environmental assessment reviews, verifying DoD's findings and conducting mitigation proposal assessments. The team of staff dedicated to DoD's EIS process will need to remain in place for DoD projects beyond 2014 to conduct reviews of private development as Guam's economy grows as a direct result of the military component of the Guam Buildup.

Guam has rich deposits of cultural artifacts from its pre-latte, latte, Spanish, and World War II eras throughout the island; these resources will require protection and preservation. In addition to identifying and ensuring the protection of known historic sites during the EIS process, Guam will be responsible for insuring that archaeological firms hired by DoD are in compliance with federal standards established by the National Park Service for each phase of historic resource management from identification and excavation to storing and analyzing excavated resources. When DoD begins its civil engineering work in 2010, Guam will need to have capacity in place to perform regular site inspections and to catalog and store recovered artifacts.

Table 13 identifies the costs associated with capacity development for the various Guam resource agencies from 2008 to 2014 as well as post-construction costs beginning in 2015.

The extensive scope and aggressive timetable of DoD's buildup will place severe burdens on Guam's ability to review and issue all of DoD's permits. Guam's capacity to review and issue permits and to conduct inspections is at full capacity because of a recent surge in private-sector development. Guam EPA in particular, which has delegated authorities under several key federal environmental laws, will not be able to meet development review and construction permitting demand. Appropriately, Guam EPA will place a strong emphasis on protection of water resources, including marine waters, wetlands, and watershed ecosystems through the Guam Water Quality Standards. DoD's timetable will be significantly pushed back unless Guam EPA's capacity is significantly increased. At the current rate of demand for permits coupled with significant staff retention and recruitment challenges over the past 18 months, DoD's construction timeline requirements are unattainable without a significant and focused executive policy solution and financial backing.

| <b>Table 13. Estimated Additional Funding Required to Meet Military Growth Demands</b> |                                                            |                                         |                                                   |
|----------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------|---------------------------------------------------|
| <b>Cost Category</b>                                                                   | <b>Pre-Construction Phase<br/>(EIS/OEIS)<br/>2008-2010</b> | <b>Construction Phase<br/>2010-2014</b> | <b>Post-Construction Phase<br/>Beginning 2015</b> |
| <b>Bureau of Statistics and Plans: Guam Coastal Management Program (GCMP)</b>          |                                                            |                                         |                                                   |
| Personnel                                                                              | \$317,000                                                  | \$440,000                               | \$455,000                                         |
| Office Space                                                                           | \$15,000                                                   | \$50,000                                | \$50,000                                          |
| Training                                                                               | \$15,000                                                   | \$30,000                                | \$30,000                                          |
| Equipment                                                                              | \$5,000                                                    | \$72,000                                |                                                   |
| Research & Monitoring                                                                  | \$120,000                                                  | \$100,000                               |                                                   |
| Education/Outreach                                                                     | \$30,000                                                   | \$30,000                                |                                                   |
| Professional Services                                                                  | \$120,000                                                  | \$120,000                               | \$60,000                                          |
| Fuel and Supplies                                                                      | \$4,000                                                    | \$10,000                                | \$12,500                                          |
| <b>Subtotal</b>                                                                        | <b>\$626,000</b>                                           | <b>\$852,000</b>                        | <b>\$607,500</b>                                  |
| <b>Department of Parks and Recreation: Guam Historic Resources Division</b>            |                                                            |                                         |                                                   |
| Personnel                                                                              | \$130,000                                                  | \$130,000                               |                                                   |
| Equipment and Supplies                                                                 | \$99,500                                                   |                                         |                                                   |
| Professional Services                                                                  | \$40,000                                                   | \$40,000                                |                                                   |
| Preservation Space                                                                     | \$120,000                                                  |                                         |                                                   |
| <b>Subtotal</b>                                                                        | <b>\$780,459</b>                                           | <b>\$170,000</b>                        |                                                   |
| <b>Department of Agriculture</b>                                                       |                                                            |                                         |                                                   |
| <b>Aquatic and Wild Life</b>                                                           |                                                            |                                         |                                                   |
| Personnel*                                                                             | \$197,563                                                  | \$197,563                               | \$197,563                                         |
| Equipment & Supplies                                                                   | \$114,600                                                  |                                         |                                                   |
| <b>Conservation Enforcement</b>                                                        |                                                            |                                         |                                                   |
| Personnel*                                                                             |                                                            | \$313,640                               | \$313,640                                         |
| Equipment                                                                              |                                                            | \$160,000                               |                                                   |
| Plant Inspection                                                                       |                                                            |                                         |                                                   |
| Personnel*                                                                             |                                                            | \$172,417                               | \$172,417                                         |
| <b>Agricultural Development Services</b>                                               |                                                            |                                         |                                                   |
| Personnel*                                                                             |                                                            | \$59,194                                | \$59,194                                          |
| Equipment                                                                              |                                                            | \$40,000                                |                                                   |
| <b>Subtotal</b>                                                                        | <b>\$312,163</b>                                           | <b>\$942,814</b>                        | <b>\$742,814</b>                                  |
| <b>Guam Environmental Protection Agency</b>                                            |                                                            |                                         |                                                   |
| Personnel*                                                                             | \$2,080,000                                                | \$100,000                               |                                                   |
| Supplies and Fuel*                                                                     | \$92,000                                                   | \$40,800                                |                                                   |
| Equipment                                                                              | \$669,000                                                  | \$120,000                               |                                                   |
| Utilities*                                                                             | \$92,000                                                   | \$65,500                                |                                                   |
| Professional Services                                                                  | \$300,000                                                  | \$40,000                                |                                                   |
| Office Space Rental*                                                                   | \$240,000                                                  | \$252,000                               |                                                   |
| Training                                                                               | \$150,000                                                  | \$100,000                               |                                                   |
| <b>Subtotal</b>                                                                        | <b>\$3,623,000</b>                                         | <b>\$718,300</b>                        |                                                   |
| <b>Subtotals – Category</b>                                                            | <b>\$5,341,622</b>                                         | <b>\$2,683,114</b>                      | <b>\$1,350,314</b>                                |
| <b>Grand Total \$9,375,050</b>                                                         |                                                            |                                         |                                                   |

Note: These estimates are subject to refinement to support a budget request to Congress through the Department of Interior Office of Insular Affairs for the FY 2010 federal budget.

To understand which funding approaches and sources are appropriate to target, it is necessary to understand the makeup of local natural resource program budgets. A number of natural resource



programs are essentially 100 percent funded through federal grants or from government of Guam General Fund sources. Other local funding sources include special fund revenues from permit fees and penalties and, to a small extent, from non-government entities. Table 14 provides an overview of budget figures for the following natural resource programs:

- Department of Agriculture Natural Resource Programs – Forestry and Soil Resources, Law Enforcement, Plant Inspection, BTS, Endangered Species Recovery, and Sport Fish Restoration
- Department of Parks Natural Resource Programs – Territorial Park Protection, Guam Territorial Seashore Park, and Historic Resource Division/Historic Preservation
- Bureau of Statistic and Plans Natural Resource Programs – Guam Coastal Management Program
- Guam Environmental Protection Agency Natural Resource Programs – Water Resources Management, Water Pollution Control, Environmental Planning and Review, and Environmental Monitoring and Analytical Services

**Table 14. Natural Resource Programs Funding Sources**

| Agency                                  | General Fund | Special Funds | Federal Sources          | Total Percent (L/F) <sup>1</sup> |
|-----------------------------------------|--------------|---------------|--------------------------|----------------------------------|
| Department of Agriculture               | \$2,471,262  | \$68,022      | \$2,166,929              | \$4,706,213<br>54/46             |
| Guam Coastal Management Program         | -0-          | -0-           | \$936,358                | \$936,358<br>0/100               |
| Guam Department of Parks and Recreation | \$3,605,042  | -0-           | \$390,109                | \$3,995,151<br>90/10             |
| Guam Environmental Protection Agency    | -0-          | \$641,731     | \$2,600,000 <sup>2</sup> | \$3,241,731<br>20/80             |
| Totals                                  | \$6,076,304  | \$709,753     | \$6,093,396              | \$12,879,453<br>47/53            |

<sup>1</sup> Federal/Local funding ratio

<sup>2</sup> Estimate – mainly Clean Water Act grant funding

Source: Executive Budget FY 2009

## 17.2 FUNDING SOURCES

As detailed above a significant part (nearly half) of natural resource management program funding comes from existing federal grants, and the other half comes from local sources. Funding levels can fluctuate year to year, and on occasion new opportunities arise to increase funding from existing sources. By most accounts, natural resource agencies do a good job of managing federal grants and

local special funds to ensure basic program services are maintained according to grant projects, programmatic work plans, and objectives. Following are some of the major funding sources for natural resource agencies.

**Federal sources:**

- Sport Fish and Wildlife Restoration Act, US Endangered Species Act Section 6
- Coral Reef Initiative
- Western Pacific Fisheries Council
- Coastal Zone Management Section 309
- Clean Water Act Section 319
- National Marine Fisheries Service Sea Turtle Recovery
- Office of Insular Affairs funding for brown tree snake control

**Local funding sources:**

- General Fund appropriations for the DAWR Law Enforcement section
- Wildlife Conservation Fund (hunting license and permit fees)
- Private/NGO donations
- Penalties from enforcement activities

Additional funding may be obtained from sources such as the USEPA Wetland Conservation and Environmental Monitoring and Assessment Program (EMAP) Grants, Safe Harbor Agreements, Department of Defense Legacy Funding, Secretariat of the Pacific Regional Environment Programme, government of Guam Local Appropriations, in-kind donations, and Land Acquisition Grants (Federal). Guam has received single appropriations from the US Congress through State Wildlife Grant Programs and the Wildlife Conservation Restoration Program.

### **17.3 EVALUATING FUNDING SOURCES**

This part of the strategy provides a list of existing and potential new funding sources and describes an approach to pursuing those sources in the current accelerated management capacity-building context. At least two critical considerations should be made with regard to programming efforts to increase funding for public conservation programs: 1) the time required to bring a source online, and 2) the relative sustainability of the funding over time.

In order to increase agency capacity quickly, the following ranges may be appropriate. The time it would take to obtain approval and implement a revenue stream can be described as either *Immediate*, requiring 4 to 6 months to implement; *Near-Term*, requiring 6 to 12 months to implement; or *Long-Term*, requiring 12 to 24 months to develop and implement. Immediate actions would include implementation through the administrative adjudication process, small grant amendment based on executive level requests, transfer authority, and similar actions. Near-Term actions would possibly involve a critical needs appropriation, a single budget cycle, or a grant cycle. Long-Term actions would involve significant up-front development time as well as potentially multiple development phases, or may involve controversial proposals such as tax increases.



The second consideration is the relative sustainability of a new or expanded funding source. The source could be *Highly Variable*, indicating that it has a direct link to business or other highly cyclical activity and is subject to political manipulation or modification based on short-term special interest. The source could also be considered *Variable*, which would involve a moderate level of external influence and possibly would involve year-to-year factors such as annual appropriations or competitive grants. Finally, a funding source could be described as *Sustainable*, which would indicate that the mechanism is not easily affected or subject to political interests, is part of a historically proven formula-type grant, or is derived from a stable tax base such as real property or retail taxes on essential goods and special assessments linked to certain utilities such as drinking water, wastewater disposal, solid waste, and electricity.

Other important factors that should be considered in evaluating the choice of which financing mechanism(s) would be useful are based on a number of feasibility issues. Spergel and Moye 2004 identify the following considerations to be made when evaluating funding alternatives:

#### Financial Feasibility

- How much money will actually be needed each year to support the particular wildlife conservation programs and activities that are envisaged?
- How much revenue is likely to be generated each year by the new financing mechanisms?
- Will the revenues generated be worth the cost of setting up the new financing mechanism?
- Could the revenues vary substantially from year to year depending on global and national economic, political, and natural conditions?
- How will a highly variable revenue flow affect the conservation programs that the financial mechanism is intended to pay for?
- What other sources of funds might be available, either on a long-term or a one-time basis?

#### Legal Feasibility

- Can the proposed financing mechanisms be established under the country's current legal system? Some legal systems do not recognize concepts such as easements or development rights. In other legal systems, there may be a constitutional prohibition against earmarking tax revenues or fees for specific purposes.
- Will new legislation be required in order to establish the proposed financing mechanism?
- How difficult and time-consuming will it be to pass such legislation?
- Could the new financing mechanism be established under current legislation, by simply issuing an administrative or executive order?

#### Administrative Considerations

- In the particular country, how difficult will it be to administer, enforce, collect, or implement a particular type of financing mechanism?
- Will it be too complicated or costly to administer?
- Are there enough trained people (or how difficult will it be to train enough people) to administer and enforce the system?
- Will implementing the particular financing mechanism depend too much on the discretion of individual officials and therefore present too many opportunities for corruption?
- Can safeguards be devised to limit potential problems?
- How difficult will it be to collect, verify, and maintain the data upon which a particular financing mechanism is based?



**Social Buy-In**

- What will be the social impacts of implementing a particular system of generating revenues for conservation?
- Who will pay, and what is their willingness and capacity to pay?
- Will the new financing mechanism be perceived as equitable and legitimate?

**Political Support**

- Is there government support for introducing the new financing mechanism?
- Can the government be relied upon to spend the new revenues only for the purposes intended, or is there a strong likelihood that the money may end up being used for other purposes?
- Can this be monitored and ensured by the courts or the media or NGO “watchdog” groups or particular user groups or an independent board of directors or an international agency?

**Environmental Impact**

- What will be the environmental impact of implementing the new financing mechanism? For example, for tourism-based mechanisms, will the desire to increase revenues from tourism compromise conservation objectives or exceed the carrying capacity of a protected area?

**17.4 EXISTING FUNDING OPTIONS**

*Direct General Fund Appropriations* – Natural resource agencies can work with the Governor’s office and policy makers to increase budget requests to cover natural resource management costs, especially to cover short duration projects or to fund contractual arrangements and critical funding gaps. There are examples of the tendency for the government of Guam to rely heavily on federal grants to cover natural resource programs, which are often considered “non-essential,” and to shift all available resources to critical social programs such as health care, public safety, and education. This budgeting approach can turn into a near permanent shift of funding away from natural resource needs, while natural resource programs shrink to cover only basic programmatic commitments. As a general rule, initial efforts to secure additional funding for natural resource management should focus on a larger share of local sources.

*Special Fund Development* – A number of special funds derived from permit fees and penalties currently exist to support natural resource management. Guam EPA administers the Water Research and Development Fund and the Water Pollution Protection Fund, from clearing and grading permits, well drilling, and operating permits. The Customs, Agriculture, and Quarantine Inspection Services Fund is administered by Guam Customs and Quarantine, and the Guam Plant and Inspection Permit Fund is under the Department of Agriculture. A review and cost of services analysis could be performed on each existing permit or user fee program to determine if fees should be adjusted to better reflect the intended service. There has been a gradual shift toward permit and user fee mechanisms throughout government of Guam’s operations. Much more can be done, and unlike economically depressed conditions, increased or new fees are not likely to significantly affect the perceived investment climate.

*Expanding Grant Awards* – Increasing grant awards may be possible based on new demands, mandates, and shifts in priority. Federal agencies may have the authority to reallocate grant funding under certain circumstances. Sometimes a comprehensive review of grant guidance will reveal

avenues to justify increases through reapportionment based on jurisdictional reclassification or updating information used to determine award amounts.

Under the proposed Seashore Reserve Plan, a similar fee is proposed for all commercial use of seashore areas. Additional fees may be required of commercial entities that need exclusive use of certain property or submerged lands for anchoring and operating on a regular basis. Guam Waterworks Authority through the Consolidated Commission on Utilities is proposing a system development charge policy. A similar development charge system was established for development in the Tumon Bay area during Guam's major tourism development period from 1986 to 1991.

*Ongoing New Grants Initiative* – To address the shortfalls, natural resource agencies will be working with their federal partners to obtain additional funds to meet capacity requirements. Information was provided to federal agencies for inclusion in their budgets. It is expected that agencies will receive additional grant funds to address the shortfall. Capacity concerns are directly related to natural resource agencies' abilities to expedite and improve efficiencies in the permitting process and in determining mitigation requirements. Discussion with federal counterparts and DoD are ongoing at various levels, including the IGIA, OEA, and regional forums, to address funding requirements as they relate to the timeframe for the EIS (Camacho 2007).

## 17.5 NEW OPTIONS FOR FINANCING CONSERVATION

### *Micronesia Challenge*

One of the first actions Guam is undertaking under the framework of the Micronesia challenge is the development of a sustainable finance plan to be completed in June 2008. The plan will identify the funding needed to effectively manage Guam's natural resources and meet the goals of the MC. The plan will also identify, from internal and external sources, key strategies to secure the funding, including the building of an endowment (Leberer 2008).

*System Development Charges* – System development charges are one-time fees assessed on new development or resource users to cover a portion of the cost of providing specific types of public infrastructure, maintenance, and management that are required as a result of the development. Some communities have park system development charges to ensure that the state or municipality's quality of life keeps pace with growth and change by offsetting the cost of providing the additional facilities needed to accommodate this growth. The Guam Waterworks Authority (GWA) is in the process of developing water and sewer system development charges to apply to new developments (Antrobus 2007). Both utility services require either resource extraction or use of groundwater, fresh surface water, or marine water. Natural resource agencies could explore the potential for obtaining a fraction of the system development charge or could develop a *conservation support fee* that could be added to water and wastewater service charges. Such a fee could be equally divided between GWA and a natural resource agency to support conservation programs through research and special projects similar to the Water Research Development Fund under the Water Resource Conservation Act (10 GCA, Div 2, Chapter 46) and the revenue sharing approach under the Litter Control Revolving Fund (10 GCA, Div 2, Chapter 51, §51204).

*Conservation/Beautification Taxes and Bonds* – Even modest conservation taxes on goods and services will provide substantial and stable baseline program funding. Similarly, a new tax could be established as a percentage on the Gross Receipts Taxes for tour and outdoor recreation businesses, which rely directly on natural resources for their operation. Companies operate tourism or recreation enterprises,



which rely substantially or entirely on marine waters in Tumon, Hagatna, Cocos, Urunao, and Piti Bays as well as outer Apra Harbor. Other enterprises involve off-road recreation on public and private lands and public parks. Once a reliable revenue source is established, revenue bonds can be used to fund large capital projects or to acquire important and highly functional habitat.

#### *Real Estate and Development Taxes*

A portion of real estate taxes could be dedicated for conservation so governments can compensate for developed property by applying revenues to the acquisition and preservation of remaining habitat and open lands. Pennsylvania imposes a 1 percent realty transfer tax on the actual consideration or price of real property that is transferred by deed, instrument, long-term lease, or other official mechanism. In July 1994, the state passed the Keystone Recreation, Park, and Conservation Fund Act, which established a permanent funding source for these activities. The law requires that 15 percent of revenue earned from the realty transfer tax be applied to the fund.

#### *Premium-priced motor vehicle license plates*

Natural resource agencies could partner with the Guam Division of Motor Vehicles to sell specialty vehicle license plates as a way to raise money and awareness for designated causes. In the United States, many states offer a special environmental license plate. At least 29 states offer plates specifically to support species conservation. The license plates are sold at a premium compared to fees charged for standard license plates, and the difference in price is allocated to the identified program. Images of Guam's endangered species might be fairly popular considering the success of the Veterans license plate project. There are more than 100,000 registered vehicles on Guam. Premium plates have raised millions of dollars for state wildlife conservation efforts (Koteen 2004). If 10,000 premium plates were sold at \$25 each over a five-year period (a one-time fee) the annual revenue would be \$50,000. Similarly, Guam could charge \$5 annually at registration renewal for the same 10,000 vehicles and generate the same amount (\$50,000). Florida charges \$25 annually for premium plates.

#### *Airport Passenger Fees and Hotel Taxes*

Guam has a system of hotel occupancy and airport passenger taxes. The government of Guam can support conservation by allocating a portion of the airport and hotel tax revenues collected to natural resource agencies or wildlife management programs. Such allocations make particular sense given the fact that a significant portion of tourists come to Guam to experience nature and wildlife, especially the island's marine environment. A good example is the Tumon Bay Marine Preserve, which now boasts high numbers of fish and has become a significant component of the swimming and snorkeling experience for many visitors. It should not be difficult to justify applying a portion of the occupancy tax to support marine conservation or to increase passenger and hotel taxes specifically to raise revenue for conservation (Koteen 2004).

Proposed new taxes and fees are often viewed with varying degrees of disfavor. Several things can be emphasized in the feasibility assessment of any new tax, including social equity, transparency, accountability, and showing tangible benefits or evidence of effectiveness, among others. Table 15 compares natural resource funding mechanisms. A broader range of financing options is available from Koteen 2004.



**Table 15. A Comparison of Select Natural Resource Program Funding Methods**

| <b>Funding Methods</b>            | <b>Approval/Implementation</b>           | <b>Sustainability</b> |
|-----------------------------------|------------------------------------------|-----------------------|
| General Fund Appropriation        | Short-Term                               | Highly Variable       |
| Special Fund Development          | Immediate (existing)<br>Short-Term (new) | Variable<br>Variable  |
| Increased Grant Funding           | Short-Term                               | Variable              |
| System Development Charges        | Long-Term                                | Highly Variable       |
| New Grants                        | Short-Term                               | Highly Variable       |
| Conservation Taxes/Bonds          | Long-Term                                | Sustainable           |
| Real Estate and Development Taxes | Long-Term                                | Sustainable           |
| Motor Vehicle License Plates      | Long-Term                                | Sustainable           |
| Airport Passenger and Hotel Taxes | Intermediate                             | Sustainable           |

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## **Appendix 1**

### **Summary of Strategic Goals**



## **Summary of Recommended Strategic Goals**

### **Species of Greatest Conservation Need**

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**SGCN Goal 1: Re-establish species** on Guam from either captive breeding programs or wild population on other Mariana Islands or from small remaining population on island.

**SGCN Goal 2: Increase and recover species** populations to target levels and specified locations on Guam.

**SGCN Goal 3: Locate, Determine, or Survey species** status or relative importance to ecosystems and regional population dynamics.

**SGCN Goal 4: Protect, Preserve, Maintain, or Prevent species** from further decline in populations and their distribution.

### **Invasive Species**

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#### **Invasive Species Goal 1**

Provide enhanced inspection and quarantine facilities and personnel capacity at all Guam ports of entry to accommodate peak passenger, baggage, air, and surface freight volumes over the Guam Buildup period of development.

#### **Invasive Species Goal 2**

Permanently establish a core Regional Invasive Species Rapid Response Team program that can be augmented through mutual assistance agreements with other Guam, other Micronesian political entities, federal resource agencies, private industry, and NGOs.

#### **Invasive Species Goal 2**

Permanently establish a core Regional Invasive Species Rapid Response Team program that can be augmented through mutual assistance agreements with other Guam, other Micronesian political entities, federal resource agencies, private industry, and NGOs.

### **Marine Preserves**

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#### **Marine Preserve Goal 1**

Develop and implement Marine Preserve Recreational Use Permit System for all Marine Preserves in accordance with Public Law 27-87.

#### **Marine Preserve Goal 2**

Develop and implement new comprehensive fishing regulations for all nearshore fisheries, outside the established MPs, with authority to issue field citations.

#### **Marine Preserve Goal 3**

Conduct a Limits of Acceptable Change (LAC) analysis of marine preserves and make recommendations for marine preserve management.

## **Mitigation**

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### **Mitigation Goal: Develop a Guam Compensatory Mitigation Policy**

Develop a Compensatory Mitigation Policy by December 2008. The policy will address all aspects of an effective multi-agency approach to mitigation, be compatible with existing federal policies, and address Guam's unique resource management challenges.

## **Monitoring Protocols**

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### **Monitoring Protocol Goal 1:**

Develop a Marine Monitoring Protocol to guide all manner of marine monitoring to include project mitigation, research, and marine preserve monitoring.

### **Monitoring Protocol Goal 2:**

Continue the development of the Guam Comprehensive Long-Term Monitoring Strategy.

## **Agency Capacity**

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### **Agency Capacity Goal 1**

One of the first steps in securing an increase in fee-based revenue is to provide the proper basis and justification. It's recommended that proposals be supported by cost of service studies of natural resource programs.

### **Agency Capacity Goal 2**

Continue to pursue new funding directly linked to military development plans.

### **Agency Capacity Goal 3**

Fill critical natural resource technical and supervisory positions.

### **Agency Capacity Goal 4**

Develop scopes of services for professional services contracts and draft legislative language for Indefinite Delivery, Indefinite Quantity (IDIQ) and other innovative methods.

### **Agency Capacity Goal 5**

Develop a reimbursable Defense-Guam memorandum of agreement program to dedicate resources to DoD projects.

## **Historic Preservation**

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### **Historic Preservation Goal 1: Identify, evaluate, and nominate historic properties**

- Identify historic properties on Guam.
- Evaluate the importance of historic properties to the history of Guam.
- Nominate historic properties to the National (NRHP) and Guam (GRHP) Registers.

**Historic Preservation Goal 2: Protect and preserve historic properties**

- Strengthen local laws and enforcement against destruction of historic properties.
- Assess and maintain the physical conditions of historic properties.
- Pursue community partnerships to preserve historic properties.

**Historic Preservation Goal 3: Invigorate the public and empower communities to preserve cultural resources**

- Promote awareness of preservation issues.
- Invigorate communities to be involved with historic preservation.
- Provide guidance and tools to empower communities.

**Historic Preservation Goal 4: Establish strong partnerships**

- Promote creative funding and sharing of resources between agencies.
- Incorporate historic preservation at the land use decision level.
- Partner with communities to take action in preservation.

**Historic Preservation Goal 5: Improve efficient retrieval of information for research and distribution**

- Improve access to existing storage and research facilities.
- Improve the database and inventory of existing historic properties.
- Streamline review processes for cooperating agencies and partners.

**Wetlands and Watersheds**

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**Wetlands and Watersheds Goal 1**

Implement CNMI and Guam Stormwater Management Manual as an enforceable regulation.

**Wetlands and Watersheds Goal 2**

Develop design guidelines for development and integrate stormwater and site design standards.

**Wetlands and Watersheds Goal 3**

Update the Wetland Conservation Plan and expand public awareness.

**Wetlands and Watersheds Goal 4**

Develop Watershed Management Plans for several critical (high-priority) watersheds.

**Wetlands and Watersheds Goal 5**

Develop a system to establish reference wetlands to serve as a Guam set of baseline information to accurately classify Guam's wetland.

**Legal Frameworks**

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**Legal Framework Goal 1**

Continue to develop effective working relationships between local and federal natural resource agencies and regulated entities both civilian and military.

**Legal Framework Goal 2**



Request that the Navy clearly delineate the jurisdictional boundaries for submerged lands as a matter of clearly describing the "affected environment" under the EIS.

**Legal Framework Goal 3**

Public Laws 23-24 and 23-25 should be repealed.

**Legal Framework Goal 4**

Continue to participate on the Guam/CNMI Forward-Basing Regulatory Community/DoD Partnering Team.

**Legal Framework Goal 5**

GCMP should undertake a review of the Guam Zoning, Subdivision, Subdivision Rules, Seashore Reserve, and other related growth management laws and policies.

**Legal Framework Goal 6**

Assemble an interagency NEPA Review Team specifically tasked to oversee the development of government of Guam natural resource agency review comments on the Draft EIS.

**Legal Framework Goal 7**

The GCMP should initiate a Cumulative and Secondary Effects Assessment (CSAA) project that compiles information about private-sector development projects proposed or approved and presents preliminary data on potential cumulative effects on natural resources and mitigation recommendations.

**Legal Framework Goal 8**

Develop an incentive program that encourages and rewards developers who apply sustainable design for site planning, structural design, and energy efficiency similar to *Smart Growth* planning principals.

**Legal Framework Goal 9**

Prepare a Special Area Management Plan (SAMP) for northern Guam in two phases.

**Legal Framework Goal 10**

Evaluate and assess the effectiveness of the new Seashore Reserve Plan.

**Legal Framework Goal 11**

Develop alternative methods to reduce shoreline erosion using natural systems.

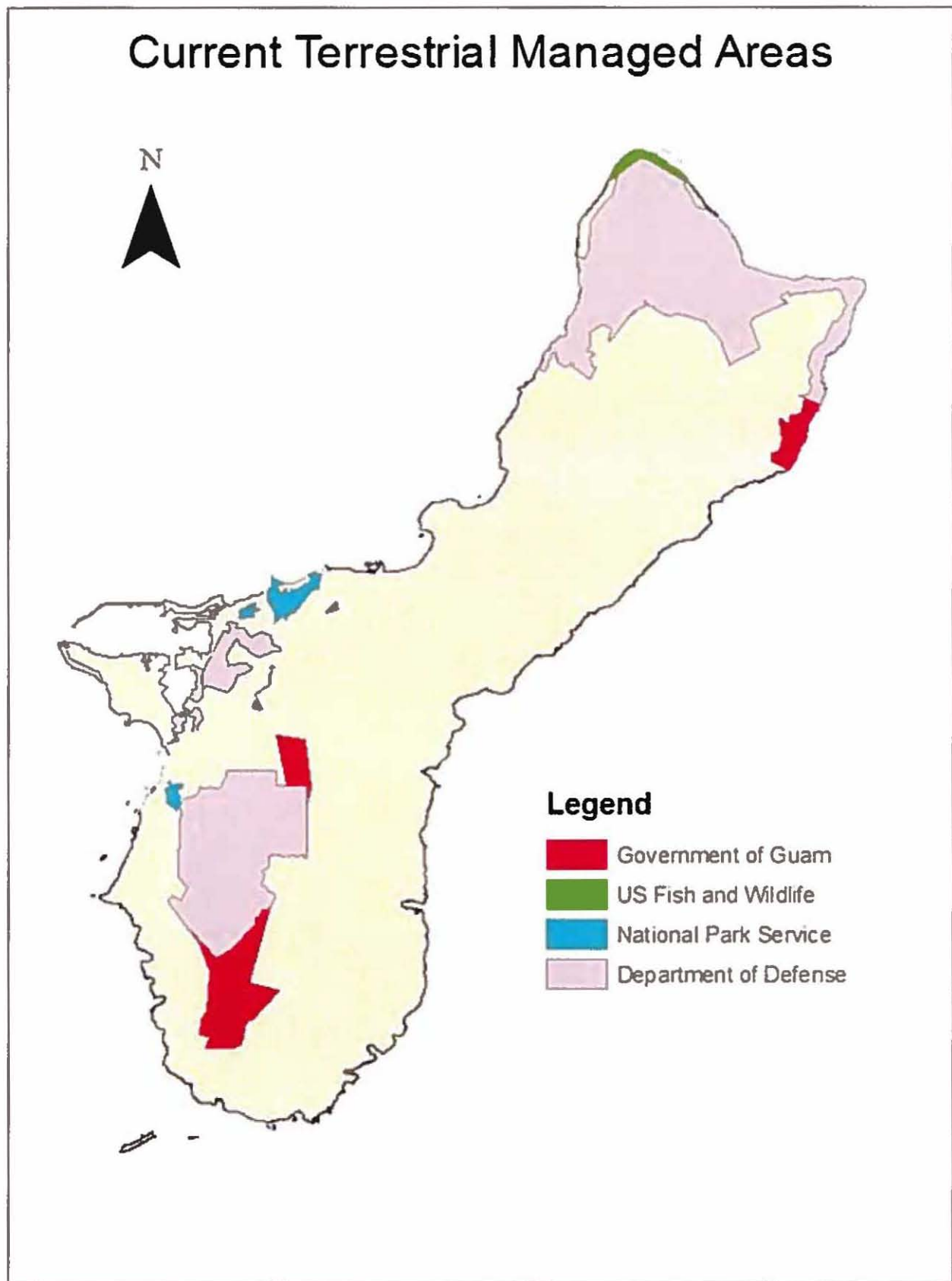
**Legal Framework Goal 12**

Study the impact of development along Guam's shoreline and in hazardous areas.

## **Appendix 2**

### **Natural Resource Figures**

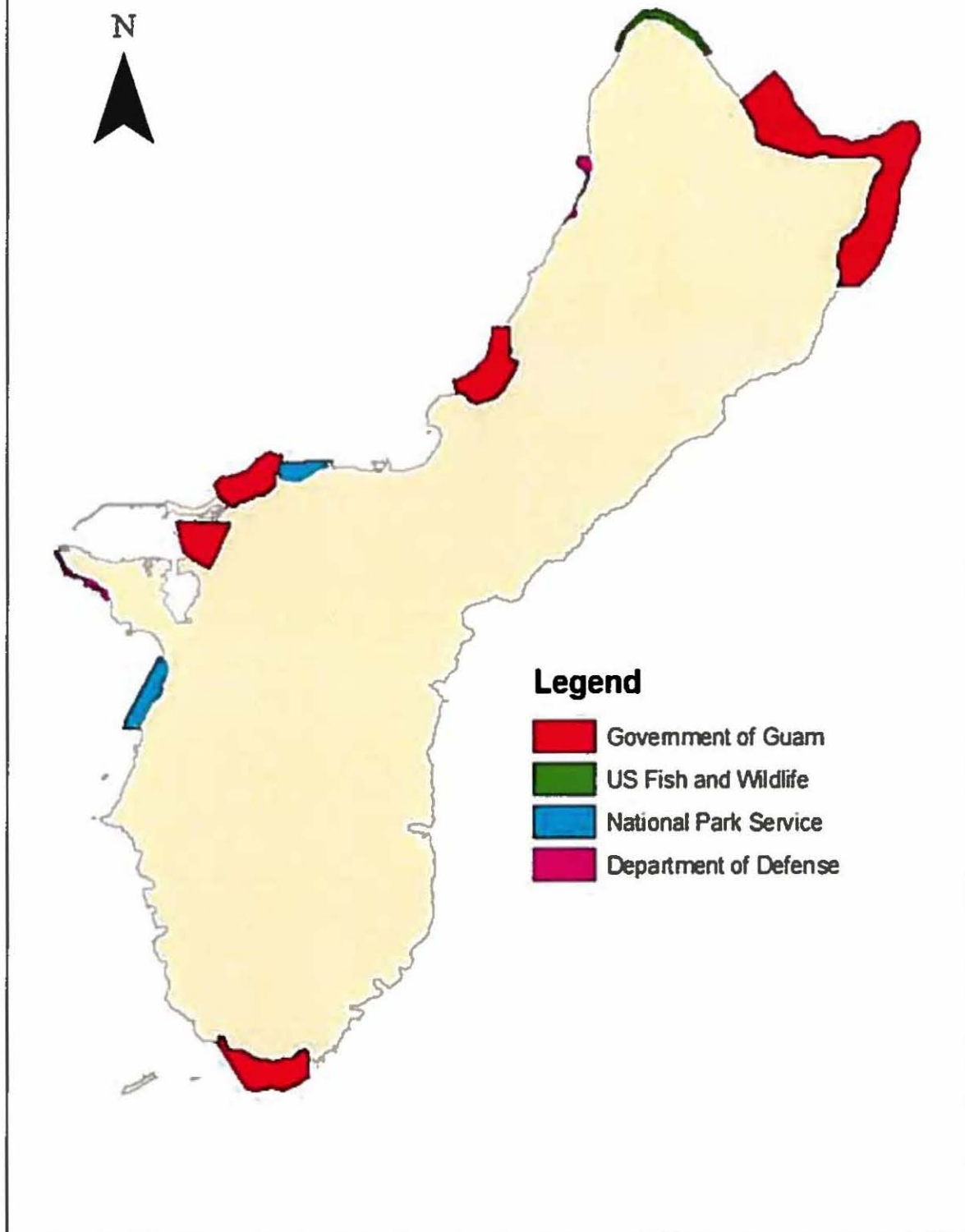
## Current Terrestrial Managed Areas



**Appendix 2 Guam Terrestrial Managed Areas**  
Guam Natural Resources Strategy 2012

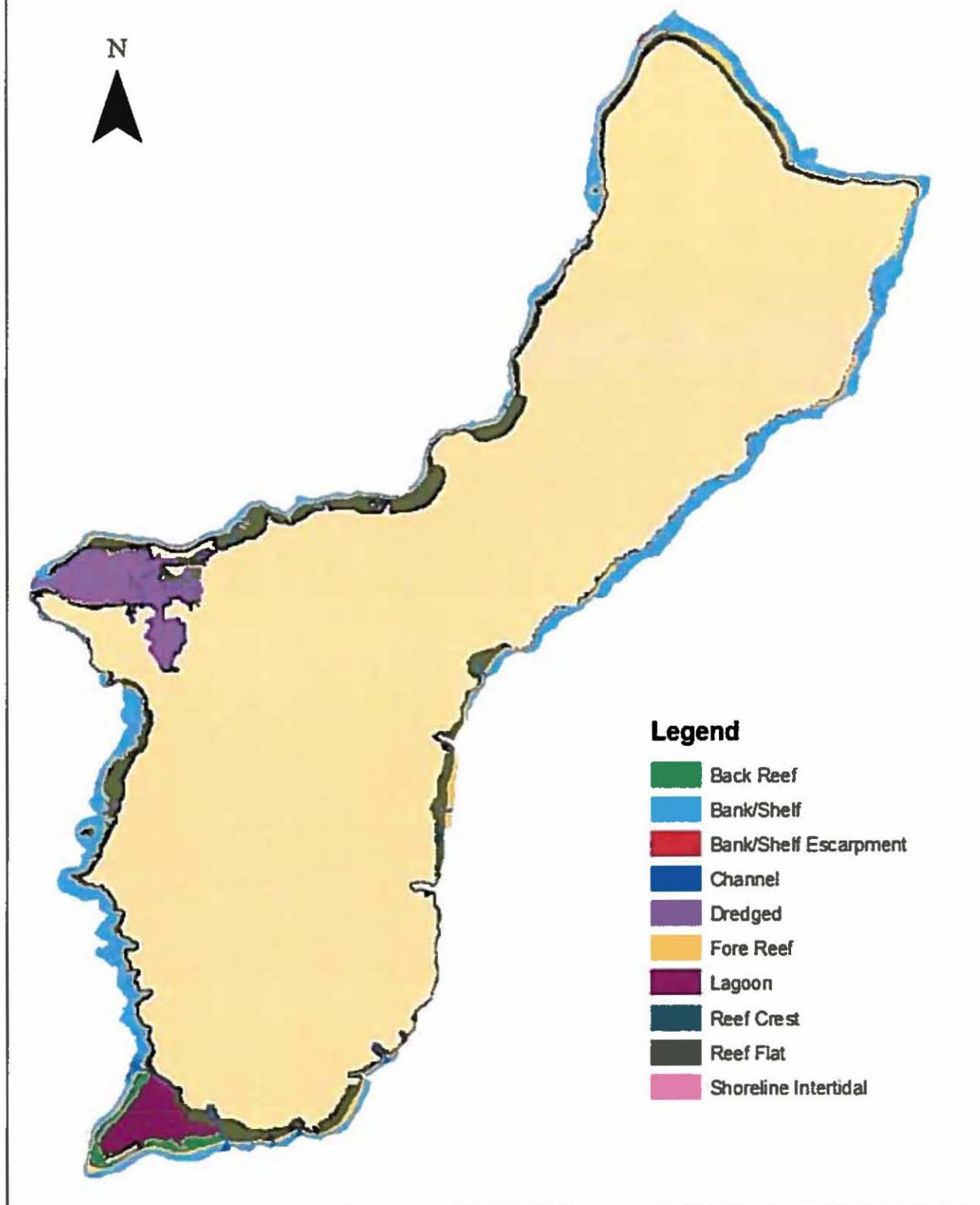


## Current Marine Managed Areas

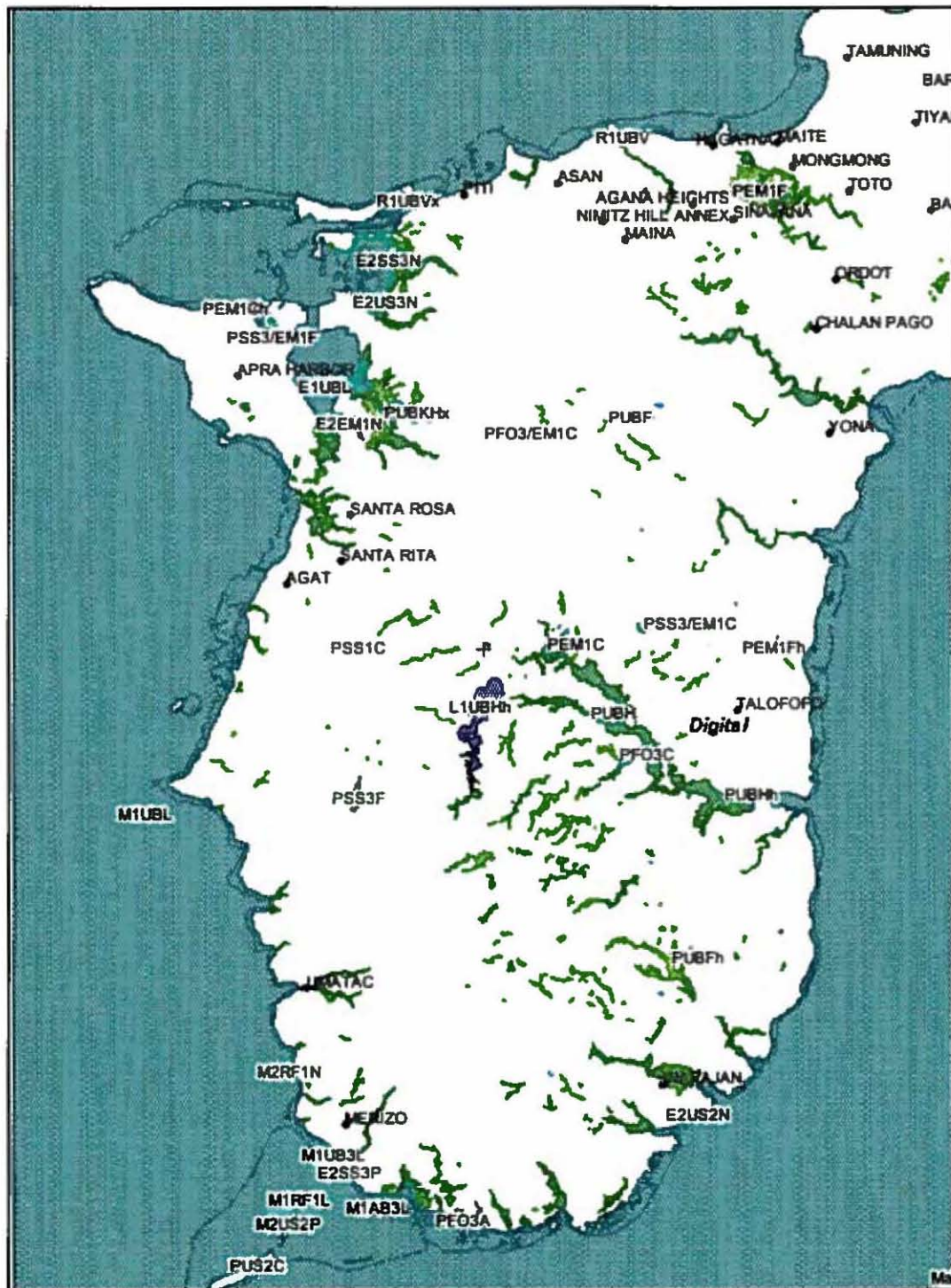


**Appendix 2 Guam Marine Managed Areas**  
Guam Natural Resources Strategy 2012

## Benthic Habitat <100 ft.

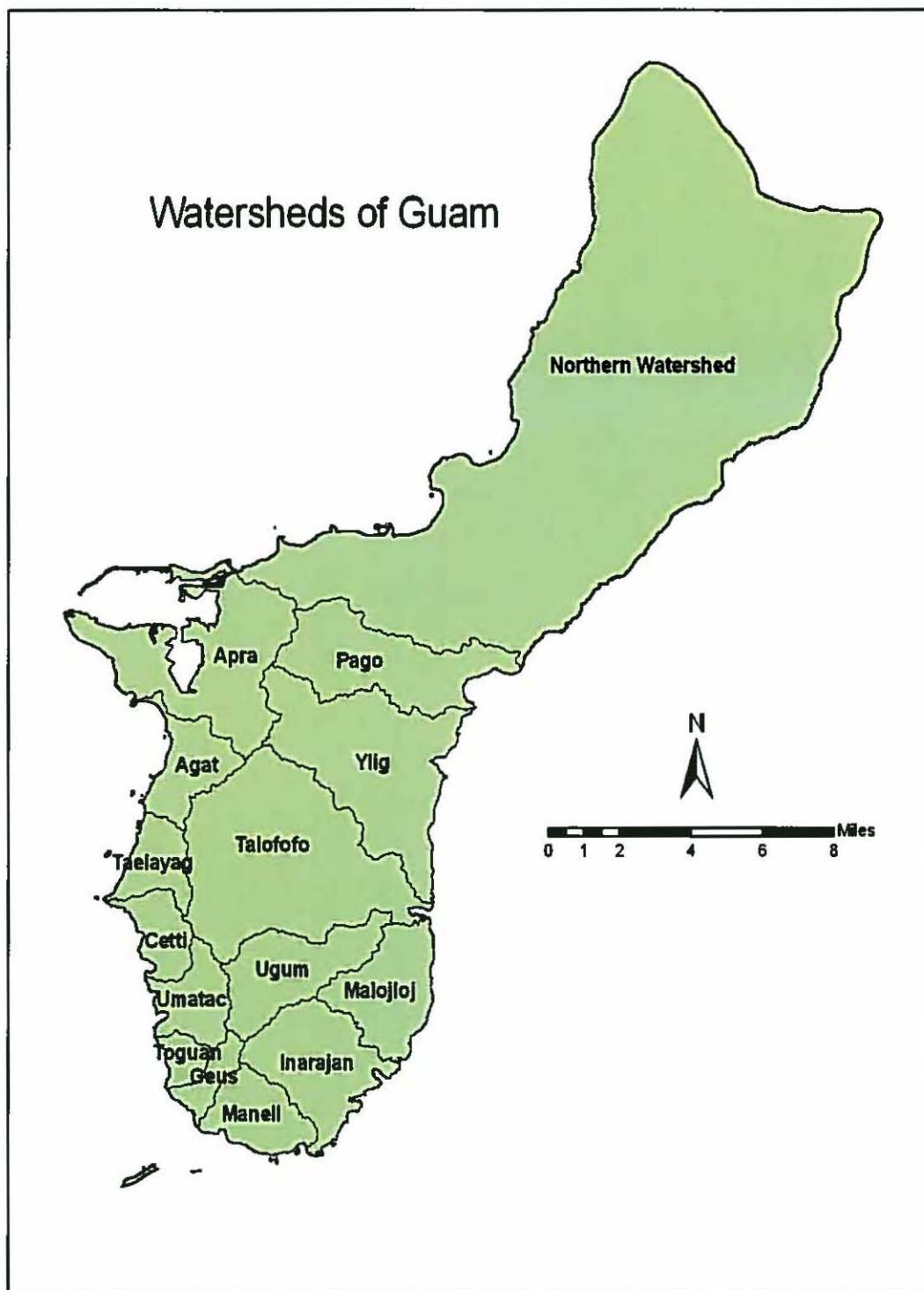


**Appendix 2 Guam Benthic Habitat Map**  
Guam Natural Resources Strategy 2012



**Appendix 2 Guam Wetlands**  
Guam Natural Resources Strategy 2012





**Appendix 2 Guam Watersheds**  
Guam Natural Resources Strategy 2012

## **Appendix 3**

### **Guam Executive Orders 2006-10 and 2008-09**



**EXECUTIVE ORDER NO. 2006-10**

**RELATIVE TO CREATING A CIVILIAN/MILITARY TASK FORCE TO  
MAXIMIZE OPPORTUNITIES FOR THE CIVILIAN AND MILITARY  
COMMUNITY RESULTING FROM INCREASES IN MILITARY  
PRESENCE**

**WHEREAS**, numerous public and private entities, including the Guam Chamber of Commerce, the Guam Board of Realtors, the media, GovGuam utility agencies, GovGuam employment and training agencies and health and human service entities, have been communicating with the U. S. military on matters that are important to the interests of these entities; and

**WHEREAS**, a close partnership between the public and private sectors and the U. S. military must be created to facilitate military transformational initiatives and maximize opportunities available to the civilian and military community from planned increases in military presence; and

**WHEREAS**, the U. S. Military should be afforded an opportunity to discuss its expansion plans with a single entity to ensure that the myriad of concerns are comprehensively addressed; and

**WHEREAS**, there is a need to coordinate public agency activities to ensure consistency in the application of government-wide policy and to ensure that these policies are not adversely affected in the legitimate pursuit of specific agency interests; and

**WHEREAS**, public and private resources must be used effectively to ensure that Guam is adequately prepared to meet the needs of an expanding U. S. military; and

**WHEREAS**, the People of Guam have been consistent and steadfast in our support for America's military mission in Asia and the Pacific; and

**WHEREAS**, military transformation initiatives affecting Guam will add value to our country's ability to deter aggression, defend freedom and promote stability in the Asia Pacific region;

**NOW, THEREFORE, I, FELIX P. CAMACHO, I Maga'Lahen Guahan**, Governor of Guam, by virtue of the authority vested in me by the Organic Act of Guam, as amended, do order:

1. The creation of a "Civilian/Military Task Force (C/MTF)" to develop an integrated comprehensive master plan that would accommodate the expansion of military personnel, operations, assets and missions and to maximize opportunities resulting from this expansion for the benefit of all the civilian and military community.
2. The Civilian/Military Task Force shall be comprised of the following members:
  - a. The Governor of Guam, or his designee, who shall be the Chairperson of the Civilian/Military Advisory Committee;
  - b. The Speaker of I Mina'Bente Ocho Na Liheslaturan Guahan;





- c. The Chairperson of the Legislative Committee on Finance, Taxation and Commerce, Mina'Bente Ocho Na Liheslaturan Guahan;
  - d. The Chairperson of the Legislative Committee on Tourism, Maritime, Military and Veterans Affairs, Mina'Bente Ocho Na Liheslaturan Guahan;
  - e. The Chairperson of the Legislative Committee on Health and Human Services, Mina'Bente Ocho Na Liheslaturan Guahan;
  - f. The Chairperson of the Legislative Committee on Aviation, Immigration, Labor and Housing, Mina'Bente Ocho Na Liheslaturan Guahan;
  - g. A member of the Legislative Minority, Mina'Bente Ocho Na Liheslaturan Guahan, nominated by the Legislative Minority;
  - h. Guam's Delegate to Congress or her designee;
  - i. The Chairperson of the Consolidated Commission on Utilities or his designee;
  - j. A member of the Armed Forces Committee of the Guam Chamber of Commerce, nominated by the members of the Committee;
  - k. A member of the Guam Board of Realtors, nominated by the President of the Guam Board of Realtors;
  - l. Two representatives of the community-at-large, selected by the Governor of Guam;
  - m. The Commander, Naval Forces Marianas or his designee, who shall act in an advisory capacity;
  - n. The Commander, Andersen Air Force Base or his designee, who shall act in an advisory capacity;
  - o. The Commander, U. S. Coast Guard Marianas Sector or his designee, who shall act in an advisory capacity;
  - p. The Adjutant General, Guam National Guard or his designee, who shall act in an advisory capacity;
  - q. The Commander, U. S. Army Reserves or his designee, who shall act in an advisory capacity;
  - r. The Commander, U. S. Air Force Reserve or his designee, who shall act in an advisory capacity;
  - s. Civilian advisors to the military;
  - t. The President, Guam Hotel and Restaurant Association;
  - u. The President, Mayors' Council of Guam
3. The functions of the C/MTF include but are not limited to:
- a. Develop an integrated comprehensive master plan that would accommodate the expansion of military personnel, operations, assets and missions and to maximize opportunities resulting from this expansion for the benefit of all the People of Guam;
  - b. The Master Plan should include advise and recommend in the Master Plan the following areas:
    - i. How the public and private sectors can support expansion;
    - ii. Maximize positive effects and mitigate potentially adverse effects;
    - iii. Infrastructure requirements;
    - iv. Improvements in military-civilian relations;
    - v. Land and other natural resource requirements;
    - vi. Address the integration of the military community as part of the "community of Guam";



- c. Meet with Congressional, Defense and other representatives to demonstrate Guam's commitment to the U. S. military;
  - d. Serve as a focal point from which the military can discuss its plans;
  - e. Apply for federal grants-in-aid to implement the functions mandated by this Executive Order (under the auspices of the Guam Economic Development and Commerce Authority);
4. The C/MTF membership may be divided into subcommittees and may include other members such as:
- a. The Director of the Guam Department of Labor;
  - b. The Administrator of the Guam Economic Development and Commerce Authority;
  - c. The Director of the Office of Homeland Defense;
  - d. The Administrator, Guam Environmental Protection Agency;
  - e. The Director, Bureau of Statistics and Plans;
  - f. The Director, Department of Revenue and Taxation;
  - g. The Director, Guam Ancestral Lands Commission;
  - h. The General Manager, Guam Visitors Bureau;
5. All government of Guam agencies are directed to coordinate activities associated with military expansion with the C/MTF; and
6. The Guam Economic Development and Commerce Authority and the Bureau of Statistics and Plans are directed to provide technical support to the C/MTF. The Governor may also assign other executive branch employees as needed including legal support.

SIGNED AND PROMULGATED at Hagåtña, Guam this 26 day of April, 2006.

FELIX P. CAMACHO  
*I Maga'Lahen Guahan*  
Governor of Guam



OFFICE OF THE GOVERNOR  
HAGATNA, GUAM 96910  
U.S.A.

EXECUTIVE ORDER NO. 2008- 09

**RELATIVE TO RESTRUCTURING THE CIVILIAN/MILITARY TASK  
FORCE TO MAXIMIZE OPPORTUNITIES FOR THE GUAM  
COMMUNITY RESULTING FROM THE INCREASED MILITARY  
PRESENCE**

WHEREAS, on March 7, 2007, the Department of Defense announced its plans to relocate portions of the III Marine Expeditionary Force from Okinawa, Japan to Guam, and subsequently has announced additional military force buildup plans for the island of Guam; and

WHEREAS, on April 26, 2006, Governor Felix P. Camacho signed into effect Executive Order 2006-10 establishing the Civilian/Military Task Force (CMTF) to ensure local participation in the military's planned expansion on Guam; and

WHEREAS, since the establishment of the CMTF, while additional information has been released relative to the United States military's plans for the Guam expansion, much of the information remains "notional" and "pre-decisional;" and

WHEREAS, at the direction of Governor Camacho, the CMTF has developed needs assessments for the government and the island of Guam quantifying the impact of the military's planned expansion on our entire island community based on the limited information provided; and

WHEREAS, in an effort to augment the Civilian/Military Task Force's effectiveness and responsiveness to the evolving military plans and their impact on the entire Guam community, revisions to the original Executive Order 2006-10 are necessary; and

WHEREAS, revisions to the original Executive Order 2006-10 include a restructuring of the CMTF organization to ensure that the entire Guam community, civilian and military, can reap the maximum benefits of the Guam buildup, which encompasses both the military expansion and the economic growth on Guam;

NOW, THEREFORE, I, FELIX P. CAMACHO, *I Maga' Lohen Guahan*, Governor of Guam, by virtue of the authority vested in me by the Organic Act of Guam, as amended, do order,

1. The restructuring of the Civilian/Military Task Force, as created by Executive Order 2006-10, to more effectively advocate for the interests of all the people of Guam.
2. The CMTF membership shall remain as designated in Executive Order 2006-10, however, the organizational structure will be augmented as follows:
  - a. A CMTF Executive Committee shall be created to ensure that the policy direction provided by the Governor are carried out and that the work conducted in support of the CMTF is consistent with that policy direction.





3. There is hereby established a Guam Buildup Office, within the Office of the Governor of Guam:

- a. The Guam Buildup Office (GBO) is established within the Office of the Governor in line with a request by the United States Department of Defense to establish a Guam single point of contact for the military expansion and Governor's letter to JGPO dated January 22, 2008, a copy attached for easy reference. The GBO should be viewed as Guam's local counterpart to the Joint Guam Program Office (JGPO). All JGPO interaction with the government of Guam shall originate from the GBO, subject to the policy guidance of the Office of the Governor;
- b. The GBO is also tasked with monitoring all federal and international activities relative to the military expansion and providing all relevant information to the Executive Committee;
- c. The GBO will be the initial contact point for public information, official requests and any other inquiries regarding the buildup;
- d. The GBO will serve as program oversight office for the Guam Buildup planning and implementation;
- e. The GBO may manage all operational and administrative support functions for CMTF relative to the Buildup as necessary;
- f. The GBO will serve as the central clearinghouse for all communications and policy directives relative to the Buildup, providing policy synchronization, oversight, and integration planning for the Guam Buildup subject to the supervision of the Governor; and
- g. The GBO shall monitor all policies, plans and activities relative to the Buildup from the U.S. federal govt., U.S. Congress, DOD, local government, Legislature, or any other organization and provide regular reports to the Governor, the Chairman of the CMTF and the Executive Committee regarding all relevant developments relative to the Guam Buildup.

4. The functions of the CMTF include but are not limited to:

- a. Develop an integrated Guam Buildup Master Plan to implement all necessary improvements and expansions to accommodate the needs of the entire Guam community, both civilian and military, and to maximize opportunities resulting from this expansion for the benefit of all the people of Guam;
- b. The Guam Buildup Master Plan should include advice and recommendations in the following areas:
  - i. Public and private support for expansion;
  - ii. Maximizing positive effects and mitigating potentially adverse effects;
  - iii. Infrastructure requirements;
  - iv. Land and other natural resources requirements;
  - v. Identify Guam's total buildup needs and to serve as the focal point for all discussions with federal and military officials regarding Guam's need for funding support to accommodate those needs;
  - vi. Apply for federal grants-in-aid or any other federal or other funding source to implement the functions mandated by this Executive Order;
  - vii. Explore all opportunities for outsourcing government of Guam buildup requirements in those areas where surge-capacity requirements will exceed future sustained demand from the government of Guam for our island community;
  - viii. Improve civilian-military/federal relations.



5. The CMTF membership may be divided into subcommittees it deems necessary in order to accomplish the purposes set forth herein.

SIGNED AND PROMULGATED at Hagåtña, Guam this 27 day of May, 2008.

FELIX P. CAMACHO  
*I Maga'låhen Guåhan*  
Governor of Guam

COUNTERSIGNED:

MICHAEL W. CRUZ, M.D.  
*I Segundu Maga' Låhen Guåhan*  
Lieutenant Governor of Guam





*Office of the Governor of Guam*

COPY

P.O. Box 2950 Hagåtña, Guam 96932

TEL (671) 472-8931 • FAX (671) 477-4826 • EMAIL [governor@mail.gov.gu](mailto:governor@mail.gov.gu)

Felix P. Camacho  
Governor

Michael W. Cruz, M.D.  
Lieutenant Governor

22 JAN 2008

David F. Bice  
MajGen USMC (Ret); Executive Director  
Joint Guam Program Office  
Office of the Assistant Secretary of the Navy  
(Installations & Environment)  
2221 S. Clark St., Suite 9000  
Arlington, VA 22202

Dear General Bice:

*Hafa Adai!* Thank you for your commitment to a mutually-beneficial buildup in Guam. I appreciate your continuous recognition of the integral role the government of Guam has in this process. Rest assured, the Civilian/Military Task Force and all officers within my Administration stand ready with your office to face challenges and accomplish joint objectives.

I am designating my Chief of Staff, J. George Bamba, as the single point of contact. He will provide a single, coordinated government of Guam position on all issues during this period. Mr. Bamba will work closely with your office, the five working groups, government of Guam offices and island stakeholders to move this process forward efficiently and to quantify the federal commitment.

This is an exciting process we are entering. I am grateful for your support and understanding of the challenges and issues the people of Guam face. My Administration is preparing at an accelerated rate in unison with federal efforts. Mr. Bamba will coordinate and channel my Administration's positions as this process moves forward.

You may reach Mr. Bamba at (671) 475-9371, via facsimile at (671) 472-7549 or via email at [cos@mail.gov.gu](mailto:cos@mail.gov.gu).

Thank you, once again, for your hard efforts. I look forward to your next visit to our island.

*Sinsiru yan Magåhet,*

FELIX P. CAMACHO  
*I Maga' Låhen Guåhan*  
Governor of Guam



## **Appendix 4**

### **Cooperative Agreement Between the U.S. Navy and Government of Guam For the Kilo Wharf Expansion (MILCON P-502) Mitigation Project**



# **BUREAU OF BUDGET & MANAGEMENT RESEARCH**

OFFICE OF THE GOVERNOR

Post Office Box 2950, Hagåtña Guam 96932

**FELIX P. CAMACHO**  
GOVERNOR

**BERTHA M. DUENAS**  
DIRECTOR

**MICHAEL W. CRUZ, M.D.**  
LIEUTENANT GOVERNOR

MAY 02 2008

**RECEIVED**

MAY 20 2008  
#21621

**DAWR**

## **MEMORANDUM**

**To:** Attorney General

**From:** Director, Bureau of Budget and Management Research

**Subject:** Cooperative Agreement Between the U.S. Department of the Navy and the Government of Guam Department of Agriculture to Implement a Program for the Reimbursement of Costs Incurred for the Cetti Watershed Mitigation Plan (MILCON P-502 Kilo Wharf Extension, Apra Harbor, Guam) – Cooperative Agreement Number N40192-08-2-9003 (March 2008)

In light of your Procurement Circular 03-001 (updated January 10, 2008), the Bureau is transmitting subject request submitted by the Department of Agriculture for the amount of \$4,474,100. The Bureau's clearance is based solely on funding availability as certified by the requesting Department.

The Cooperative Agreement defines the assurances and the scope of work for the Reforestation of the Cetti Bay Watershed Mitigation Plan (Lot 275 on approximately 500 acres in area, Municipality of Agat/Umatac) and provides for 100 percent funding by the U.S. Department of the Navy. Funding is compensatory mitigation to unavoidable impacts on coral resources from construction of and dredging of Kilo Wharf, Apra Harbor, Guam.

Please notify our Office should there be legal improprieties with subject request, so that the Bureau may rescind its clearance.

**BERTHA M. DUENAS**  
Acting

Attachment

915  
ORIGINAL

**COOPERATIVE AGREEMENT  
BETWEEN  
THE U.S. DEPARTMENT OF THE NAVY AND THE GOVERNMENT OF GUAM  
DEPARTMENT OF AGRICULTURE  
TO IMPLEMENT A PROGRAM FOR THE REIMBURSEMENT OF COSTS INCURRED  
FOR  
THE CETTI WATERSHED MITIGATION PLAN (MILCON P-502 KILO WHARF  
EXTENSION, APRA HARBOR, GUAM)**

**COOPERATIVE AGREEMENT NUMBER  
N40192-08-2-9003**

March 2008

This COOPERATIVE AGREEMENT (hereinafter referred to as the "Agreement" or "CA"), is entered into on the dates indicated below between the Government of Guam (GovGuam) Guam Department of Agriculture (the "GDA") and THE DEPARTMENT OF THE NAVY (the "DON"), hereinafter referred to collectively as the "Parties." This Agreement defines the assurances and scope of work for the Reforestation of the Cetti Bay Watershed Mitigation Plan funded by the DON as compensatory mitigation to unavoidable impacts on coral resources from construction of and dredging of Kilo Wharf, Apra Harbor, Guam. The work within the plan will be conducted on Apra Harbor, Cetti Bay Lot 275 on approximately 500 acres in area, situated in Guam, in the Municipality of Agat/Umatat, upon which the Cetti Bay Watershed is located.

**PREAMBLE**

**WHEREAS**, the Department of the Army, Corps of Engineers, through the U.S. Army Engineer District issued Permit No. POH-2008-00038 for MILCON P-502 Kilo Wharf Extension Project; and

**WHEREAS**, U.S. Army Corps of Engineers Permit No. POH-2008-00038 requires implementation of the mitigation plan entitled "Final Mitigation Plan for MILCON P-502, Kilo Wharf Extension Project, Apra Harbor, Guam: Cetti Bay Watershed" (referred to as the Cetti Mitigation Plan) dated January 22, 2008 to compensate for the approximately 4.75 acres of coral impacts associated with the authorized dredging and filling for MCON P-502; and

**WHEREAS**, U.S. Army Corps of Engineers Permit No. POH-2008-00038 requires certain assurances between GDA and DON to ensure the Cetti Mitigation Plan meet the requirements for an approved mitigation plan pursuant to the Department of Army's regulations and policies; and



**WHEREAS**, soil erosion is a significant and ongoing problem in many areas of Guam because of activities, such as wildland fires and disturbance from ungulates; and

**WHEREAS**, the purpose of the Cetti Mitigation Plan is to reduce soil erosion through reforestation and other methods with a goal of reducing sediment entering the marine habitats of Cetti Bay; and

**WHEREAS**, the purpose of this Agreement is to coordinate the respective efforts of the GDA and the DON by delineating each Department's responsibilities relative to the provisions of Permit No. POH-2008-00038 and to establish procedures for the rendering of funds to GDA by the DON;

**FOR AND IN CONSIDERATION** of the covenants herein provided, the parties agree to the following program scope:

### **GENERAL ADMINISTRATIVE**

#### **1. Purpose**

The DON and the GDA enter into this agreement pursuant to 16 U.S.C. § 670c-1 (Sikes Act). This agreement will result in a reforestation of approximately 500 acres within the Cetti Bay Watershed, Guam as compensatory mitigation to unavoidable impacts to coral resources that may result from the extension of the Kilo Wharf in Apra Harbor.

#### **2. Project Area**

The project is located on 500 acres (202 ha) of the Cetti Bay Watershed. The Cetti Bay Watershed is located approximately 9 miles (14.4 km) southeast of the Apra Harbor Naval Complex. The 500 acres of the project area are located on property owned by Guam Waterworks Authority (GWA) and provided to the DON under easement.

#### **3. Designated Representatives**

The Navy Grants Officer is:

Paul T. Fuligni  
Captain, CEC, USN  
Commanding Officer, NAVFAC Marianas

The Navy Cooperative Agreement Technical Representative is:

Anne Brooke, PhD  
Natural Resources Branch Head (EV2)  
NAVFAC Marianas  
Phone: (671) 339-7051

E-mail: anne.brooke@navfacmar.navy.mil

The Navy Representative for administrative issues is:

Norma Borja  
Acquisition (AQ)  
NAVFAC Marianas  
Phone: (671) 339-3901  
E-mail: norma.borja@navfacmar.navy.mil

The Guam Department of Agriculture Technical Representative shall be:

TBN  
Chief, Division of Forestry and Soil Resources  
163 Dairy Road  
Mangilao, Guam 96913  
Phone: (671) 735-3949  
E-mail: TBN

The Guam Department of Agriculture Administrative Representative shall be:

Paul Bassler  
Director, Department of Agriculture  
163 Dairy Road  
Mangilao, Guam 96913  
Phone: (671) 735-3960  
E-mail: guamagriculture@yahoo.com

**THE DEPARTMENT OF THE NAVY (DON) AGREES TO:**

1. Provide \$4,474,100.00 as the "Total Obligated on Award" to GDA to fulfill the work at Cetti Watershed for the Cetti Mitigation Plan for MCON P-502 Kilo Wharf Extension Project, Apra Harbor, Guam. Should the actual cost to fulfill the work exceed \$4,474,100.00, the additional costs will not be reimbursed or otherwise paid by the DON.
2. Provide assistance where mutually agreed to in writing.

**THE DEPARTMENT OF AGRICULTURE (GDA) AGREES TO:**

1. Conduct reforestation actions on up to 500 acres within the Cetti Bay Watershed.
  - a. Collaborate with the USFS on the creation of a Reforestation Implementation Plan to achieve the land management objectives identified in Guam's Reforestation Plan for the Cetti Watershed, anticipated within the first six months after execution of this Cooperative Agreement. In developing the Reforestation Implementation Plan, GDA will:

1) Develop a comprehensive assessment of the current environment at Cetti Bay Watershed.

2) Determine the locations and conditions of all existing roads and trails.

3) Coordinate among the various, appropriate organizations within the Government of Guam to facilitate implementation of the Reforestation Implementation Plan.

4) Determine the design and layout of erosion pins or other methods to quantify soil erosion in treated areas

**b. Implement the Reforestation Implementation Plan**

**1) Seedling Production**

a) By the beginning of the first wet season (usually July) following the signing of this cooperative agreement, tree seedlings in the number and size as prescribed in the Reforestation Implementation Plan shall be procured or produced for outplanting in the wet season.

b) By the beginning of each wet season thereafter for up to nine years a minimum number of tree seedlings as prescribed in the Reforestation Implementation Plan shall be procured or produced for outplanting.

**2) Site Preparation**

a) Prior to outplanting, the site to be planted that wet season shall be prepared as prescribed in the Reforestation Implementation Plan. The timing of the site preparation shall be such that the areas to be planted have sufficient planting sites sufficiently free of plant competition at the time of outplanting to reasonably ensure the survival of the planted seedlings.

b) If the Reforestation Implementation Plan provides that GDA will use prescribed fire to prepare sites prior to tree planting, site specific area burn plan prescriptions will be developed collaboratively between USFS cooperative fires specialists and GFSRD to ensure there is a reasonable probability of achieving stated burn objectives, and that the probability of the prescribed burn escaping the designated burn area is low and meets professional prescribed burning standards.

c) DON shall not be held liable in any manner in the event that a prescribed burn carried out under this cooperative agreement damages land or property.



### **3) Tree Planting and Critical Area Planting**

a) Outplanting of tree seedlings (e.g. green belts, interior plantings, etc.) shall only occur during periods of adequate soil moisture (normally July – September) each year.

b) Plant trees in accordance with the Reforestation Implementation Plan; at a minimum annual rate of 1/10 of the identified watershed acreage to be reforested.

c) A minimum of 100 acres shall be planted with appropriate native species per the Reforestation Implementation Plan.

d) Areas identified in the Reforestation Implementation Plan as requiring critical area treatment (e.g. badlands) shall be treated as per prescriptions in the Reforestation Implementation Plan within the first three years.

### **4) Stand Improvement**

a) Areas planted as green belts shall be managed in accordance with the Reforestation Implementation Plan to reduce competition from grasses and to reduce fuel loadings to a level that would result in a low probability of wildland fire damaging the planted trees.

b) Areas planted shall be maintained at or above stocking densities prescribed in the Reforestation Implementation Plan. Areas that experience lower survival rates needed to maintain the prescribed stocking rates shall be replanted at no additional cost to DON.

### **5) Fencing**

a) Up to a maximum of 100 acres will be fenced to protect native tree seedlings from deer and feral pigs as per the Reforestation Implementation Plan specifications.

b) Fencing shall be maintained to serve the intended purpose.

### **6) Ungulate Control**

a) After completion of the fence, remove ungulates from the fenced area.

b) Fenced area will be assessed for the presence of ungulates at least annually.

c) Fenced area will be kept free of ungulates during the establishment of trees.

**IT IS MUTUALLY AGREED BETWEEN THE PARTIES THAT:**

1. GDA may spend the \$4,474,100.00 among mitigation-related activities, providing that all Federal funds be used exclusively for the work described in the above-referenced plan, and upon DON concurrence per DA Permit No. POH-2008-00038

2. A temporary conservation and construction easement shall have been granted by GWA prior to the execution of this Cooperative Agreement to allow for the construction of fencing and reforestation work and not to exceed a period of 10 years from recordation.

3. A deed restriction shall have been executed by GWA and the DON prior to the execution of this Cooperative Agreement.

4. GDA will submit invoices on a monthly basis. Payment will be based upon progress toward regulatory concurrence and completion of the mitigation plan as set forth in DA Permit No. POH-2008-00038, and the GDA/Government of Guam obligations as set forth in this Agreement. Upon GDA submission of proper invoices, in accordance with 32 C.F.R. Part 33, OMB Circular A-87 and OMB Circular A-102, the Navy will make payment within two weeks. The DON will transfer funds to GDA on an apportioned basis as the work described in the above-referenced plan is performed per DA Permit No. POH-2008-00038. The DON shall reimburse GDA for amounts on submitted mitigation project invoices in accordance with DON finance and accounting requirements.

5. This Agreement is not a contract as defined under OMB Circular A-125 which implements the Prompt Payment Act of 1982 (32 U.S.C. § 3901, et seq.) and that Act does not apply to this Agreement.

6. In no event will the DON make direct payment to a GDA or Government of Guam contractor, GDA or Government of Guam employee, or GDA or Government of Guam vendor for any costs incurred by GDA and/or Government of Guam under this Agreement. The GDA and Government of Guam's contractual obligations are its own exclusively and shall not be shared in or guaranteed in any manner by the DON. Neither does the DON have the obligation hereunder to assume the GDA and Government of Guam's contractual obligations to third parties in the event that the GDA and Government of Guam might fail or refuse to carry out those obligations, and the GDA and Government of Guam hereby agrees to defend and hold the DON harmless from any such claims.

7. The DON shall address correspondence related to this Agreement to the attention of the Director of GDA, by either personal delivery, United States Postal Service, or facsimile. The Director of GDA shall establish an account for the funds through the Government of Guam procedures.

8. All Tangible Property developed under this Agreement with all components purchased by GDA shall be the property of GDA.



9. GDA shall be responsible for all costs of maintenance, removal, storage, repair, disposal, and shipping of all Tangible Property to which GDA has title.

10. Disposal of Tangible Property by GDA shall be in accordance with applicable U.S. Federal, state, and local property disposal laws, environmental laws, and regulations.

11. GDA shall be responsible for the handling, control, and disposition of any and all hazardous substances or waste in its custody during the course of this Agreement. At the conclusion of this Agreement, GDA shall be responsible for the handling, control, and disposition of any and all hazardous substances or waste still in its possession. GDA shall obtain at its own expense all necessary permits and licenses as required by U.S. Federal, State, Territorial and local law and shall conduct such handling, control, and disposition in a lawful and environmentally responsible manner.

12. GDA is solely responsible for its actions and the actions of those acting for GDA in the performance of this Agreement and for any damages that may arise from any suit, action, or claim resulting from such actions, and for any costs from or incidental to any such suit, action, or claim, including but not limited to settlement and defense costs. Further GDA agrees that it shall not pursue litigation or any other judicial or administrative recourse against DON in, or take any action to enter DON as party to, any such suit, action, or claim in which GDA may become involved.

## **SUBMITTALS AND PAYMENTS**

1. All reports/submittals, except photographs, must be submitted electronically as Microsoft Word or PDF documents. All deliverables and products related to this project shall become the property of DON and will not be issued, distributed or published without prior DON approval.

### **2. Project Submittals**

GDA will submit to DON the following schedules:

a. Project Schedule – Within 15 days of signature of this cooperative agreement submit a proposed schedule for project implementation for the first year and updated annually thereafter.

b. Cost Schedule – Within 15 days of signature of this cooperative agreement, submit a proposed payment schedule for project implementation for the first year and updated annually thereafter.

Upon receipt and DON acceptance of the final Reforestation Implementation Plan, the project and cost schedule may be modified.



### **3. Progress Reports**

Progress reports (submitted electronically) are required quarterly. These reports will briefly describe activities accomplished and proposed activities for the upcoming quarter.

Written quarterly progress reports on the acres currently under management at the time in electronic format will be due on the last calendar day of January, April, July, and October and will cover the preceding three-month period (e.g., the January 31 report will cover the period October 1 through December 31). Each report shall contain:

- a. Brief narrative description of work performed during that quarter and the general conditions of the planted area(s). If progress varies from the annual schedule (para 2.a above) a narrative will be provided explaining the variation.
- b. The number of trees outplanted and numbers of survivors in each outplanting area, if planting occurs;
- c. The number of seedlings grown or procured and their disposition;
- d. Notes on the effectiveness of methods used to control threats and a description of any new threats identified;

### **4. Draft Annual Report**

An annual report will be provided to the DON and all participating resource agencies documenting all actions conducted during the previous year, allowing 30 days for comments.

- a. The report shall be prepared describing progress toward the objectives of this reforestation plan and discussion/suggestions for the upcoming year.
- b. The report shall be prepared with both English Units and Metric (SI units) including figures, tables and captions. The primary unit of measurement shall be English units followed by the metric equivalent in parenthesis.
- c. If submitted, all maps on paper and in digital format will be compatible with ArcGIS version 9.X with associated attribute tables of GPS data (in UTM, WGS 84 Zone 55N, Meters). This data shall be compliant with Spatial Data Standards for Facilities, Infrastructure and Environment (SDSFIE).

## **5. Final Annual Report**

The GDA shall submit to DON the final annual report no later than 30 days following the receipt of review comments from DON, the US Fish and Wildlife Service (USFWS), the National Oceanic Atmospheric Administration, Pacific Islands Regional Office (NOAA/PIRO), USFS and the US Environmental Protection Agency (EPA). The final report will consist of the deliverables stated above.

## **6. Payment limitations**

The GDA shall be reimbursed for work as documentation of the work and cost is provided to the Navy Technical and Administrative Representatives. However, at the discretion of the Grants Officer, annual start up material, equipment, and contract costs may be paid in advance. No more than 80% of the total will be paid prior to delivery of the material or equipment to GDA, or completion of the contract work is confirmed by the Navy. GDA shall provide sufficient details to support all payment invoices. Payments are on a reimbursable basis for work performed, but in no event, to include losses attributable to "Acts of God", shall they exceed the total sum or "total obligated on award" amount agreed to on page one of this agreement. In the event that DON expends the total amount obligated on award, prior to replacement of seedlings lost due to "Acts of God", the DON shall incur no additional financial obligation whatsoever, in excess of the total amount obligated on award.

The Parties hereby agree that all monies paid shall be placed into a separate account established by the Government of Guam exclusively for the purposes as set forth in this Cooperative Agreement to ensure such funds are not co-mingled with any other funds.

## **7. Adaptive Management**

If there is a loss of trees or fencing due to "Acts of God" or other actions beyond the control of the DON, including appropriate management of reforested areas, the DON will confer with the ACOE and Federal and Guam resource agencies to determine the appropriate action; however the DON shall not expend any funds beyond the "Total Obligated Amount on Award."

## **ADDITIONAL TERMS AND CONDITIONS**

### **1. Order of Precedence**

This Cooperative Agreement is subject to the laws and regulations of the United States. Any inconsistency or conflict in the terms and conditions specified in this Cooperative Agreement shall be resolved according to the following order of precedence:

- a. The Federal statute authorizing this award, or any other Federal statutes directly affecting performance of this Cooperative Agreement.

b. Department of Defense Grant and Assistance Regulations (DoDGARs) 32 CFR Part 33, Uniform Administrative Requirements for Grants and Agreements to State and Local Governments.

c. These General Terms and Conditions.

d. Other terms and conditions contained within this Cooperative Agreement and any attached schedules.

## **2. Statutes and Regulations**

The DON enters this Agreement, in part, pursuant to its authority under the "Sikes Act", as amended, 16 U.S.C. § 670, et seq. This Cooperative Agreement is also subject to the laws and regulations of the United States that apply to assistance instruments including Chapter 63 of U.S. Code Title 31. DoDGARs Part 33 is hereby incorporated into this Cooperative Agreement by reference. The following OMB circulars, as appropriate, are also incorporated by reference into this Cooperative Agreement:

a. A-87, "Cost Principles for State, Local, and Indian Tribal Governments",

b. A-102, "Grants and Cooperative Agreements with State and Local Governments",

c. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

## **3. Cost Principles and Audit**

DoDGARs Part 33, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments, and the OMB Circulars below apply specifically to the GDA. The Cooperative Agreement shall be consistent with these authorities:

a. A-87, "Cost Principles for State, Local, and Indian Tribal Governments",

b. A-133 "Audits of States, Local Governments, and Non-Profit Organizations."

## **4. Record Retention and Access Requirements**

The GDA and GovGuam shall afford any authorized representative of the DON, the Department of Defense, the Comptroller General, or other officially concerned Federal Government agency access to and the right to examine all records, books, papers, and documents, including records in automated forms that are within the GDA and GovGuam's custody or control and that relate to its performance under this Agreement. This includes all financial and programmatic records, supporting documents, statistical records, and other records of the GDA and its contractors/subcontractors which are:



a. Required to be maintained by the terms of this part, program regulations or the cooperative agreement, or

b. Otherwise reasonably considered as pertinent to program regulations or the cooperative agreement. The GDA and GovGuam shall retain all such records intact in such form as may be approved by the DON for at least three (3) years following completion or termination of this Agreement.

#### **5. Modification of Cooperative Agreement**

The only method by which this Cooperative Agreement can be modified is by a formal, written and signed modification. Administrative modification(s) to the Agreement may be accomplished unilaterally by the signature of designated Cooperative Agreement Administrative Representative or Awarding Officer. Changes to the express clauses or terms of the Cooperative Agreement affecting price, quality, quantity or delivery of the GDA's duties shall be the subject of a bilaterally executed modification. No other communications, whether oral or in writing, shall modify this Cooperative Agreement.

#### **6. Prior Approvals and Changes**

Any program changes to the approved project must comply with 32 CFR 33.30.

#### **7. Allowable Costs**

Allowability of costs to be in accordance with 32 CFR 33.22 and 33.23.

#### **8. Unexpended Balance**

In the absence of any specific notice to the contrary, GDA is authorized to carry forward unexpended balances of funds received to subsequent funding periods.

#### **9. Overpayment and Earned Interest**

**Overpayment.** Within ninety (90) days after the end date of the Cooperative Agreement, any overpayment of funds shall be remitted to the Administrative Grants Officer (AGO) at the Administrative Office on the Award/Modification document, by check made payable to the Naval Facilities Engineering Command. An overpayment represents the difference between allowable actual expenditures and total disbursements received by the GDA.

**Advances and Earned Interest.** Interest earned on any account holding funds advanced under this Cooperative Agreement shall be remitted at least quarterly to NAVFAC Pacific, 258 Makalapa Drive, Suite 100, Pearl Harbor, HI, 96860, by check made payable to the Treasury of the United States.

#### 10. Future Funding

The Government's legal funding obligation is limited to the amount shown as the "Total Obligated on Award," section of the Cooperative Agreement document. The DON's obligation to pay or reimburse for any costs hereunder is subject to the availability of appropriated funds and nothing in this Agreement will be interpreted to require obligations or payments by the Federal Government in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341 et seq.

#### 11. Subagreements

GDA shall comply with 32 CFR 33.37 in awarding any subagreement.

#### 12. Officials Not to Benefit

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this Cooperative Agreement, nor to any benefit arising from it, in accordance with 41 U.S.C. § 22.

#### 13. Hatch Act

The GDA agrees to comply with the Hatch Act (5 U.S.C. §§ 1501-1508 and §§ 7324 - 7328), as implemented by the Office of Personnel Management at 5 CFR part 151, which limits political activity of employees or officers of State or local governments whose employment is connected to an activity financed in whole or part with Federal funds.

#### 14. Lobbying

The GDA has provided the certification required by Appendix A to 32 CFR Part 28 regarding lobbying prior to execution of this Agreement.

#### 15. Environmental Standards

By accepting funds under this Cooperative Agreement, the GDA assures that it will:

a. Comply with applicable provisions of the Clean Air Act (42 U.S.C. § 7401, et seq.) and Clean Water Act (33 U.S.C. § 1251, et seq.), as implemented by Executive Order 11738 [3 CFR, 1971-1975 comp., p. 799] and Environmental Protection Agency (EPA) rules at Subpart J of 40 CFR Part 32.

b. Identify to the DON any impact that this agreement may have on:

1) The quality of the human environment, and provide help the DON may need to comply with the National Environmental Policy Act (NEPA, at 42 U.S.C. § 4321, et seq.) and to prepare Environmental Impact Statements or other required



environmental documentation. For actions not covered in the Kilo Wharf Extension EIS, the GDA agrees to take no action that will have an adverse environmental impact (e.g., physical disturbance of a site such as breaking of ground) until the DON provides written notification of compliance with the environmental impact analysis process.

2) Coastal barriers, and provide help the agency may need to comply with the Coastal Barriers Resource Act (16 U.S.C. § 3501, et seq.), concerning preservation of barrier resources.

3) Any existing or proposed component of the National Wild and Scenic Rivers system, and provide help the agency may need to comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §1271, et seq.).

4) Coastal zones, and provide help the agency may need to comply with Coastal Zone Management Act of 1972 (16 U.S.C. 1451, et Seq.) concerning protection of U.S. coastal resources. [Note: 16 U.S.C. 1456(d), prohibits the approval of projects inconsistent with a coastal State's approved management program for the coastal zone.

#### 16. Nondiscrimination

By accepting funds under this Cooperative Agreement, the GDA assures that it will comply with applicable provisions of the following national policies prohibiting discrimination:

a. On the basis of race, color, religion, sex, or national origin, in Executive Order 11246 [3 CFR, 1964-1965 Comp., p.339], as implemented by Department of Labor regulations at 41 CFR part 60. [Note: 41 CFR 60-1.4(b) prescribes a clause that cooperator must include in federally assisted construction awards and subawards, 60-1.4(d) allows incorporation by reference. This requirement also is at 32 CFR 33.36(l)(3) and in Appendices A to 32 CFR part 32 and 32 CFR par 34.]

b. On the basis of age, in the Age Discrimination Act of 1975 (42 U.S.C. 6101, et seq.) as implemented by Department of Health and Human Services regulations at 45 CFR Part 90. [Note: 45 CFR 90.4 requires that recipient flow down requirements to subrecipients (definition of "recipient" ant 45 CFR 90.4 includes entities to which assistance is extended indirectly, through another recipient].

c. On the basis of handicap, in Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794), as implemented by Department of Justice regulations at 28 CFR Part 41 and DoD regulations at 32 CFR Part 56.



#### 17. Cargo Preference

The GDA agrees that it will comply with the Cargo Preference Act of 1954 (46 U.S.C. § 1241), as implemented by Department of Transportation regulations at 46 CFR 381.7, which require that at least 50 percent of equipment, materials or commodities procured or otherwise obtained with U.S. Government funds under this cooperative agreement, and which may be transported by ocean vessel, shall be transported on privately owned U.S.-flag commercial vessels, if available.

#### 18. Preference for U. S. Flag Air Carriers

Travel supported by U.S. Government funds under this agreement shall use U.S.-flag air carriers (air carriers holding certificates under 49 U.S.C. § 41102) for international air transportation of people and property to the extent that such service is available, in accordance with the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. § 40118) and the interpretative guidelines issued by the Comptroller General of the United States in the March 31, 1981, amendment to Comptroller General Decision B-138942.

#### 19. Profit or Fee

In accordance with 32 CFR 22.205(b), no fee or profit may be charged to this cooperative agreement.

#### 20. Claims, Disputes, and Appeals

##### a. GDA Claims:

Per 32 CFR 22.815, any claims arising out of this agreement must be:

- 1) Submitted in writing to the Grants Officer;
- 2) Specify the nature and basis for the relief requested, and;
- 3) Include all data and relevant facts in support of the claim.

##### b. DOD Component Claims:

Claims by a DOD Component shall be the subject of a written decision by the Grants Officer.

##### c. Alternative Dispute Resolution (ADR):

The Parties shall use ADR to the maximum extent practicable, and comply with 32 CFR 22.815 ADR policies and procedures.

**d. Grants Officer Decisions:**

1) Within 60 calendar days after receipt of a written claim, the Grants Officer shall:

a) Prepare a written decision, which shall include: the reasons for the decision; the relevant facts on which the decision is based; and the identity and mailing address of the cognizant Appeal Authority, and; shall be included in the award file, or

b) Notify the Party of a date when the written decision will be rendered. The notice shall address why additional time is needed.

2) The Grants Officer's decision is final, unless appealed. In the event of an appeal, the Parties shall endeavor to use ADR procedures to the maximum extent practicable.

**e. Formal Administrative Appeals:**

All formal administrative appeals shall comply with the applicable provisions of 32 CFR 22.815(e), Claims, disputes, and appeals.

1) Appeal Authority. The Assistant Commander for Acquisition is the Appeal Authority to decide formal, administrative appeals under this Grant.

**f. Non-exclusivity of remedies:**

Nothing in this section is intended to limit GDA or DON rights to any remedy under the law.

**21. Controlled Unclassified Information**

The Parties understand that information and materials provided pursuant to or resulting from this Cooperative Agreement may be export controlled, sensitive, for official use only, or otherwise protected by law, executive order or regulation. GDA is responsible for compliance with all applicable laws and regulations. Nothing in this Agreement shall be construed to permit any disclosure in violation of those restrictions.

**22. Debarment and Suspension**

GDA agrees to comply with the requirements regarding debarment and suspension in Subpart C of the OMB guidance in 2 CFR 180, as implemented by the Department of Defense in 2 CFR part 1125. GDA also agrees to communicate the requirement to comply with Subpart C to persons at the next lower tier with whom GDA enters into transactions that are "covered transactions" under Subpart B of 2 CFR part 180 and the DoD implementation in 2 CFR part 1125.

### 23. Drug Free Workplace

GDA agrees to comply with the requirements regarding drug-free workplace requirements in Subpart B of 32 CFR Part 26, which implements Secs. 5151-5160 of the Drug-Free Workplace Act of 1988 (Pub. L. 100-690, Title V, Subtitle D; 41 U.S.C. § 701, et. seq.).

### 24. Standards for Financial Management Systems

By accepting funds under this Cooperative Agreement, GDA agrees to maintain a financial management system that complies with 32 CFR 33.20.

### 25. Funding Limitation Terms

a. The parties agree that performance of this agreement will not cost the DON more than the Total Obligated on Award in the Agreement. The GDA agrees to use its best efforts to perform the work specified in the Agreement and all obligations under this contract within the Total Obligated on Award.

b. The GDA shall notify the Grants Officer in writing whenever it has reason to believe that:—

1) The costs the GDA expects to incur under this contract in the next 60 days, when added to all costs previously incurred, will exceed 75 percent of the Total Obligated on Award specified in the Agreement; or

2) The total cost for the performance of this Agreement will be either greater or substantially less than had been previously estimated.

c. As part of the notification, the GDA shall provide the Grants Officer a revised estimate of the total cost of performing this Agreement.

d. Except as required by other provisions of this Agreement, specifically citing and stated to be an exception to this clause:

1) The DON is not obligated to reimburse the Contractor for costs incurred in excess of the Total Obligated on Award in the Agreement;

2) The DON's obligation to pay or reimburse any costs hereunder is subject to the availability of appropriated funds and nothing in the Agreement will be



interpreted to require obligations or payments by the Federal Government in violation of the Anti-Deficiency Act (31 U.S.C. 1341); and

3) GDA is not obligated to continue performance under this Agreement (including actions under the Termination clause of this agreement) or otherwise incur costs in excess of the Total Obligated on Award specified in the Agreement, until the Grant Officer (i) notifies the GDA in writing that the Total Obligated on Award has been increased and (ii) provides a revised Total Obligated on Award of performing this agreement.

e. No notice, communication, or representation in any form other than that specified in paragraph (d)(3) of this clause, or from any person other than the Grant Officer, shall affect this agreement's Total Obligated on Award to the DON. In the absence of the specified notice, the DON is not obligated to reimburse the GDA for any costs in excess of the Total Obligated on Award, whether those excess costs were incurred during the course of the agreement or as a result of termination.

f. If the Total Obligated on Award specified in the Agreement is increased, any costs the GDA incurs before the increase that are in excess of the previously estimated ceiling shall be allowable to the same extent as if incurred afterward, unless the Grants Officer issues a termination or other notice directing that the increase is solely to cover termination or other specified expenses.

g. Modifications or Changes shall not be considered an authorization to exceed the Total Obligated on Award to the DON specified in the Agreement, unless they contain a statement increasing the Total Obligated on Award.

h. If this Agreement is terminated or the Total Obligated on Award is not increased, the DON and the GDA shall negotiate an equitable distribution of all property produced or purchased under the agreement, if applicable.

## 26. Payment

a. Advance Payment (Annual Material and Equipment Start up Costs). In accordance with the DoD Grant and Agreement Regulations, DoD 3210.6-R, section 33.21 (c), GDA may be paid in advance, provided it maintains or demonstrates the willingness and ability to maintain procedures to minimize the time elapsing between the transfer of funds and their disbursement by GDA or its subgrantee(s). For any advance payment, GDA must maintain or demonstrate the willingness to maintain the conditions set forth at 32 CFR 33.21 (c). Reimbursement is the preferred method when the requirements in 32 CFR 33.21(d) cannot be met. GDA is authorized reimbursements under the conditions set forth at 32 CFR 33.21(d).

b. Reimbursement. GDA shall submit all other requests for payment in accordance with 32 CFR 32.22. Payment will be made in accordance with 32 CFR 32.22. GDA is authorized reimbursements under the conditions set forth at 22 CFR 33.32.22(e)-(j).

27. Procurement

GDA's system for acquiring goods and services under this Cooperative Agreement shall comply with 32 CFR 33.36, Procurement.

28. Property

Title shall vest in, and GDA shall manage, property under this cooperative agreement in accordance with 32 CFR 33.31 through 33.34.

29. Reports

GDA shall maintain and submit reports in accordance with 32 CFR 33.40, Monitoring and Reporting Program Performance, and 32 CFR 33.41, Financial Reporting.

30. Termination and Enforcement

This award is subject to 32 CFR 33.43, Enforcement, and 33.44, Termination for Convenience.

31. After-Award Requirements

Closeouts, subsequent adjustments, continuing responsibilities, and collection of amounts due are subject to the requirements in 32 CFR 33.50 through 33.52.

32. Cost Share or Match

Any cost share or cost match agreements shall comply with 32 CFR 33.24.

33. Resource Recovery and Conservation Act

GDA shall comply with the requirements contained in 32 CFR 32.49. By signing this agreement or accepting funds under this agreement, the recipient assures that it will comply with applicable provisions of the following national policies concerning live organisms:

a. Rules of the Departments of Interior (50 CFR parts 1-24) and Commerce (50 CFR part 217-227) implementing laws and conventions on the taking, possession, transport, purchase, sale, export, or import of wildlife and plants, including the: Endangered Species Act of 1973 (16 U.S.C. 1531-1543);



b. Marine Mammal Protection Act (16 U.S.C. 42); and Convention on International Trade in Endangered Species of Wild Fauna and Flora.

#### 34. Miscellaneous Terms and Conditions

a. Entire Agreement. This Cooperative Agreement constitutes the entire Agreement between the Parties. All prior discussions and understandings on this matter are superseded by this Agreement.

b. Non-Waiver. The failure of a Party to exercise any of the agreements, terms or conditions hereof shall not be deemed a waiver of any right or remedy that a Party may have, and shall not be deemed a waiver of any subsequent breach or default of any of such agreements, terms or conditions.

c. Severability. If any provision or term of this Agreement or the application thereof to any person or circumstance shall be held invalid or unenforceable to any extent by a court or an administrative body of competent jurisdiction, then the remainder of this Agreement or the application of such term to persons or circumstances other than those as to which it is invalid or unenforceable, shall not be affected thereby, and each term of this Agreement shall be valid and enforceable to the fullest extent permitted by law. If a court or administrative body of competent jurisdiction renders the entire Agreement invalid, the Agreement will be considered null and void *ab initio*. Any GDA or GovGuam costs incurred during the term of this Agreement, not paid as of the date of the adverse ruling, will be pursued outside this Agreement.

d. Full Disclosure. The Parties assure that any statements, press releases, media interviews, and other documents releasing information about the work performed by GDA under this Agreement, shall upon request, clearly state the dollar amount of federal funds allocated to GDA under this Agreement.

e. Notices. Any notice, transmittal, approval, or other official communication made under this Agreement shall be in writing and will be delivered by hand, facsimile transmission, electronic mail, or by first class mail to the Project Managers/DON Grants Officer (or designee) at the address or facsimile transmission telephone number as set forth or appended to this Agreement.

f. Points of Contact. The Navy's Grants Officer is the Commanding Officer, NAVFAC Marianas. The Commanding Officer, NAVFAC Marianas, is the only authorized Government agent who can make changes and obligate or de-obligate funds under this Cooperative Agreement. The Grants Officer will delegate administrative responsibilities for this Agreement to a Cooperative Agreements administrator. The Cooperative Agreements administrator will appoint a Cooperative Agreement Technical Representative who will assist in managing the daily activities necessary to accomplish the services specified in the Agreement. However, the Grants Officer retains authority to (1) increase or decrease the maximum funding limitation of the Agreement, (2) extend the performance period of the Agreement, (3) suspend or terminate the Agreement in whole or in part, and (4) respond to the grantee on any claim



submitted under the Agreement. Copies of these appointment letters will be made available to both Parties. The points of contact may be changed at any time upon written notification within thirty (30) days of change.

**35. Legal Authority**

The Parties hereby represent and warrant that they are under no existing or reasonably foreseeable legal disabilities that would prevent or hinder them from fulfilling the terms and conditions of this Agreement. The Parties will promptly notify each other of any legal impediment that arises during the term of this Agreement that may prevent or hinder its fulfillment of its obligations under this Agreement.

**36. Term of Agreement**

This Agreement shall remain in effect until all obligations identified above have been fulfilled on Cetti Watershed for the Cetti Mitigation Plan for MCON P-502, Kilo Wharf Extension, Apra Harbor, Guam as determined by the Grants Officer.

**37. Total Obligated on Award**

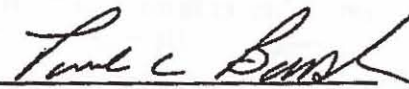
Line of Accounting 17 08121205/2581/40240

Payments will be made electronically via the Defense Financial Accounting System (DFAS) to a Government of Guam account to be designated.

38. Effective Date of Agreement

This Agreement shall become effective on the date it is signed by both Parties.

IN WITNESS WHEREOF, the parties have entered into this Agreement on the dates shown below.



PAUL C. BASSLER  
Director  
Guam Department of Agriculture

Dated: 3-21-08

CLEARED PER  
BBMR'S REVIEW



BERTHA M. DUENAS  
Acting Director  
Guam Bureau of Budget and  
Management Research

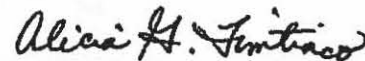
Dated: MAY 12 2008

LEGAL CONCURRENCE:

  
RICHARD J. HUBER  
Counsel, NAVFAC Marianas

Dated: \_\_\_\_\_

APPROVED AS TO FORM:

  
ALICIA G. LIMTIACO  
Attorney General of Guam

Dated: 5/12/08

APPROVED:

  
PAUL T. FULIGNI  
CAPT. CEC, USN

Dated: \_\_\_\_\_

  
FELIX P. CAMACHO  
Governor of Guam

Dated: \_\_\_\_\_

## **Appendix 5**

### **Summary of Navy RICRMP Management and Preservation Recommendations**



Table II-2. Summary of RICRMP Management and Preservation Recommendations.

| Objective                                       | Site Protection Action                      | Management Recommendation                                                | Comment                                                                                                                                                                                       | Problem Addressed | Priority Level* |
|-------------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|
| Resource identification (RICRMP Section II.1.1) |                                             |                                                                          | Purpose: document resources before adverse impacts can occur                                                                                                                                  | • all problems    | E               |
|                                                 | survey for archaeological, historical sites | continue Section 110 surveys                                             | continue survey to ensure comparability in data; all annexes should be surveyed to same or similar levels of survey intensity                                                                 |                   | E               |
|                                                 |                                             | continue resource identification, by annex                               | see Table II-3; reiterates recommendations made in previous cultural resource management plans, cultural resource studies                                                                     |                   | E               |
|                                                 |                                             | follow Standard Operating Procedures                                     | follow SOPs as means to identify, inventory resources, until such time that resource identification surveys are carried out                                                                   |                   | E               |
|                                                 |                                             | review development proposals, per areas of potential for historic assets | provides opportunity for long-range planning, by identifying areas of resource potential; i.e., projects can be planned in areas where mitigation actions are feasible                        |                   | R               |
|                                                 | future focused studies, long-range planning | facilitate future research                                               | provide opportunities for future research through Section 110 survey, Section 106-related work, partnering with private and public agencies                                                   |                   | E               |
|                                                 |                                             | incorporate data recovery into long-range planning                       | provide plans for data recovery of sites in areas that may be needed for military mission; research should provide a substantive contribution to understanding Mariana history and prehistory |                   | E               |
|                                                 |                                             | NAVFAC Pacific review of research requests                               | ensures that proposed research can substantively contribute to study of Mariana prehistory, history, and culture                                                                              |                   | E               |
|                                                 |                                             | contribute to resource management                                        | studies should provide recommendations on continuing research avenues, interpretive opportunities, Section 106 clearance, ideas for alternative management strategies                         |                   | E               |

Table II-2. Summary of RICRMP Management and Preservation Recommendations (continued).

| Objective | Site Protection Action                 | Management Recommendation                                                       | Comment                                                                                                                                                                                                                              | Problem Addressed | Priority Level* |
|-----------|----------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|
|           | historic buildings survey              | survey historic buildings constructed up through 1960                           | brings historic buildings survey up-to-date to include Cold War period                                                                                                                                                               |                   | E               |
|           | historic objects                       | evaluate significance of identified historic objects                            | brings objects survey up-to-date                                                                                                                                                                                                     |                   | E               |
|           | places of ethnographic significance    | initiate inventory of traditional places                                        | provides information on potentially significant places                                                                                                                                                                               |                   | E               |
|           | human remains                          | follow Standard Operating Procedures for inadvertent discovery of human remains | provides process for identifying and sensitively dealing with human remains                                                                                                                                                          |                   | R               |
|           |                                        | enter data on newly found burials into master cultural resources data base      | provides a management data base that can be used to anticipate future management needs                                                                                                                                               |                   | R               |
|           | National Register sites and districts  | review and update forms for all National Register-listed sites                  | updates National Register information to incorporate data collected in recent inventory and data recovery projects                                                                                                                   |                   | R               |
|           | National Register thematic nominations | update forms for thematic nominations to include new data                       | updates National Register thematic nominations to incorporate data collected in recent inventory and data recovery projects; e.g., expand definition of Advance Base Construction theme to include early permanent base construction |                   | E               |
|           |                                        | develop other themes                                                            | provides other thematic opportunities to facilitate management                                                                                                                                                                       |                   | E               |
|           | curation                               | initiate curation study                                                         | will better define the status of collections held by Navy, other government agencies, private firms                                                                                                                                  |                   | E               |
|           |                                        | complete curation negotiations between Navy and Guam Museum                     | ensures that collections and records are properly curated in a timely manner                                                                                                                                                         |                   | E               |

Table II-2. Summary of RICRMP Management and Preservation Recommendations (continued).

| Objective                                                            | Site Protection Action     | Management Recommendation                                                                                  | Comment                                                                                                                                                                                                                                          | Problem Addressed                                                                                                                                                                                | Priority Level* |
|----------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Resource Protection, Monitoring, Maintenance (RICRMP Section II.1.2) |                            |                                                                                                            | Purpose: site protection, on-going monitoring, maintenance of site condition                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• unintentional disturbance</li> <li>• vandalism, pot-hunting</li> <li>• deterioration from public use</li> <li>• damage to resource integrity</li> </ul> | R               |
|                                                                      | resource protection        | develop resource protection plans for significant and/or fragile sites that are in danger of deterioration | provides process for ensuring continuing and on-going protection of significant/fragile sites                                                                                                                                                    |                                                                                                                                                                                                  | R               |
|                                                                      | resource monitoring        | initiate program to review site condition on a regular basis                                               | ensures that significant sites are protected on long-term basis; monitoring program will allow continuing, on-going review of protection issues, forestall site deterioration by catching problems early                                         |                                                                                                                                                                                                  | R               |
|                                                                      |                            | prepare annual report on results of site condition reviews                                                 | establishes a data base on site condition issues                                                                                                                                                                                                 |                                                                                                                                                                                                  | R               |
|                                                                      | resource maintenance       | develop maintenance program for historic buildings                                                         | ensures long-term preservation of significant architectural resources                                                                                                                                                                            |                                                                                                                                                                                                  | R               |
| Resource Data Management (RICRMP Section II.1.3)                     |                            |                                                                                                            | Purpose: improve data organization to facilitate management                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• all problems</li> </ul>                                                                                                                                 | E               |
|                                                                      | coordinated site numbering | consult with GHPO regarding acquisition of site numbers                                                    | acquire site numbers that can be used for sites identified on Navy lands; will provide a consistent numbering system for Navy-maintained resources that is linked to GHPO system; will facilitate resource management, inter-agency coordination |                                                                                                                                                                                                  | R               |



Table II-2. Summary of RICRMP Management and Preservation Recommendations (continued).

| Objective                                 | Site Protection Action            | Management Recommendation                                                                             | Comment                                                                                                                                                                                   | Problem Addressed                                                                                                                | Priority Level* |
|-------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                           |                                   | if GHPO numbers cannot be acquired, apply consistent site numbering system to resources on Navy lands | facilitates internal resource management; still poses problem with inter-agency cooperation                                                                                               |                                                                                                                                  |                 |
|                                           | integrated data management system | provide computer facilities for a cultural resources GIS system                                       | facilitates resource management                                                                                                                                                           |                                                                                                                                  | E               |
|                                           |                                   | provide for regular updating of data in cultural resources GIS system                                 | facilitates resource management                                                                                                                                                           |                                                                                                                                  | R               |
| Compliance Review (RICRMP Section II.1.4) |                                   |                                                                                                       | Purpose: ensure that new development does not adversely affect significant resources                                                                                                      | <ul style="list-style-type: none"> <li>• site disturbance/destruction</li> <li>• deterioration from increased contact</li> </ul> | R               |
|                                           | Section 106 consultation          | assign cultural resource responsibilities to knowledgeable, trained staff                             | ensures that compliance reviews are carried out by qualified personnel (presently done by BOS contractor staff with no, little cultural resource experience)                              |                                                                                                                                  | R               |
|                                           |                                   | develop adequate reference library for compliance review                                              | ensures that compliance reviews are carried out with all available background information (presently done by BOS contractor staff with no, little access to full CRM library, resources)  |                                                                                                                                  | R               |
|                                           |                                   | provide RICRMP to BOS contractor                                                                      | ensures that compliance reviews are carried out with an understanding of all provisions of the RICRMP                                                                                     |                                                                                                                                  | R               |
|                                           | construction monitoring           | monitor ground-disturbing activities                                                                  | ensures that ground-disturbing activities or new construction in areas designated as high or medium potential for historic assets are monitored by a qualified professional archaeologist |                                                                                                                                  | R               |

Table II-2. Summary of RICRMP Management and Preservation Recommendations (continued).

| Objective                                            | Site Protection Action            | Management Recommendation                                                                                | Comment                                                                                                                                                          | Problem Addressed                                                                                                                                                                      | Priority Level* |
|------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                                      | monitoring of training activities | comply with all accepted cultural resource requirements for military training                            | ensures that cultural resources are protected from adverse impacts of military training activities                                                               |                                                                                                                                                                                        | R               |
| Interpretation and Education (RICRMP Section II.1.5) |                                   |                                                                                                          | Purpose: encourage public stewardship                                                                                                                            | <ul style="list-style-type: none"> <li>• unintentional damage from ignorance, increased public use</li> <li>• vandalism, pothunting</li> </ul>                                         | R               |
|                                                      | interpretive exhibit and trails   | maintain Command Historic Exhibit; assign duty to CRM; move exhibit to more publicly accessible location | offers opportunity to educate public, and enhance awareness of historic value of Guam Navy lands; contributes to quality of life for Navy personnel and families |                                                                                                                                                                                        | E               |
|                                                      |                                   | develop interpretive brochures                                                                           | offers opportunity to educate public, and enhance awareness of historic value of Guam Navy lands; contributes to quality of life for Navy personnel and families |                                                                                                                                                                                        | E               |
|                                                      |                                   | develop, maintain additional sites for interpretation                                                    | offers opportunity to educate public, and enhance awareness of historic value of Guam Navy lands; contributes to quality of life for Navy personnel and families |                                                                                                                                                                                        | E               |
|                                                      | briefings                         | continue and enhance indoctrination briefings                                                            | offers opportunity to educate in-coming Navy personnel, and enhance awareness of historic value of Guam Navy lands                                               |                                                                                                                                                                                        | E               |
| Administrative Actions (RICRMP Section II.1.8)       |                                   |                                                                                                          | Purpose: facilitate resource management through efficient, effective administration                                                                              | <ul style="list-style-type: none"> <li>• site deterioration from wild, feral animals</li> <li>• site damage from IRP, ordnance demolition</li> <li>• vandalism, pot-hunting</li> </ul> | R               |

Table II-2. Summary of RICRMP Management and Preservation Recommendations (continued).

| Objective | Site Protection Action | Management Recommendation                                      | Comment                                                                                                                                                                                                                   | Problem Addressed | Priority Level* |
|-----------|------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|
|           | staff training         | provide training opportunities for cultural resource personnel | ensures that cultural resource personnel have the most up-to-date information to carry out their duties                                                                                                                   |                   | R               |
|           | staff coordination     | coordinate cultural and natural resource responsibilities      | makes best use of limited staffing                                                                                                                                                                                        |                   | R               |
|           | RICRMP evaluation      | annual report                                                  | documents historic preservation activities in a manner that can be used to review, revise, improve the RICRMP in its next iteration; provides opportunity to update Priority Levels for recommendations on a yearly basis |                   | E               |

\* Priority descriptions are taken from DoD Instruction 4715.3, Enclosure 4.

**Recurring:** Recurring cultural resources conservation management requirements include activities needed to meet applicable compliance requirements or which are in direct support of the military mission; recurring costs consist of manpower, training, supplies, hazardous waste disposal, operating recycling activities, permits, fees, testing and monitoring and/or sampling and analysis, reporting and record-keeping, maintenance of environmental conservation equipment, and compliance self-assessments.

**Enhancement:** Enhancement actions beyond compliance include those projects and activities that enhance conservation resources or the integrity of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required under regulation or Executive Order and are not of an immediate nature.