
MANAGEMENT PLAN

KAGMAN WILDLIFE CONSERVATION AREA
AND
FORBIDDEN ISLAND MARINE SANCTUARY

MAY 15, 2007

DEPARTMENT OF LANDS AND NATURAL RESOURCES

DIVISION OF FISH AND WILDLIFE
COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS
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Department of Lands and Natural Resources

Division of Fish and Wildlife

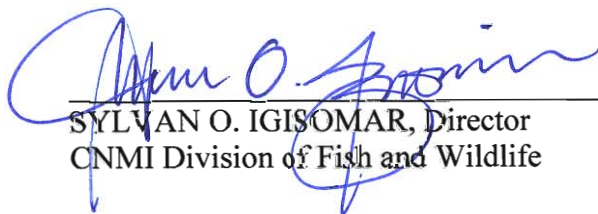
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The Division of Fish and Wildlife of the CNMI Department of Lands and Natural Resources is pleased to present this Management Plan for the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary. The Kagman Wildlife Conservation Area was first established by the Tenth Legislature of the Commonwealth of the Northern Mariana Islands in 1998, to “designate public lands owned by the Commonwealth Government that will be preserved in perpetuity for wildlife conservation and managed to enhance habitat functions for targeted endangered and threatened species”. The Forbidden Island Marine Sanctuary was created by the Twelfth Legislature in 2001 for the conservation of wildlife and marine life.

This Management Plan is an essential first step in conserving and managing terrestrial and marine wildlife resources in these two conservation areas. The plan designates which uses are compatible with the mandates of laws and regulations, which uses will require permits, and which uses will not be allowed. Also provided herein are management goals, objectives and strategies, and recommendations for implementation.

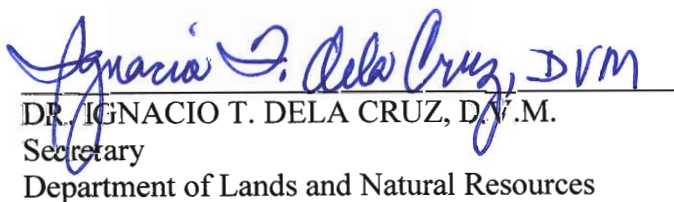
We wish to thank Greg Schroer of Resources Northwest for researching the background, compiling data, consulting with staff, and writing this management plan under contract. We also wish to acknowledge the efforts of the many professionals on the staff of the Division of Fish and Wildlife and the Department of Lands and Natural Resources who have provided valuable insight and experience in the development of this document.



SYLVAN O. IGISOMAR, Director
CNMI Division of Fish and Wildlife



Date



DR. IGNACIO T. DELA CRUZ, D.V.M.
Secretary
Department of Lands and Natural Resources



Date

Acknowledgements

Numerous managers and staff in the Department of Lands and Natural Resources reviewed the drafts of this plan, or the similar Bird Island Management Plan. These included Secretary Dr. Ignacio T. dela Cruz, D.V.M., Special Assistants to the Secretary Henry S. Hofschneider and Manny Pangelinan, Director for the Division of Fish and Wildlife (DFW) Sylvan O. Igisomar, and Director Donald Flores and Vic Guerrero for the Division of Agriculture. Gayle Martin, DFW Natural Resources Planner, provided valuable guidance and comments in her role as the contract administrator. Numerous DFW staff also provided comments for the drafts, including Greg Moretti (Marine Protected Area Specialist), Mike Trianni (Fisheries Biologist), Mike Tenorio (Fisheries Biologist), Laura Williams (Wildlife Biologist), Paul Radley (Wildlife Biologist), and Joe Ruak (CNMI Sea Turtle Program Coordinator). Ted Hitzroth, Digital Mapping Specialist with International Forestry Consultants, provided subcontract expertise for preparing the maps.

Funding for the research and writing of this management plan was provided by the U.S. Fish and Wildlife Service, Division of Federal Assistance, under the State Wildlife Grant, grant number T-1-P.

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ACRONYMS AND ABBREVIATIONS

Agencies and Organizations

CNMI	= Commonwealth of the Northern Mariana Islands
CRMO	= CNMI Coastal Resources Management Office
DEQ	= CNMI Division of Environmental Quality
DFW	= CNMI Division of Fish and Wildlife
DLNR	= CNMI Department of Lands and Natural Resources
DPL	= CNMI Department of Public Lands
DPW	= CNMI Department of Public Works
EPA	= U.S. Environmental Protection Agency
HPO	= CNMI Historic Preservation Office
MPLA	= Marianas Public Land Authority
MVA	= Marianas Visitors Authority

Other

Ac	= acre
C	= Celsius
Cm	= centimeters
Dbh	= tree diameter at breast height (4.5 ft. above ground)
ESA	= Endangered Species Act
F	= Fahrenheit
Ft	= feet
Ha	= hectare
In	= inch
Km	= kilometer
M	= meter
Mi	= mile
PL	= public law
Spp	= species

1.0 INTRODUCTION

The **Kagman Wildlife Conservation Area** and the **Forbidden Island Marine Sanctuary** are adjoining conservation areas encompassing 440 hectares (ha) (1,087 acres (ac)), of land and marine environments on the east-central coast of Saipan, Commonwealth of the Northern Mariana Islands (CNMI) (Figures 1 and 2). The Division of Fish and Wildlife (DFW), within the Department of Lands and Natural Resources (DLNR), is responsible for managing these areas. As part of this responsibility, the DFW has developed the following management plan which describes the: 1) legislative and agency mandates; 2) resources; 3) uses; 4) management goals, objectives, and strategies; and 5) management costs and funding options.



Figure 1. Forbidden Island, and the Forbidden Island Marine Sanctuary, as seen from the Forbidden Island Overlook in the Kagman Wildlife Conservation Area.

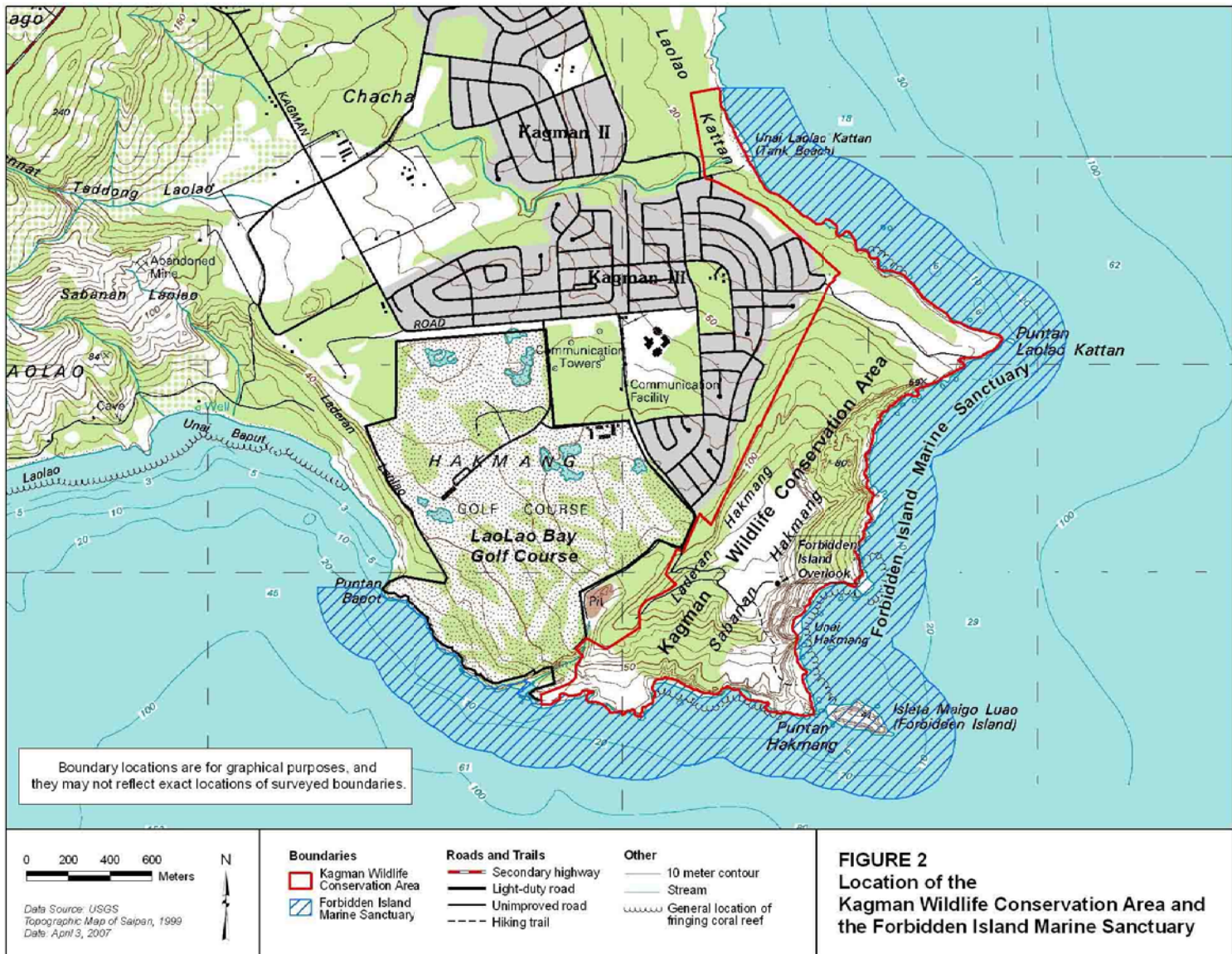


FIGURE 2
 Location of the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary

2.0 Legislative and Agency Mandates

2.1 KAGMAN WILDLIFE CONSERVATION AREA

2.1.1 ENABLING LAND GRANT

The Kagman Wildlife Conservation Area was created on December 31, 1991 when the Marianas Public Land Corporation (now the Department of Public Lands [DPL]) transferred title of ownership of those lands to the Department of Natural Resources (now the Department of Lands and Natural Resources [DLNR]). This “Grant of Public Domain Lands” was recorded as file no. 92-004 at the Commonwealth Recorder’s Office on January 2, 1992. Key provisions of this land grant are defined here.

Purpose: The land “is to be solely used as a wildlife or agricultural area... Any other use inconsistent with the above stated purpose shall cause title to revert to the Grantor.” The land grant also identified the following three premises for conducting the land transfer.

- Whereas, all public lands in the Northern Mariana Islands belong collectively to the people of the Commonwealth and it is intended that the management and disposition of public lands should ultimately benefit the people of the Commonwealth; and
- Whereas, the Grantor [MPLA, which is now the DPL] desires that certain parcels of public lands be used exclusively for wildlife sanctuary and related purposes; and
- Whereas, a primary objective of the Grantee [DNR, which is now the DLNR] is to improve and expand agricultural and wildlife resources to meet the needs of the residents of the Commonwealth.

Location and Ownership: The DLNR holds title to the land and resources within the boundaries of the Kagman Wildlife Conservation Area. The land grant specifically states the Grantor (DPL, formerly MPLA) will:

“...hereby grant, remise, release, convey, and quitclaim forever to the Grantee, its successors and assigns, all of Grantor’s right, title, interest, claim or demand in or to those parcels of public lands situated, lying and being located at Saipan, Northern Mariana Islands, and described as follows:

Lot No. 019 G 01, containing an area of 1,791,587 square meters as described on DLS Check No. 019 G 00, dated November 13, 1991, Recorded as File No. 91-5488 on November 21, 1991.

TO HAVE AND TO HOLD, the above-described property, together with the rights, title and interest thereto, and the hereditaments and appurtenances thereunto belonging to the Grantee, its successors and assigns, forever, but reserving and excepting therefrom all existing roadways, easements, and rights-of-way.”

2.1.2 REGULATIONS

The following regulations, codified at 2 NMIAC § 85-30.1-330, apply to CNMI Wildlife Conservation Areas, including the Kagman Wildlife Conservation Area.

(d) General Prohibitions

Except as provided for in subsection (e) below, no person shall, in any wildlife conservation area,

- 1) Hunt or fish,
- 2) Be in possession of any firearm, slingshot, bow and arrow, shot or any instrument that could be used for the purpose of hunting,
- 3) Have in his possession any animal, carcass, nest, egg or a part of any of those things,
- 4) Damage, destroy or remove a plant except those plants used for traditional medical purposes,
- 5) Carry on any agricultural activity, graze livestock or harvest any natural or cultivated crop,
- 6) Allow any domestic animal to run at large,
- 7) Camp or light or maintain a fire,
- 8) Operate a conveyance,
- 9) Destroy or molest animals or carcasses, nests or eggs thereof,
- 10) Remove, deface, damage or destroy any artifact, natural object, building, fence, poster, sign or other structure,
- 11) Carry on any commercial or industrial activity,
- 12) Disturb or remove any soil, sand, gravel or other material, or
- 13) Dump or deposit any rubbish, waste material or substance that would degrade or alter the quality of the environment.

(e) Permits

- (1) The Director may, on application, issue a permit to any person authorizing that person to carry on an activity described in subsection (d) in any wildlife conservation area where that activity will not interfere with the conservation of wildlife. A person to whom a permit has been issued shall:
 - (i) Have the permit in his/her possession at all times while in the wildlife area; and
 - (ii) Show the permit to any conservation officer immediately on request.
- (2) Every permit expires on the expiry date set out in the permit or, where a permit does not contain an expiry date, on December 31st of the year in which it was issued. The Director may cancel or suspend a permit where it is necessary to do so for the conservation of wildlife or wildlife habitat in a wildlife area.

(f) Restricted Entry

Where the Director has published a notice in a local newspaper or posted a notice at the entrance of any wildlife area or on the boundary of any part thereof prohibiting entry to any wildlife area or part thereof, no person shall enter the area or part thereof set out in the notice.

2.1.3 COMMONWEALTH MITIGATION BANK

The Kagman Wildlife Conservation Area is also part of the Commonwealth Mitigation Bank, which was established in January 1998 under Public Law 10-84. This mitigation bank consists of three land conservation areas: the Kagman Wildlife Conservation Area, Bird Island Wildlife Conservation Area, and the Marpi Commonwealth Forest, with the option of adding other areas in the future.

The purpose of the mitigation bank is to: "...designate public lands owned by the Commonwealth government that will be preserved in perpetuity for wildlife conservation and managed to enhance habitat functions for targeted endangered and threatened species." Public Law 10-84 also states: "The Commonwealth, through the Department of Lands and Natural Resources, shall protect, maintain and manage the protected areas in perpetuity in accordance with this Act, with any Agreement between the CNMI and the United States Fish and Wildlife Service, and with any Management Plan developed pursuant to such Agreement."

2.2 FORBIDDEN ISLAND MARINE SANCTUARY

2.2.1 ENABLING LEGISLATION

The Forbidden Island Marine Sanctuary was created by Public Law 12-46 in April 2001, which also established the Bird Island Marine Sanctuary. The following key provisions are included within that law.

Purpose: The purpose of Public Law 12-46 is to establish the Forbidden Island and Bird Island Marine Sanctuaries for the conservation of wildlife and marine life, as well as to:

- promote the concept of conserving and protecting natural resources;
- serve as a natural laboratory for the continued propagation of wildlife and marine species, which gradually and naturally can re-populate depopulated areas; and
- provide a laboratory for students, teachers and research groups to study wildlife and marine species

Location: As stated in Public Law 12-46: "The Forbidden Island Sanctuary shall have boundaries beginning from the cliff line of Lau Lau Bay Golf Course, Chikeru, encompassing all of Forbidden Island and extending to and inclusive of Tank Beach. This sanctuary extends one thousand feet from the low tide line seaward."

Management and Monitoring: The Division of Fish and Wildlife will be responsible for clearly marking the boundaries with signs, written in three languages (Chamorro, Carolinian, and English), and permanently placing these signs at the northern and southern boundaries of the sanctuary and at intervals in between. The signage shall state the purpose of the marine sanctuary, the boundaries, and the benefits derived from the sanctuary, prohibited activities within the sanctuary, and the penalty for engaging in prohibited activities in the sanctuary.

The Division of Fish and Wildlife shall monitor these marine sanctuaries on a periodic basis at different times, reporting their findings and maintaining a written record of those findings, which shall be available to the public upon reasonable request.

Collaboration: The Department of Public Lands, Coastal Resources Management Office, and the Marianas Visitors Authority shall work together with the Division of Fish and Wildlife in developing this sanctuary [and the Bird Island Marine Sanctuary] to be a model for replication throughout the Pacific. Activities to be undertaken which can benefit through collaboration include: fencing the perimeters of the land side of the sanctuary and installing gates for entry and exit, building rest areas with pavilion and bathroom facilities, marking trails and installing rails for safety purposes, providing signage that is educational, promotes conservation, and clearly

states prohibited activities and the penalty for engaging in these prohibited activities. Marker buoys should also be installed to indicate the seaward parameters of these sanctuaries.

Permissible Activities: Permissible activities within these sanctuaries include educational fieldtrips, documentary filming, hiking, picnics and other activities that do not detrimentally affect the wildlife. This determination will be made upon written application to the Director of the Division of Fish and Wildlife. The Director may also elect not to allow any individuals into these sanctuaries if the Director so determines that at certain times and in certain seasons that it is detrimental and contrary to good wildlife conservation practices to have any intrusion into a wildlife sanctuary at that time or season.

Fees:

The Division of Fish and Wildlife may elect to charge a nominal entry fee for the purposes of maintenance of these sanctuaries and for enforcement, research and improvement of the sanctuary.

Prohibited Activities:

Destruction, harassment and/or removal of plants, wildlife including birds, turtles, fish and marine species of any kind, fishing in any form, operation of jet skis, walking on exposed sections of the reef, harvesting or removal of fish, shellfish or marine life in any form is prohibited within the confines of the sanctuary.

Penalties:

A fine of \$500 and/or prison sentence of not more than one year shall be imposed on any individual who engages in any of the prohibited activities within the sanctuary.

2.2.2 REGULATIONS

CNMI marine reserves are protected by regulations defined under 2 NMIAC § 85-30.1-450. However, those regulations do not apply to the Forbidden Island Marine Sanctuary because that area is not specifically identified as a marine reserve within the regulations.

In order to establish regulations for this marine sanctuary, the DFW may decide to simply amend 2 NMIAC § 85-30.1-450 to include Forbidden Island Marine Sanctuary as a marine reserve, or develop a new set of regulations. In the interim, enforcement actions taken by the Department of Lands and Natural Resources within this marine sanctuary are limited to the statutory prohibitions and limitations defined by Public Law 12-46 (listed in Section 2.2.1), as well as any other DLNR and DFW regulations that may apply to actions occurring in the marine sanctuary.

3.0 AREA DESCRIPTION

3.1 GENERAL CHARACTERISTICS

3.1.1 KAGMAN WILDLIFE CONSERVATION AREA

The Kagman Wildlife Conservation Area consists of 175 ha (432 ac) of lands along the eastern shoreline of the Kagman Peninsula (Table 1; Figure 2). The area is bounded to the north, east, and south by the Forbidden Island Marine Sanctuary. To the west, the conservation area is generally bounded by the Laolao Bay Golf course and the Kagman Village, which has approximately 500 homes, and a few schools, stores, and government offices and facilities.

The shoreline of the conservation area begins in the north near Tank Beach (also referred to as Unai Laolao Kattan) (Figure 2) and extends south to include Puntan Laolao Kattan and Putan Hakmang, ending at the most southern point near the Laolao Bay Golf Course. From shore, the conservation area extends inland as much as approximately 800 m (2,624 ft). This inland area includes all the high, rugged coastal cliffs that dominate the eastern coastline of the Kagman Peninsula.

Table 1. Area of the Kagman Wildlife Conservation Area and Forbidden Island Marine Sanctuary. ^a

Area	Hectares	Acres
Kagman Wildlife Conservation Area	175	432
Forbidden Island Marine Sanctuary (including the 3 ha island)	265	655
Total for Both Conservation Areas	440	1,087

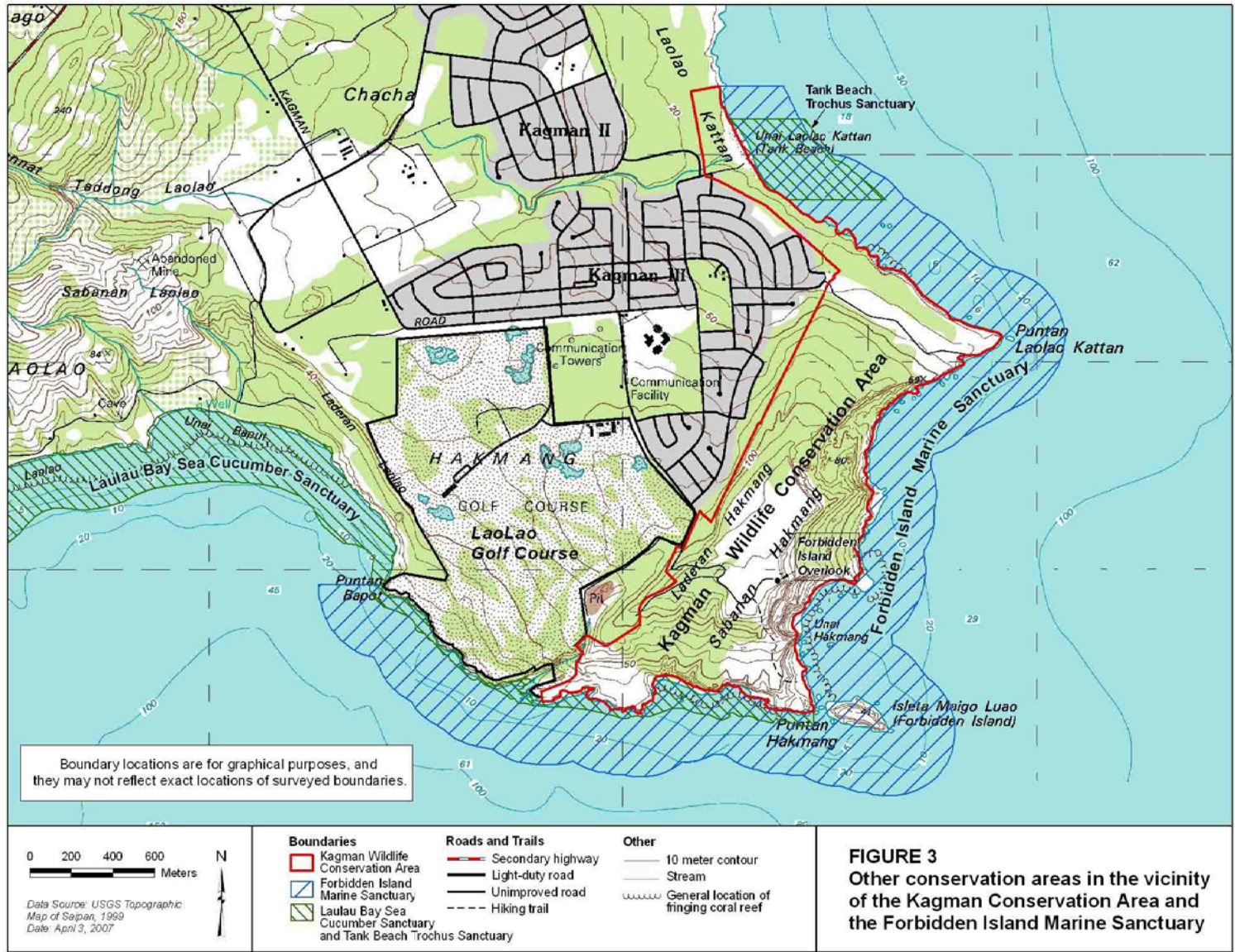
^a All boundaries of these conservation areas are final, and those coordinates may be obtained from the DLNR Division of Land Registration and Surveys for the most accurate locations.

3.1.2 FORBIDDEN ISLAND MARINE SANCTUARY

The Forbidden Island Marine Sanctuary encompasses 265 ha (655 ac) of marine environment extending 1,000 feet seaward from low tide line, including Forbidden Island, which is 3 ha (8 ac). Approximately 60% of the sanctuary shoreline consists of fringing reefs, and at their widest point, near Forbidden Island, they extend as much as 100 m (328 ft) from shore. At the outer edge, the fringing reef generally descends at 30 to 50 degrees into deep water habitats.

3.1.3 OTHER CONSERVATION AREAS IN THE VICINITY

The Forbidden Island Marine Sanctuary fully overlaps the 17 ha (42 ac) Tank Beach Trochus Sanctuary (Figure 3). Trochus may not be taken from these particular reserves except as permitted by the DFW Director, and any permit issued by the Director is subject to special conditions (2 NMIAC §85-30.1-415). The Forbidden Island Marine Sanctuary also overlaps about 15 percent of the Laulau Bay Sea Cucumber Reserve (Figure 3). DFW regulations state that no sea cucumber may be taken from this area except as permitted by the DFW Director, and that any permit issued by the Director is subject to special considerations (2 NMIAC §85-30.1-420). Sea cucumbers and any other echinoderms, as well as seaweed and seagrass, also are additionally protected throughout the CNMI by a moratorium on harvest established through



Public Law 11-63, for a period of at least ten years from February 1999. The moratorium may be extended by the Secretary of the DLNR, after ten years, if those populations have not sufficiently recovered to allow harvest.

TERRESTRIAL RESOURCES

3.2.1 GEOLOGY AND SOILS

Limestone bedrock underlies soils at the lower elevations in the Kagman Wildlife Conservation Area, whereas basalt is the predominant bedrock underlying the higher elevations (CRMO 1997). Three primary soil types are found within the conservation area - two are rock outcrop soils and one is a clay-loam soil (Table 2, Figure 4; Young 1989). The rock outcrop soils are primarily found at the highest elevations around the Forbidden Island Overlook, as well as on portions of Forbidden Island. These soils are generally less suitable for forest growth, as compared with the clay loam soils at lower elevations (Young 1989).



Table 2. Soils of the Kagman Wildlife Conservation Area (Young 1989).

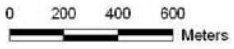
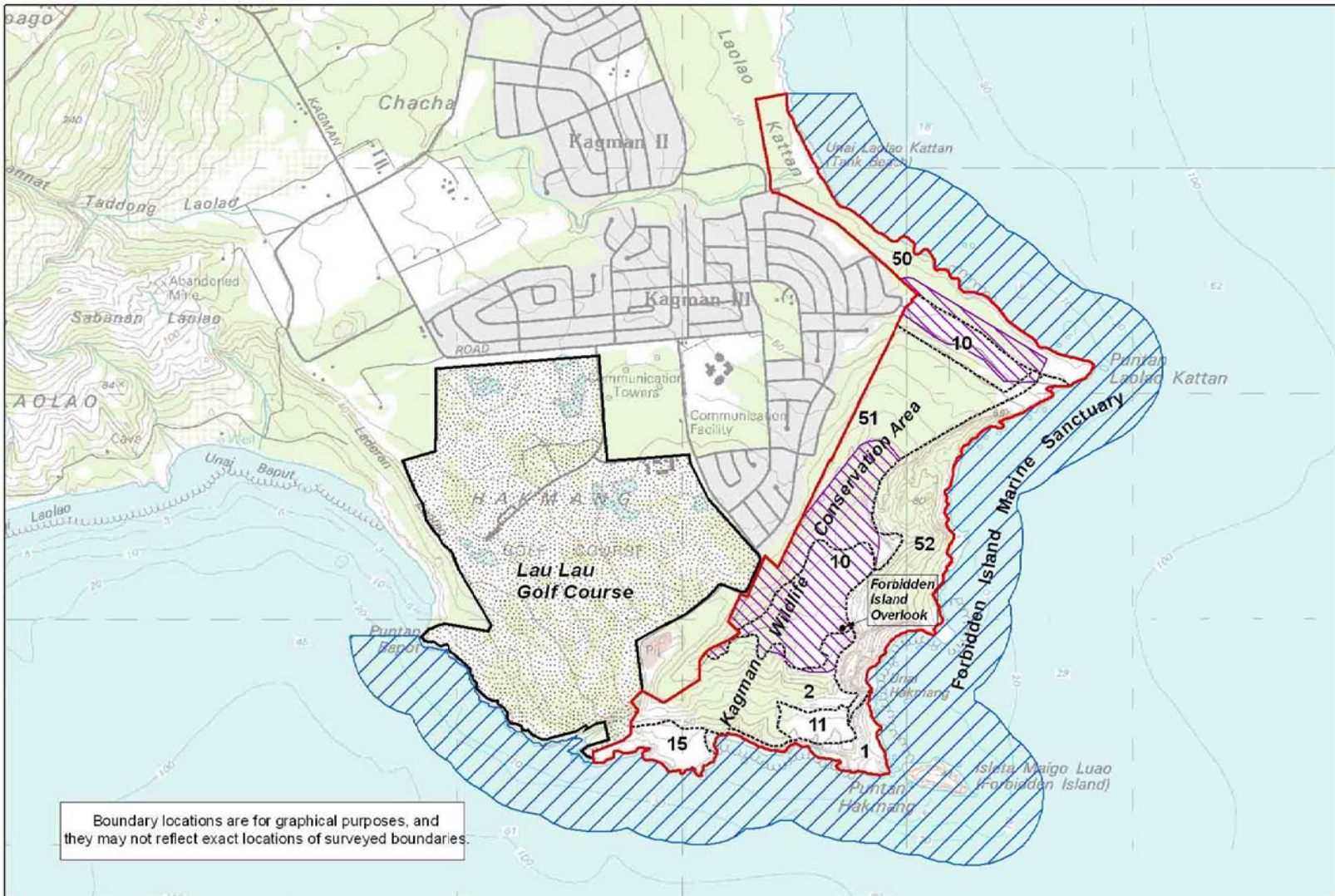
Map #	Name	Slope (%)
1	Afayan Variant Rock Outcrop	15-30
2	Afayan Variant Rock Outcrop	30-60
10	Chinen Clay Loam	0-5
11	Chinen Clay Loam	5-15
50	Tackpochao- Rock Outcrop Complex	3-15
51	Tackpochao- Rock Outcrop Complex	15-30
52	Tackpochao- Rock Outcrop Complex	30-60

3.2.2 FLORA

The Kagman Conservation Area primarily consists of native vegetation along with some areas dominated by non-native plants. Vegetation surveys were conducted in the Kagman Wildlife Conservation Area during late 2002 and early 2003, and DFW has plans to analyze that data in the future (Williams 2006, pers. comm.).

During the early 1900's, native vegetation was cleared from portions of the area, as shown by aerial photos taken in 1945 (Figure 5), and many of those previously cleared lands also were leased for livestock grazing in the 1980's (de Cruz et al. 2003; Figure 4). Some of those leases extended until 1999, at which time all permitted livestock grazing was eliminated from the conservation area lands. In 1989, native trees were planted in some of those previous leased areas, as part of the U.S. Air Force mitigation for a Saipan radar installation, and those reforestation plots were maintained until 1993 (de Cruz et al. 2003).

Non-native plants and plant communities have established in the conservation area, especially in the areas that were previously cleared and leased for livestock grazing (Figure 4; de Cruz et al. 2003). Today,



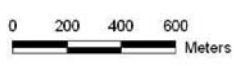
Source:
 USGS Soil and Geology Survey, 1989
 Date: April 3, 2007

- Boundaries**
- Kagman Wildlife Conservation Area
 - Forbidden Island Marine Sanctuary
 - Soil boundary
 - Former grazing leases

FIGURE 4
 Soils and previously leased lands in
 the Kagman Wildlife Conservation Area



Boundary locations are for graphical purposes, and they may not reflect exact locations of surveyed boundaries.



Date: April 3, 2007

- Boundaries**
- Kagman Wildlife Conservation Area
 - Forbidden Island Marine Sanctuary

FIGURE 5
Aerial photo (1945) of the Kagman Wildlife Conservation Area and surrounding area

many of those previously leased lands, as well as other sites in the conservation area, are dominated by the non-native species of tangantangan (*Leucaena leucocephala*).

As with many other areas of Saipan, the presence and distribution of invasive, non-native plant species is a management concern. For example, non-native vine species are found in portions of the conservation area that were previously cleared and these plants continue to expand their presence by dominating and killing native plant species. These and other species of invasive, non-native plants threaten the long-term sustainability of native plant and animal communities in the conservation area.

3.2.3 FAUNA

A survey of forest birds was conducted in the Kagman Wildlife Conservation Area in late 2002 and early 2003 (de Cruz et al. 2003). A total 847 birds were detected using variable circular plot (VCP) surveys with an average of 13.7 birds detected per survey station. On average, the density of forest birds was less in the Kagman Wildlife Conservation Area than in other protected areas on Saipan (de Cruz et al. 2003).

The most plentiful species recorded during these surveys were the Saipan bridled white-eye (nosa) (*Zosterops conspicillatus saypani*), rufous fantail (na'abak) (*Rhipidura rufifrons*), and golden white-eye (canario) (*Cleptornis marchei*). Also common are the collared kingfishers (sihek) (*Halcyon chloris*), Micronesian starlings (sali) (*Aplonis opaca*), and Micronesian honeyeaters (egigi) (*Myzomela cardinalis*). Detections of Philippine turtle-doves (paluman senesa) (*Streptopelia bitorquata*), Eurasian tree sparrows (*Passer montanus*), white-throated ground-doves (paluman apaka and paluman fachi) (*Gallinula xanthonura*), and the endangered nightingale reed-warbler (gaga karisu) (*Acrocephalus luscini*) were relatively low, but consistent with expectations. Mariana fruit-dove (totot) (*Ptilinopus roseicapilla*), which is the Commonwealth bird, occurred less often than expected, given their abundance in other forested areas of Saipan (de Cruz et al. 2003). Four feral chickens also were detected during the surveys, as well as 85 seabirds, consisting of white-tailed tropicbirds (*Phaethon lepturus*) (3 detections), brown noddies (*Anous stolidus*) (5 detections), and white terns (*Gygis alba*) (77 detections). To date, wildlife surveys have not yet been conducted on Forbidden Island.

The nightingale reed-warbler was the only endangered or threatened species detected during the forest bird surveys although the Micronesian swiftlet (chachaguak) (*Aerodramus bartschi*) also is known to use the area because it is periodically observed foraging over those forests (de Cruz et al. 2003; Table 3). The endangered Micronesian megapode (sasangat) (*Megapodius laperouse laperous*) was not recorded during the surveys.

Table 3. Endangered or threatened animal species known to inhabit the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary.

Common Name	Scientific name	CNMI Status	Federal Status
Nightingale reed warbler	<i>Acrocephalus luscini</i>	TE	E
Mariana swiftlet	<i>Aerodramus bartschi</i>	TE	E
Green sea-turtle (haggan)	<i>Chelonia mydas</i>	TE	E
Hawksbill sea-turtle	<i>Eretmochelys imbricata</i>	TE	E

Codes: TE – CNMI Threatened/ Endangered Species E – Federal Endangered Species

Historically, the Marianas fruit bat (fanihi) (*Pteropus mariannus*) was most likely present in the area, although it has not been reported to be there in recent years, and it was not detected during the surveys conducted in 2002 and 2003.

In addition to feral chickens found in the Kagman Wildlife Conservation Area; dogs, cats, and occasional stray cattle also are periodically seen in the area. Other non-native mammals known to inhabit the conservation area include mice, rats, and shrews. These and other non-native animals compete with native wildlife, impact habitat, and may potentially detrimentally impact visitor recreation experience. However, surveys have not been done for these particular animals in the conservation area, therefore their numbers and potential impacts to the conservation resources are unknown at this time.

Surveys have not yet been conducted for herpetofauna in the conservation area, although the tide pool skink (*Emioia atrocostata*) was observed by biologists in the conservation area during the late 1990's (Hawley 2006, pers. comm.).

Green sea turtles (*Chelonia mydas*) and hawksbill sea turtles (*Eretmochelys imbricata*) inhabit the marine sanctuary, although the number and trends of those populations is not yet known (Ruak 2006, pers. comm.). Green sea turtles also are known to periodically nest on Tank Beach, within the conservation area (Ruak 2006, pers. comm.). Since 2003, that beach has been systematically surveyed for nests throughout the year by conducting surveys five days a week, usually between 6 and 10 am (Ruak 2006, pers. comm.). Other beaches in the conservation area also may be surveyed on a periodic basis, but only if turtle nesting activity is reported to the DFW (Ruak 2006, pers. comm.).

3.2.4 STRUCTURES AND FACILITIES

There are no structures or facilities in the Forbidden Island Marine Sanctuary, and the structures and facilities in the Kagman Wildlife Conservation Area are primarily limited to two sites: Tank Beach and the Forbidden Island Overlook (and the associated road and trail).

Tank Beach's facilities are primarily limited to the unpaved parking lot capable of accommodating approximately 25 passenger cars, as well as a log rail fence. The parking lot is accessed by a short (150 m) unpaved access road that extends from roads in the Kagman residential subdivision.

Forbidden Island Overlook facilities include a 0.4 km (0.25 mi) unpaved access road extending from the conservation area boundary to the overlook parking lot which is capable of accommodating approximately 20 passenger vehicles (Figure 2). The overlook area has a solid wood railing with two small cement viewing stands that previously had large coin operated binoculars, which were stolen in 2004 or 2005.

The Forbidden Island Overlook Trail extends from the access road approximately 500 m (1,700 ft) to the beach near Forbidden Island (Figure 2). This steep trail is considered one of the premier hiking trails on Saipan due to the spectacular views of Forbidden Island and the nearby rugged coastal cliffs. This is not a designed trail system, rather it developed as a result of hikers taking the most direct route to the beach. This direct route down-slope has worn deep erosion trenches in many of the lower sections as well as some of the upper sections of the trail, which has resulted in significant soil erosion and potential hiking hazards.



This trail system would greatly benefit from formal trail design and management that creates minor switchbacks in the lower portions, as well as water diversion and water retention structures throughout the system. If properly installed, these structures would significantly reduce soil erosion, fill-in and moderate the deep erosion cuts, moderate the hiking slope, reduce visitor hazards, and reduce future trail maintenance requirements.

The conservation areas are posted with two signs, one at the Tank Beach parking area, and the other next to the Forbidden Island Overlook access road, where it crosses into the Kagman Wildlife Conservation Area. Both signs are approximately 4 ft by 6 ft in size and contain the text shown below, although the sign at Tank Beach is slightly different since it is titled: “Tank Beach Sanctuary,” rather than “Forbidden Island Marine Sanctuary” or “Kagman Wildlife Conservation Area.”

<p>Forbidden Island Sanctuary Public Law No. 12-46 <u>SECTION 5</u></p> <ul style="list-style-type: none"> • NO Destruction, harassment and or removal of any plants • NO Destruction, harassment and or removal of any wildlife including birds, turtles, fish and marine species of any kind. • Absolutely NO FISHING in any form. • NO Operation of jet skis. • NO walking on exposed sections of reef. • NO Harvesting or removal of any fish, shellfish, or marine life in any form. <p><u>SECTION 6</u></p> <ul style="list-style-type: none"> • A Fine of \$500.00 and/or a prison sentence of not more than one year shall be imposed on any individual who engages in any of the prohibited activities within the area designated as sanctuary. <p>REPORT ANY VIOLATION TO DIVISION OF FISH AND WILDLIFE 664-6045 OR 664-6030</p>
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The Tank Beach and Forbidden Island Overlook parking areas also have interpretive signs that contain a map of the conservation area, photos of plants and birds, and the text shown below. The text is presented in three languages, English, Japanese, and Chinese and the signs are approximately 3 ft by 8 ft in size and set about 4 feet off the ground.

<p>Kagman Wildlife Conservation Area Forbidden Island Sanctuary Forbidden Island Sanctuary</p> <p>Forbidden Island Sanctuary is part of the Kagman Wildlife Conservation Area (see map). The fringing coral reef provides protected habitat for young fish, sharks, octopus, and other small marine animals. The beach is a popular nesting site for endangered green sea turtles. Nearby trees and bushes provide valuable habitat for birds like the endangered bridled white-eye and the rufous fantail.</p> <p>The plants that grow on the beach and near shore, such as <i>Bikkia tetrandra</i> (guasali) and the morning glory vine <i>Ipomaea</i> sp. (alalag), help hold the sand and prevent it from eroding into the sea.</p> <p>Please respect and protect our nesting turtles by not driving on the beach.</p>

3.2.5 CULTURAL AND HISTORIC RESOURCES

The Kagman Wildlife Conservation Area has archeological sites that have not been well documented, including the remnants of ancient Chamorro villages (de Cruz et al. 2003; Cabrera 2003, pers. comm.). This conservation area also has some historic sites and artifacts from the Japanese and American occupations and wartime battles, including the hidden pill boxes at Tank Beach.



3.3 MARINE RESOURCES

3.3.1 GEOMORPHOLOGY AND BIOLOGICAL SUBSTRATES

Coral reefs in the Northern Mariana Islands belong to the highly diverse Indo-West Pacific fauna (USFWS 1996). These coastal waters have an international reputation for their clarity and complex reef systems, including at least 240 species of hard corals and 41 species of soft corals and sea fans. Comprehensive coral reef surveys have not been conducted in the Forbidden Island Marine Sanctuary, although generalized geomorphologic and biologic mapping was completed by the National Ocean Service Biogeography Program, of the National Oceanic and Atmospheric Administration (NOAA National Centers for Coastal Ocean Science NCCOS. 2005).

The primary geomorphic structure of the Forbidden Island Marine Sanctuary consists of flat, low-relief, solid carbonate rock (referred to as “pavement”) with sand channels (Figure 6; NOAA National Centers for Coastal Ocean Science NCCOS. 2005). Other geomorphic structures in the sanctuary include sand; rock/boulder; spur and groove; and aggregate reef; and aggregate patch reef. Aggregate reef structures consist of relatively continuous aggregations of high relief coral formations lacking sand channels, and aggregate patch reef have coral formations that are isolated from other formations by sand, seagrass, or other habitats that are not oriented to the structural axis of a shoreline or shelf edge.

The primary biological substrate cover of the Forbidden Island Marine Sanctuary is coral (with 10 to 50 percent coverage) (Figure 7; NOAA National Centers for Coastal Ocean Science NCCOS, 2005). Other biological substrate cover includes macroalgae, coralline algae, and uncolonized sand bottoms. Coral species in the marine sanctuary include, but are not limited to, species within the scientific families of: Pocilloporidae, Acroporidae, Poritidae, and Fungiidae (Trianni and Tenorio 2007, pers. comm.).

3.3.2 FAUNA

The Forbidden Island Marine Conservation Area is a complex marine coastal ecosystem that includes hundreds of invertebrate and invertebrate species. Invertebrate species present include, but are not limited to crabs (Grapsidae, Diogenidae, Portunidae); lobsters (Scyllaridae, Palinuridae); shrimp (Stomatopoda); sea worms (Polychaeta); sea slugs (Nudibranchia); and octopus/squids (Cephalopodia), just to name a few of the most obvious species (Trianni and Tenorio 2007, pers. comm.). Green sea turtles (*Chelonia mydas*) and hawksbill sea turtles (*Eretmochelys imbricata*) also inhabit the marine sanctuary, and green sea turtles periodically nest on the adjoining beaches (Ruak 2006, pers. comm.; also refer to Section 3.2.3).

Fish species found within the marine sanctuary include, but are not limited to: squirrelfish, trumpetfish, coronetfish, pipefish, cardinalfish, groupers, snappers, morey eels, lizardfish, emperors, breams, goatfish, hawkfish, butterflyfish, angelfish, damselfish, wrasses, parrotfish, surgeonfish, moorish idol, rabbitfish, blennies, gobies, triggerfish, filefish, sharks, and puffers. Preliminary fish surveys have been completed in the sanctuary and the results of those surveys will be used to design future long-term surveys for the marine sanctuary (Trianni 2006, pers. comm.; also refer to Appendix A).

3.3.3 WATER QUALITY

The Division of Environmental Quality (DEQ) monitors water quality at approximately 50 coastal sites on Saipan, including the Tank Beach site in the northern portion of the Forbidden Island Marine Sanctuary (Bearden et al. 2006; Tanaka Bearden 2006 pers. comm.).

The Tank Beach site has been monitored since 1993. Coastal waters near Forbidden Island also were monitored beginning in 2001, although that sampling was discontinued in 2003. Water samples are analyzed for microbiological and chemical parameters including: salinity, dissolved oxygen, temperature, pH, turbidity; and enterococci bacteria. The levels of enterococci bacteria are used to assess whether coastal waters violate federal water quality standards.

From 1993 until 2003 water quality samples were collected during each quarter of the year, and during that time there was only one water quality violation found at the Tank Beach site (Table 4). Beginning in 2003, water quality sampling increased to an eight week cycle, and since that time the samples collected at Tank Beach had two water quality violations in 2003 and 2004, no violations in 2005, and one during the period of January through September 2006. No water quality violations were detected at Forbidden Island in 2003, which was the last year that site was sampled.

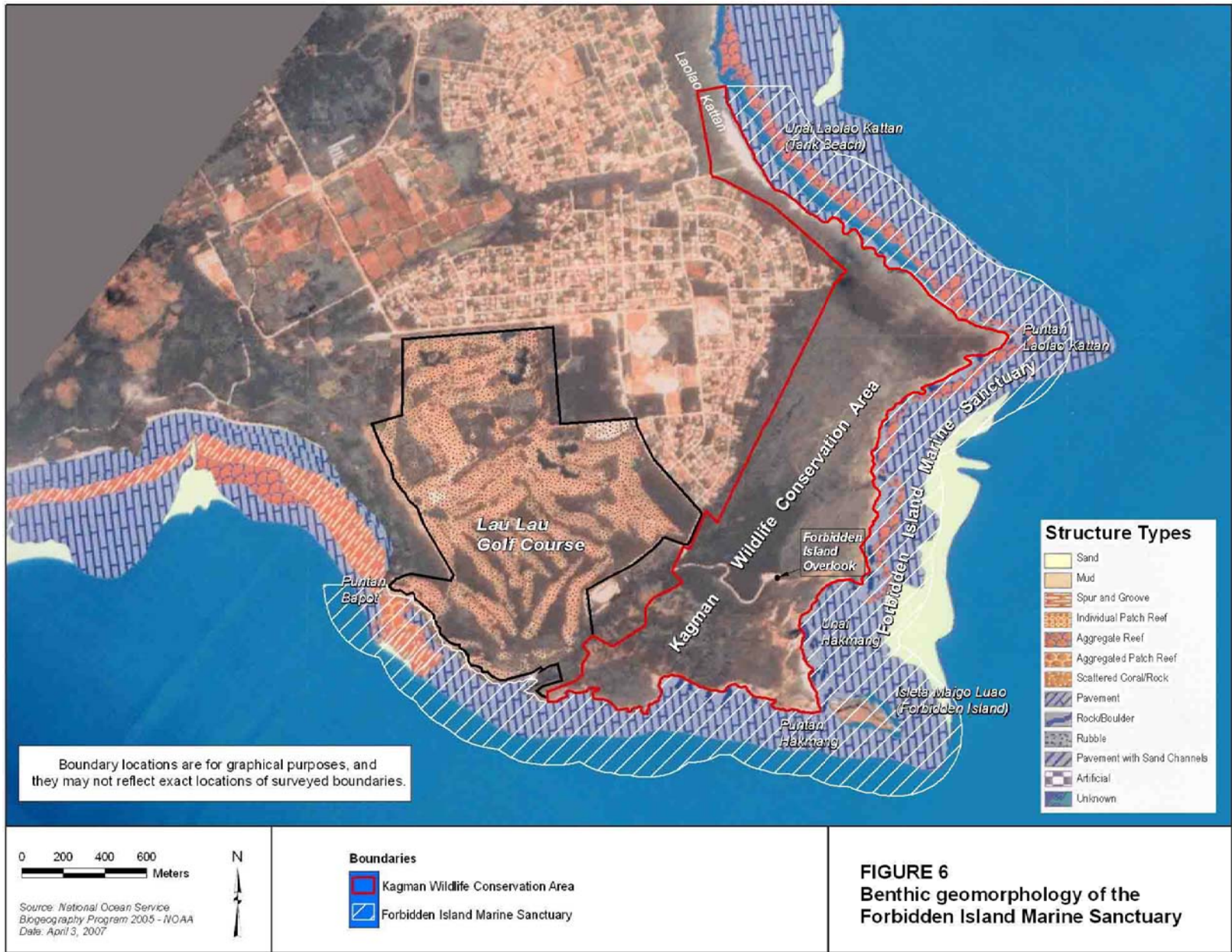
Table 4. Number of water quality samples taken in the Forbidden Island Marine Sanctuary that showed violations of federal clean water standards.

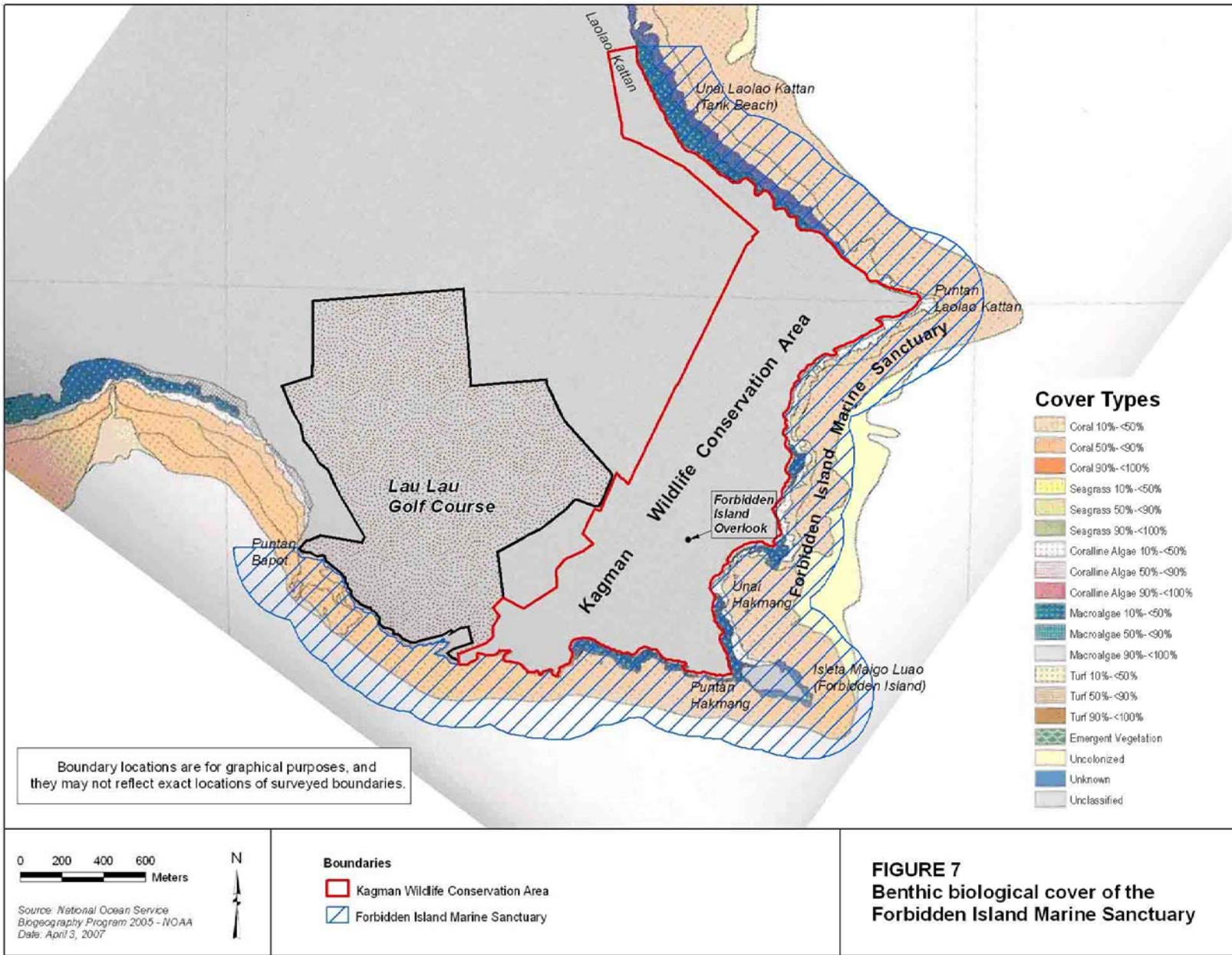
Location	1993-2002	2003	2004	2005	2006 (Jan-Sep)
Tank Beach	1	2	2	0	1
Forbidden Island	0	0	**	**	**

* Data provided by the CNMI Division of Environmental Quality.

** Sampling at the site was discontinued.

The relative isolation of the Forbidden Island Marine Sanctuary from major commercial developments, such as those on the west coast of Saipan, as well as its open exposure to flushing currents of the ocean, has helped keep the sanctuary waters and ecosystems in relatively good condition. However, potential sources of adverse impacts to the Forbidden Island Marine Sanctuary include surface and subsurface contaminants from the hundreds of residences and their septic tanks on the Kagman Peninsula, as well as farms, LaoLao Golf Course, and other developments on the Kagman Peninsula. These sources could potentially contaminate the Forbidden Island Marine Sanctuary as a result of untreated surface water runoff and waste water percolating into groundwater.





4.0 AREA USES

4.1 TYPES OF USES

Most uses occurring in the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary are related to tourism and recreation. Less common uses include scientific surveys and research, and educational field trips. Nearly all the tourism and recreation use in these two conservation areas occurs at two sites - the Forbidden Island Overlook and the associated trail and beach, and Tank Beach. The number of visitors using these sites has not been surveyed or quantified.

The Forbidden Island Overlook and the associated beach trail are considered some of the premier eco-tourism sites on Saipan due to their striking views of Forbidden Island, as well as the high coastal cliffs and rugged shoreline. Most visitors to the overlook also hike the trail to the beach where they typically rest, picnic, and snorkel. These overlook and beach sites are particularly important sites for commercial small group eco-tourism, as well as favorite destinations for Saipan residents. Large tour groups (and tour buses) do not visit the overlook primarily due to the rough, narrow access road, as well as the isolated location of this site from the major hotels on the western side of Saipan. This isolation, however, has helped preserve the relative natural uniqueness of the area, which in turn makes an attractive eco-tourism destination.

In contrast, Tank Beach is only a few meters from the parking lot, and the parking lot is adjacent to the Kagman residential village, which has approximately 500 homes. Hence, Tank Beach is a popular recreation site for many of the Kagman Village residents, as well as other Saipan residents. This beach is periodically visited by tourists, although it is not advertised as a major tourism destination. Visitors here typically can be seen partaking in family gatherings, picnicking, resting, strolling, playing in the surf, wading, and swimming. Campfires also are occasionally built here.

4.2 COMPATIBILITY OF USES

4.2.1 COMPATIBILITY WITH THE CONSERVATION PURPOSE

The DFW has reviewed known and potential visitor uses of these conservation areas to determine which uses are considered compatible with the conservation mandate and which are considered as incompatible, unless allowed by a DFW permit or a management zone designation. **The following preliminary classifications will be used as a foundation from which DFW can review and revise existing regulations or develop new regulations, to manage visitor uses in a manner that protects conservation area resources (also refer to Section 4.2.3).**

4.2.1.1 Compatible Uses

Table 5 lists the known or potential uses of the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary that are compatible with the conservation mandates for those areas. That compatibility, however, only occurs if those uses are conducted in a manner that does not significantly impact the conservation area resources.

Table 5. Compatible uses for the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary.

Compatible Uses ^a
Conducting non-motorized recreation on land, including hiking, sightseeing, resting, picnicking, photography, adventure sports, and games
Conducting non-motorized recreation in water, including swimming, snorkeling, skin diving, and SCUBA diving
Operating non-motorized watercraft, such as sail boats, kayaks, canoes, surf boards, and wind and kite surf equipment
Operating motorized watercraft except for personal watercraft (jet skis, wave runners, etc.) and submersible vessels, which are not permitted
Mooring to buoys – In the absence of mooring buoys, watercraft operators shall employ “live boat diving” techniques ^b
Operating motor vehicles on roads designated for such use
Conducting educational programs for individuals, groups, or schools
Conducting cultural ceremonies

^a These uses are compatible when they are conducted and regulated in a manner that does not significantly impact the conservation area resources. All activities conducted contrary to Public Law 12-46 or DFW regulations are prohibited.

^b Live boat diving involves an unanchored or unmoored watercraft that remains idling while the watercraft operator tracks the movements of diver(s).

4.2.1.2 Prohibited Uses Except When Allowed By DFW Permit

Table 6 identifies uses that are prohibited in the conservation areas, but may be allowed under a limited scope and duration as defined by a DFW permit issued by the DFW Director. These permits would only be granted if the uses do not pose a significant threat to the natural resources in the conservation areas.

Table 6. Prohibited uses for the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary except when allowed by DFW permit.

Prohibited Uses, Except When Allowed By DFW Permit ^{a, b, c}
Operating commercial services for a fee or other compensation ^c
Constructing or erecting permanent or non-permanent structures or buildings
Operating above-water breathing mechanisms, such as “hooka,” “snuba” or “sea-walker” systems
Overnight camping
Building or maintaining open fires
Bringing pets or domesticated animals (such as dogs, cats, and birds) into the conservation areas

^a These prohibited uses exclude actions conducted by the DFW, and by individuals or organizations sanctioned and permitted by DFW, to manage, maintain, monitor, survey, study, or protect the conservation area resources and visitors in a manner that meets the conservation mandates.

^b A few of these activities may be allowed in the future within DFW designated management zones (refer to Section 4.2.2), such as a campfire management zone that could allow those specific uses in locations that are compatible with the conservation mandates.

^c The term “Commercial Services” are those activities conducted in a conservation area for any type of fee or other compensation, such as the preparation, delivery, or sale of food, beverages, goods, equipment, or services, including providing tours or guide services for a fee in or from a conservation area.

4.2.1.3 Prohibited Uses

Table 7 identifies uses that are prohibited in the conservation areas. These uses exclude actions conducted by the DFW, and individuals or organizations sanctioned and permitted by DFW, to manage, maintain, monitor, survey, study, and protect the conservation area resources and visitors in a manner that meets the conservation mandates.

Table 7. Prohibited uses for the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary.

Prohibited Uses ^a
Operating submersible vessels or personal watercraft (jet skis, wave runners, etc.)
Operating motorized vehicles off roads designated for such use
Anchoring, except in the case of an actual emergency
Fishing of any kind, or using any type of food or other attractant for the purposes of attracting or feeding fish or other marine life (e.g., feeding, chumming, and baiting fish, including sharks)
Dumping, discharging, depositing, or littering items such as trash, food, fish food, dead vegetation, oil, gas, poisons, or other pollutants on or in land or water
Leaving trash in containers that allow rodent access
Killing, harming, harassing, baiting, collecting, or removing animals, fish, coral, or their live or dead parts, including shells, nests, burrows, and dens, including causing adverse impacts to coral as a result of watercraft operation
Killing, cutting, collecting, removing, or relocating plants or plant parts
Introducing, establishing, planting, raising, growing, or sustaining non-native plants, animals, or fish species
Removing, excavating, disturbing, destroying, defacing, or damaging cultural or historic artifacts
Extracting, removing, or excavating minerals, sand, rock, limestone, or soil.
Discharging or depositing, from beyond the conservation area boundaries, any material or other foreign matter that subsequently enters the conservation area and causes injury or damage to the resources therein.
Igniting fireworks or other explosive devices in, on, or over land or water

^a These uses exclude actions conducted by the DFW, and by individuals or organizations sanctioned and permitted by DFW, to manage, maintain, monitor, survey, study, and protect the conservation area resources and visitors in a manner that meets the conservation mandates.

4.2.2 MANAGEMENT ZONES

As provided by 2 NMIAC § 85-30.1-330(f), the DFW Director can create “Restricted Entry Zones” in wildlife conservation areas, including the Kagman Wildlife Conservation Area (refer to Section 2.1.2). These zones may be established to protect visitors from hazards or to protect rare or vulnerable natural resources for which existing regulatory capabilities are inadequate (e.g., regulations that are too broad or too narrow to adequately protect visitors or vulnerable resources). These Restricted Entry Zones would be selectively designated, on a short-term or long-term basis, depending on the specific nature of the visitor hazards or the resources needing protection. For example, these areas could be used to protect visitors from hazardous trails or unstable structures, or to protect vulnerable natural resources, such as vegetation restoration sites, critical bird nesting sites, or areas with rare native plants.

In the future, the DFW may also create management zones to provide for visitor uses in a manner that makes them compatible with the conservation mandate. For example, the DFW may need to create campfire management zones where beach campfires could be legally made within the conservation area. These special management zones have not been defined for these two conservation areas at this time,

although they may be established in the future, if deemed necessary by DFW to allow for, or to better manage, visitor uses.

4.2.3 COMPATIBILITY WITH LAWS AND REGULATIONS

The compatible and prohibited uses identified in Tables 5 through 7, as well as the management zone concept, provide an overview of how DFW foresees future use of the conservation areas that would occur in a manner that best protects the resources while also allowing for their use and enjoyment. As previously stated in Sections 2.1 and 2.2, the Kagman Wildlife Conservation Area has existing regulations, and the Forbidden Island Marine Sanctuary has statutory laws (Public Law 12-46), but no regulations. In some cases those regulations and Public Law 12-46 may, or may not, correlate with the proposed compatible and prohibited uses defined in Tables 5 through 7. Therefore, one of the goals for DFW's future management of these areas is to amend the existing regulations, or create new regulations, that correlate with these proposed uses and prohibitions.

Some current uses are inconsistent with the existing regulatory structure of these conservation areas. For example, under current regulations for the Kagman Wildlife Conservation Area (refer to Sec. 2.1.2), all commercial activities (e.g., guide services for clients) must be permitted by DFW (at this time, these permits are not required for the Forbidden Island Marine Sanctuary). Yet, on many days of the year, guide services bring small numbers of clients to the Forbidden Island Beach Trail without obtaining a permit for commercial operations. Other existing uses, such as camping, campfires, and unleashed dogs are also inconsistent with existing regulations for the conservation areas (refer to Sec. 2.1.2). For example, occasionally the Tank Beach and Forbidden Island Beaches are used for camping, campfires, and visitors walking unleashed dogs, yet those uses currently are prohibited within wildlife conservation areas (2 NMIAC § 85-30.1-330; refer to Sec. 2.1.2). Some of these uses, including camping and campfires may be compatible with the conservation area mandates, if they are conducted with minimal impact. Yet, these uses require a DFW permit, and those permit requirements are unknown to many of the visitors that partake in those activities. As part of the future management of these conservation areas, the DFW will assess whether the above uses should be sanctioned as compatible without regulations or if they should continue to be prohibited unless conducted under a DFW permit, or conducted within special management zones.

5.0 MANAGEMENT GOALS, OBJECTIVES, AND STRATEGIES

5.1 GOALS, OBJECTIVES AND IMPLEMENTATION STRATEGIES

This section defines the goals, objectives, and implementation strategies for managing the conservation areas in a manner that conserves their natural and historic resources while also providing tourism and recreation opportunities. Table 8 summarizes the goals and objectives.

Table 8. Management goals and objectives for the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary.

Goal 1: Develop and promulgate regulations, and develop visitor use guidelines.
<u>Objective 1.1:</u> Within three years of completing this management plan, DFW will develop and promulgate regulations for the Forbidden Island Marine Sanctuary, as well as review and possibly amend the existing regulations for the Kagman Wildlife Conservation Area.
<u>Objective 1.2:</u> DFW will update visitor use guidelines for the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary at least every five years.
Goal 2: Inform and educate visitors about the conservation area resources, regulations, and recommended visitor use practices.
<u>Objective 2.1:</u> DFW will annually review the information and distribution of visitor information brochures, flyers, or posters for the conservation areas, and will revise and distribute those materials as needed to meet public education needs.
<u>Objective 2.2:</u> DFW will annually review signs in the Kagman Wildlife Conservation Area and refurbish or replace those signs, or install new signs, as needed to educate visitors about resources, safety, regulations, and recommended visitor use practices.
<u>Objective 2.3:</u> DFW will annually assist schools, individuals, and groups in using the conservation areas for educational programs.
Goal 3: Implement specific management actions to address conservation area needs.
<u>Objective 3.1:</u> DFW will annually evaluate structures in the conservation areas to determine whether they need maintenance or removal, or if new structures are needed, and then implement actions to meet those needs, as funding allows.
<u>Objective 3.2:</u> DFW will annually evaluate trails in the Kagman Wildlife Conservation Area to determine if they need maintenance, rerouting, or other changes to improve resource protection, visitor safety and visitor opportunities, and then implement actions to meet those needs, as funding allows.
<u>Objective 3.3:</u> Within three years, DFW will assess and implement a conservation area user fee system and hire a Conservation Area Manager to manage the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary.
Goal 4: Survey natural resources and visitor uses in the conservation areas to assess their status through time, and work towards restoring native ecosystems.
<u>Objective 4.1:</u> DFW will survey marine resources in the Forbidden Island Marine Sanctuary at least every two years to assess marine ecosystem health and provide a baseline which future conditions will be compared.
<u>Objective 4.2:</u> DFW will survey native and non-native vegetation and wildlife in the Kagman Wildlife Conservation Area at least once every ten-years, to provide a baseline of conditions against which future survey results will be compared.
<u>Objective 4.3:</u> DFW, and the DLNR Forestry Section, will begin within three years to remove or minimize non-native plants in the Kagman Wildlife Conservation Area, and use those preliminary projects to develop a longer-term plan for native plant restoration.
<u>Objective 4.4:</u> DFW will assess the needs and capabilities for surveying visitor use patterns in the conservation areas at least every five years and implement such surveys as needed to adequately monitor visitor uses.
Goal 5: Evaluate and report on the status, trends, and needs of the conservation area resources, management, surveys, and visitor uses.
<u>Objective 5.1:</u> DFW will prepare a brief report at least every three years, and prepare a comprehensive report every five years, for the conservation areas, including the resource status, visitor uses, and surveys.

Goal 1: Develop and promulgate regulations, and develop visitor use guidelines.

Objective 1.1: Within three years of completing this management plan, DFW will develop and promulgate regulations for the Forbidden Island Marine Sanctuary, as well as review, and possibly amend the existing regulations for the Kagman Wildlife Conservation Area.

Short and Long-term Strategies:

- With assistance from the CNMI Attorney General’s Office, the DFW will develop and promulgate regulations for the Forbidden Island Marine Sanctuary that meets requirements of Public Law 12-46.
- DFW will review, and possibly revise, the existing regulations that apply to the Kagman Wildlife Conservation Area to help better protect and manage that conservation area and visitor uses.
- DFW will enforce regulations, and periodically review (i.e., every five years) their effectiveness, and amend regulations when needed to protect conservation area resources.
- DFW will inform other CNMI agencies (e.g., the Department of Public Safety (DPS), CRMO, DEQ, HPO, DPL, etc) about these regulations and request their assistance in educating the public about the regulations, and notifying DFW of any known or possible infractions.

Adaptive Management:

- If DFW finds that existing personnel and funding is inadequate to develop, revise and promulgate regulations for the conservation areas, then DFW, in consultation with the Secretary of the DLNR, will work to identify appropriate funding sources.
- If funding and personnel continue not to be available to accomplish this work, then DFW will delay this work until such support becomes available.

Objective 1.2: DFW will update visitor use guidelines for the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary at least every five years.

Short and Long-term Strategies:

- At least every five years, DFW will update or develop guidelines for visitor use practices that reduce or prevent adverse impacts to natural resources in the conservation area and that reduce hazards to visitor uses. These uses may include recommendations for hiking (on-trail and off-trail), wading, snorkeling, and SCUBA diving.
- DFW will consult with user groups (tour companies, SCUBA diving companies, environmental groups, etc.) and government agencies to assess their needs and preferences for guidelines, as well as review, and possibly incorporate other user guidelines from other sources that may be applicable to these and other conservation areas.

Adaptive Management:

- If DFW finds that existing personnel and funding is inadequate to accomplish this work, then DFW, in consultation with the Secretary of the DLNR, will work to identify appropriate funding sources.
- If funding and personnel continue not to be available to accomplish this work, then the DFW will delay this work until such support becomes available.

Goal 2: Inform and educate visitors about the conservation area resources, regulations, and recommended visitor use practices.

Objective 2.1: DFW will annually review the information and distribution of visitor information brochures, flyers, or posters for the conservation areas, and will revise and distribute those materials as needed to meet public education needs.

Short and Long-term Strategies:

- DFW will update and distribute, as needed, visitor information materials (i.e., brochures, maps, flyers, or posters) to convey the purposes, needs, regulations, and recommended visitor use practices for conservation area uses.
- These visitor information materials will be distributed to the public through a variety of means and at a variety of locations, such as at the DFW and DLNR main offices, offices of other agencies (i.e., MVA, CRMO, DEQ, DPL), public news sources (i.e., newspapers, television, and radio), and various visitor information distribution centers.
- DFW will conduct other forms of public education to convey the importance of the conservation areas to the CNMI, as well as inform the public about the conservation area resources, research, assessments, laws, and use guidelines. Some means for this communication include TV programs, special events, newspaper articles, workshops, volunteer work outings, but there are many others.
- DFW will discuss visitor education needs with CNMI, federal agencies, and groups or organizations (i.e., the Coral Reef Initiative) that also have a stake in protecting the conservation area resources to determine whether there are shared opportunities for creating and funding visitor education materials.

Adaptive Management:

- If the DFW finds that existing personnel and funding is inadequate to accomplish this work, then DFW, in consultation with the Secretary of the DLNR, will work to identify appropriate funding sources.
- If funding and personnel continue to not be available to accomplish this work, then DFW will delay this work until such support becomes available.

Objective 2.2: DFW will annually review signs in the Kagman Wildlife Conservation Area and refurbish or replace those signs, or install new signs, as needed to educate the visitors about resources, safety, regulations and recommended visitor use practices.

Short and Long-term Strategies:

- DFW will review signs in the Kagman Wildlife Conservation Area and refurbish or replace signs, or install new signs, as needed to educate the public about resources, regulations and recommended visitor use practices.
- DFW will discuss signage needs with CNMI, federal agencies, and groups or organizations (i.e., the Coral Reef Initiative) that also have a stake in the conservation of the resources in these conservation areas to determine whether there are opportunities for shared visitor education and funding for developing and installing signs.

Adaptive Management:

- If DFW finds that existing personnel and funding is inadequate to accomplish this work, then DFW, in consultation with the Secretary of the DLNR, will work to identify appropriate funding sources.

- If funding and personnel continue not to be available to accomplish this work, then the DFW will delay this work until such support becomes available.

Objective 2.3: DFW will annually assist schools, individuals, and groups in using the conservation areas for educational programs.

- DFW will assist schools, groups, and individuals with using the conservation areas for educational purposes, provided that those uses are consistent with the conservation purpose of those conservation areas.

Goal 3: Implement specific management actions to address conservation area needs.

Objective 3.1: DFW will annually evaluate structures in the conservation areas to determine whether they need maintenance or removal, or if new structures are needed, and then implement actions to meet those needs, as funding allows.

Short and Long-term Strategies:

- DFW, in collaboration with other DLNR divisions and sections, will assess the condition of structures in the conservation areas, such as buoys, roads, parking lots, fences, hand railings, overlook facilities, and picnic facilities to determine whether they need maintenance, removal, or if new facilities are needed.
- DFW, in collaboration with other DLNR divisions and sections, will maintain or refurbish existing structures, or install new structures, as needed to provide resource protection and safe visitor access.

Adaptive Management:

- If DFW finds that existing structures need maintenance, refurbishment, or replacement, or new structures are needed, and personnel and funding are not available to accomplish that work, then DFW, in consultation with the Secretary of the DLNR, will work to identify appropriate funding sources.
- If DFW finds visitor facilities are not safe for visitor use, and funding is not available to repair or replace those structures, then DFW will close those structures to visitor use until corrections can be completed.

Objective 3.2: DFW will annually evaluate trails in the Kagman Wildlife Conservation Area to determine whether they need maintenance, relocating, or new trails to improve resource protection, visitor safety and visitor opportunities, and then implement actions to meet those needs, as funding allows.

Short and Long-term Strategies:

- DFW will assess the condition of Forbidden Overlook Beach Trail to determine what actions are needed to protect resources, such as reducing trail soil erosion, and reducing visitor hazards.
- DFW will work with other DLNR sections and divisions (i.e., Parks and Recreation) to either contract or internally design a trail system that meets the above needs and implement that work through grants, local funding, volunteer assistance or other means.

Adaptive Management:

- DFW or other DLNR Divisions or Sections find that the existing trails need maintenance or rerouting, or if new trails are needed, and personnel and funding are not available to accomplish the work, then DFW, in consultation with the Secretary of the DLNR, will work to identify appropriate funding sources.
- If DFW finds that trails in the Bird Island Wildlife Conservation Area are in serious need of maintenance to protect resources or visitor safety, and funding is not available for those corrective actions, then DFW may close those trails to public use until corrective actions can be completed.

Objective 3.3: Within three years, DFW will assess and implement a conservation area user fee system and hire a Conservation Area Manager to manage the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary.

Short and Long-term Strategies:

- DFW will assess, plan, and implement a user fee system for commercial guides and operators, and potentially non-resident visitors, that use the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary.
- DFW will develop and hire a person to fill a Conservation Area Manager staff position within DFW.
- The Conservation Area Manager will be responsible for managing and tracking the user fee payments; overseeing the management, protection, and monitoring of the natural resources and visitor uses in these conservation areas; assist in developing and revising regulations; and developing, updating and implementing management plans for these conservation areas.

Adaptive Management:

- If DFW finds that assistance is needed to implement a user fee system for the conservation areas, then the DFW will garner the needed support and expertise from whatever source is needed, such as from CNMI legislators and CNMI Attorney General's Office.

Goal 4: Survey natural resources and visitor uses in the conservation areas to assess their status through time.

Objective 4.1: DFW will survey marine resources in the Forbidden Island Marine Sanctuary at least every two years to assess marine ecosystem health and provide a baseline which future conditions will be compared.

Short and Long-term Strategies:

- DFW biologists will conduct fish surveys at least every two years in the Forbidden Island Marine Sanctuary to provide population and trend assessments through time. Appendix A summarizes existing and proposed fish surveys and research.
- DFW biologists will assess the need and funding ability to conduct surveys of marine invertebrate species in the Forbidden Island Marine Sanctuary to develop population trend assessments through time, and DFW will implement those surveys, if needed and when funding is available. Appendix A identifies the estimated costs for this work.

Adaptive Management:

- If additional surveys and research are needed to adequately assess fish species and populations, DFW will design plans, obtain funding, and implement that additional work as needed, and as funding allows.
- If surveys or research show fish and other marine resources or their ecosystems have been degraded, the DFW biologists will consult with the DFW Director and the DLNR Secretary to assess the means for reducing, minimizing, or eliminating that resource damage, and restoring those resources, as funding allows.

Objective 4.2: DFW will survey native and non-native vegetation and wildlife resources in the Kagman Wildlife Conservation Area, at least every ten years, to provide a baseline of conditions against which future survey results will be compared.

Short and Long-term Strategies:

- DFW scientists will conduct native and non-native wildlife surveys at least every ten years in the Kagman Wildlife Conservation Area to assess their status and changes through time. Appendix A summarizes existing and proposed terrestrial wildlife surveys and research.
- DFW scientists will conduct native and non-native vegetation surveys at least every ten-years in the Kagman Wildlife Conservation Area to assess their status and changes through time. Appendix A summarizes existing and proposed vegetation surveys.

Adaptive Management:

- If additional surveys and research are needed to assess terrestrial resources, and changes to them, then DFW will design plans, obtain funding, and implement the work as needed, and as funding allows.
- If surveys or research show that non-native wildlife species could have, or may be significantly degrading the conservation area resources, then DFW will consult with the DFW Director to develop and implement a plan to minimize or eliminate that resource damage, as funding allows.

Objective 4.3: DFW, and the DLNR Forestry Section, will begin within three years to remove or minimize non-native plants in the Kagman Wildlife Conservation Area, and use those preliminary projects to develop a longer-term plan for native plant restoration.

Short-term Strategies:

- Within three years, the DFW and the DLNR Forestry Section will begin removing non-native plant species from the Kagman Wildlife Conservation Area, and this process also will be used as a pilot project for developing a more comprehensive, longer-term action plan.

Long-term Strategies:

- Within five years, the DFW and DLNR Forestry Section will develop a ten-year plan to restore native plant communities in the Kagman Wildlife Conservation Area, including removing or minimizing non-native plants, and this plan will use information collected from the pilot projects conducted for the short-term strategies of Objective 4.3.
- Within six years, the DFW and DLNR Forestry Section will begin to implement the vegetation restoration plan.

Adaptive Management:

- If DFW and the DLNR Forestry Section finds that existing personnel and funding is inadequate to conduct these short-term or long-term strategies, then the DFW, in consultation with the Secretary of the DLNR, will work to identify appropriate funding sources.
- If funding and personnel continue to not be available to accomplish this work, then DFW will delay this work until such support becomes available.

Objective 4.4: DFW will assess the needs and capabilities for surveying visitor use patterns in the conservation areas at least every five years and implement such surveys as needed to adequately assess visitor uses.

Short and Long-term Strategies:

- DFW will evaluate the needs for assessing and monitoring visitor uses in the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary, including reviewing visitor use data that may have been collected by other agencies or organizations (e.g., Marianas Visitor Authority), and implement visitor use surveys when such surveys are deemed necessary to adequately assess and manage visitor uses.

Adaptive Management:

- If DFW finds that existing personnel and funding is inadequate to accomplish the work, then DFW, in consultation with the Secretary of the DLNR, will work to identify appropriate funding sources.
- If funding and personnel continue to not be available to accomplish this work, then the DFW will delay this work until such support becomes available.

Goal 5: Evaluate and report on the status, trends, and needs of the conservation area resources, management, surveys, and visitor uses.

Objective 5.1: DFW will prepare a brief report at least every three years, and prepare a comprehensive report every five years, for the conservation areas, including the resource status, visitor uses, and surveys.

Short and Long-term Strategies:

- DFW will prepare a brief report at least every three years, and prepare a comprehensive report every five years, for the conservation areas, including resource status, visitor uses, research and surveys. Suggested topics are:

Introduction

- Brief introductory overview of the conservation areas and their management.

Resource and Visitor Use Status and Trends

- Status and trends of the conservation area resources and visitor uses.

Management and Surveys

- Progress made toward accomplishing the management plan goals, objectives, and strategies.
- Status of surveys or research completed or on-going during the assessment period.
- Results of surveys or research that have been peer-reviewed.

- Proposed or planned future management and surveys.
- Recommendations for changes in existing, proposed or planned management and surveys, goals and objectives, personnel, funding and implementation strategies, including funding sources.

Adaptive Management:

- If DFW finds that existing personnel and funding is inadequate to accomplish this work, then DFW, in consultation with the Secretary of the DLNR, will work to identify appropriate funding sources.
- If funding and personnel continue not to be available to accomplish this work, DFW will delay this work until such support becomes available.

6.0 IMPLEMENTATION

6.1 SCHEDULE

Table 9 shows a general outline for implementing the management objectives during the first 15 years. The DFW has intentions for meeting this schedule, although changes may be necessary due to funding and personnel availability. As with any management plan, additional tasks will be needed to effectively manage the conservation area. Therefore, the DFW will periodically assess the status of the conservation area, update this management plan, and implement unplanned management actions as needed to meet the mandate for these conservation areas.

6.2 COSTS AND FUNDING OPTIONS

The DLNR's Division of Fish and Wildlife is responsible for implementing this management plan and enforcing the associated regulations, including the commitment of personnel, materials, and equipment. As shown by Table 10, DFW will need at least an estimated \$700,000 of additional funds to adequately manage and survey these conservation areas during the next 15 years. This total, however, does not include additional funding needed for conservation officers and their expenses to adequately monitor these areas. Currently conservation officers can only spend a small portion of their time monitoring these conservation areas because of limited staff and funding, and their existing federal funding could expire in the next few years. The additional funds identified above also do not include funding that potentially may be needed to implement adaptive management actions.

All, or nearly all, the costs for implementing this plan will be borne by the DFW. However, existing DFW budgets are inadequate to meet many of these demands, let alone the needs of the current DFW responsibilities and mandates. Therefore, the DFW, in consultation with the Secretary of DLNR, will explore and implement strategies for obtaining additional and alternative funding to meet these management needs, such as seeking additional grants from federal and non-governmental organizations, teaming with existing conservation organizations for volunteers or funding, or possibly implementing a fee system for non-residents, as well as for companies that use the conservation areas for their commercial business benefits.

As stated in the goals and objectives, the DFW will assess options for implementing a fee system for visitors using these conservation areas. DFW permits currently are required for commercial operations in the Kagman Wildlife Conservation Area, and a fee could be levied on commercial operators at the time those permits are issued. However, a statutory provision will most likely be needed for the DFW to charge visitor fees above those needed for administrative purposes. In the case of the Forbidden Island Marine Sanctuary, the DFW already has the legal authority to charge visitors a nominal entry fee, yet there is no regulation or requirement for commercial operators to obtain a DFW permit (refer to Section 2.2). Ideally, these discrepancies will be resolved to create a fee system that is consistent for all conservation areas, and one that focuses on commercial operators. Any DFW fee system should be created so that it is streamlined and easy for operator compliance, as well as for DFW implementation and tracking.

Table 9. Preliminary schedule for accomplishing management strategies for the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary Management Plan during the first 15 years.

Num	Management Plan Objective	Year														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.1	Develop, promulgate and implement regulations	X	X	X												
1.2	Update visitor use guidelines	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.1	Update or create, and distribute educational materials	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.2	Refurbish, replace existing signs or install new signs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.3	Assist with educational programs or activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.1	Evaluate, maintain, or install structures	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2	Evaluate, maintain or create trails	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.3	Develop and implement a user fee & hire a manger	X	X	X												
4.1	Survey fish resources		X		X		X		X		X		X		X	
4.2	Survey terrestrial resources and restoration planning										X					
4.3	Remove non-native plants and restore native veg.			X	X	X	X	X	X	X	X	X	X	X	X	X
4.4	Survey visitor uses					X					X					X
5.1	Evaluate and report on the conservation areas		X		X		X		X		X		X		X	

X = Generalized year that objectives will be completed, although it does not represent the specific year of the work. The timing for accomplishing each objective will vary depending on the exact language of the objectives (i.e. at least once every 10 years, versus once per 10 years), as well as availability of personnel and funding.

Table 10. Preliminary costs and funding needed (beyond current budgets) for implementing the Management Plan for the Kagman Wildlife Conservation Area and the Forbidden Island Marine Sanctuary during the first 15 years.

Num.	OBJECTIVE	ESTIMATED LABOR SOURCE	ESTIMATED ADDITIONAL LABOR COST	ESTIMATED ADDITIONAL EXPENSE COST ^A	TOTAL NEEDED YEARS 1-15
1.1	Develop and promulgate regulations	New DFW staff (nonfederal funding)	\$12,000	0	\$12,000
1.2	Develop visitor use guidelines	New DFW staff required	\$12,000	\$6,000	\$18,000
2.1	Update and distribute brochures, posters, etc.	New DFW staff required	\$27,000	\$15,000	\$42,000
2.2	Refurbish, replace existing signs or install new signs	New DFW staff required	\$27,000	\$20,000	\$47,000
2.3	Assist with educational programs or activities	New and existing DFW staff	\$12,000	\$15,000	\$27,000
3.1	Evaluate, maintain or install structures	New DFW staff required	\$27,000	\$120,000	\$147,000
3.2	Evaluate, maintain or create trails	New DFW staff required	\$27,000	\$35,000	\$62,000
3.3	Develop and implement a user fee & hire a manger	Existing DFW staff	0	0	0
4.1	Survey marine resources	New DFW staff or funding required	\$110,000	\$30,000	\$140,000
4.2	Survey terrestrial resources	New DFW staff or funding required	\$25,000	\$5,000	\$30,000
4.3	Remove non-native plants and restore natives	New DFW staff or funding required	\$100,000	\$50,000	\$150,000
4.4	Survey visitor uses	New DFW staff or funding required	\$27,000	\$30,000	\$57,000
5.1	Evaluate and report on the conservation areas	New DFW staff required	\$27,000	\$6,000	\$33,000
	Totals		\$433,000	\$332,000	\$765,000

^A These 15 year labor costs are general estimates only and may need to be adjusted upward or downward through time depending on a variety of needs and issues. The labor costs were approximated using the percentage of time required of a full time staff person that requires approximately \$40,000 for salary and benefits in 2007 dollars.

^B Expense costs includes potential materials, supplies, and contract fees.

7.0 REFERENCES

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APPENDIX A

PLANNED OR PROPOSED SURVEYS, RESEARCH, AND ECOSYSTEM RESTORATION

KAGMAN WILDLIFE CONSERVATION AREA AND THE FORBIDDEN ISLAND MARINE SANCTUARY

Marine

Fisheries Assessments

From 2000 to 2006, the Fisheries staff of DFW has conducted preliminary surveys of fish species in portions of the Forbidden Island Marine Sanctuary (Trianni and Tenorio 2007, pers. comm.). The results of these surveys will be used to design surveys for longer-term assessments that can be implemented at least every two years in the future. Thus far, this work has been funded by the U.S. Fish and Wildlife Service, but in the future, additional funding will be needed for this work (Trianni and Tenorio 2007, pers. comm.). Therefore, Table A-1 includes an estimate of the additional funding for that work, as well as a funding estimate for invertebrate surveys that also may occur.

Coral Reef Monitoring

DFW will continue to focus on surveys of fish species to assess marine sanctuary health, while other CNMI agencies (e.g., DEQ and CRMO) and federal agencies (e.g., NOAA) may provide at least partial monitoring of coral reef populations in the marine sanctuary. DFW will keep apprised of those other ongoing studies.

Terrestrial

Wildlife and Vegetation Assessments

DFW conducted the first quantitative surveys of forest birds, herpetofauna, and plants in the Kagman Wildlife Conservation Area in early 2000, and those transects will be resurveyed at least once every ten years.

Non-Native Plant Assessment and Native Plant Restoration

Non-native invasive plants cover a portion of the Kagman Wildlife Conservation Area. Some of these species have the potential for spreading and dominating native plant communities, which subsequently can significantly degrade ecosystems and potentially the visitor experience. Therefore, as a first step in dealing with this issue, the DFW proposes begin a pilot or experimental project at removing non-native plants and information obtained from that effort will be used to develop a longer-term and more comprehensive native plant restoration for the Kagman Wildlife Conservation Area. Table A-1 includes the preliminary estimates of these costs.

Table A-1. Estimated additional funding needed for surveys, research, and habitat enhancement measures in the Bird Island Wildlife Conservation Area and Bird Island Marine Sanctuary during the first 15 years.

SURVEY AND RESEARCH TASKS	TOTAL ADDITIONAL COST FOR YEARS 1- 15	COMMENTS
Marine		
Fisheries Surveys	\$50,000	Supplements existing federal funding
Invertebrate Surveys	\$90,000	Requires entirely new funding
Marine Subtotal	\$140,000	
Terrestrial		
Ten-yr wildlife surveys	\$15,000	Supplements expected federal funding
Ten-yr vegetation surveys	\$15,000	Supplements expected federal funding
Non-native plant assessment and restoration planning	\$150,000	New funding to plan and implement vegetation restoration
Terrestrial Subtotal	\$180,000	
Total for the first 15 yrs	\$320,000	

A FRAMEWORK FOR HABITAT RESTORATION

The following are components that could be included in vegetation restoration plans.

- Project goals
- Maps and description of the extent of non-native plant distribution
- A map of proposed restoration site boundaries
- Description of the restoration methods, such as clearing non-natives, and seeding, transplanting, care of native plants, as well as erosion control, as needed.
- A list of native plant species that will be established, their sources, and care required for 3-5 years
- Fencing, signing, or other visitor use controls needed to protect the site
- Personnel and resources needed for preparing the sites, planting, and follow-up maintenance and monitoring
- Schedule for plant propagation, site preparation, planting, and maintenance
- Needs for removing and disposing non-native plant materials

Prospective restoration sites could be prioritized according to the following criteria.

- Area size, types of species present, and degree of adverse impacts
 - The amount and dominance of non-native species on the site
 - The potential for non-native species to spread
 - Location and ease of access to the sites (which affects resources needed for the restoration)
- The availability of native planting stock and capabilities to produce such stock
- The costs, time, and personnel needed to restore each site
- The overall cost/benefit effectiveness of restoring each area
- The effects of restoration on the area ecosystem