

***Commonwealth of the Northern Mariana Islands
Three-Year Coral Reef Protection Local Action Strategy***

Prepared by

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Executive Summary

Purpose

This document is the product of a collaborative effort between CNMI public agencies, non-profit groups, business owners, interested members of the community, and Federal agency partners and provides a short-term priority action plan for coral reef management throughout the Commonwealth beyond currently planned and funded commonwealth programs (such as the Non-Point Source programs of DEQ and CRM supported by EPA and NOAA funds and the Fisheries Management programs of DFW supported by US Sportsfish and Restoration funds). This plan meets the U.S. Coral Reef Task Force’s resolution for the development of Local Action Strategies (LAS) in the US mainland, Caribbean, and Pacific Island regions.

Funding

It is critical to recognize that CNMI approached development of these LASs as a means of leveraging additional support for coral reef protection priorities. We intentionally exclude those projects that are already planned for and will be completed with existing resources (not including Coral Reef Initiative coral management grants). Thus, none of the projects herein can be achieved without continued coral reef appropriations or without securing additional support. Although these projects are framed in a 3-year timeframe, that timeframe can only start for any one project when the necessary support identified in the project description is secured. We recognize that support will be secured over time project by project. Thus, in 3-years time perhaps only a portion of the projects included in our LASs will have been initiated and only a few will have been completed.

Collaborative Planning Process

The CNMI LAS has been developed through a coordinated effort among the CNMI’s natural resource management agencies, in particular the Division of Environmental Quality (DEQ), Division of Fish and Wildlife (DFW), and Coastal Resource Management Office (CRMO). The LAS planning process resulted in the development of a priority list of projects to address relevant US Coral Reef Task Force adopted focus areas. Many other projects were identified during the planning process that had to be eliminated to focus on priority needs. As many key stakeholders were involved in development of these projects as was feasible given the timeframe.

The planning process included several initial meetings of the CNMI Watershed Group and Local Coral Reef Advisory Group to flesh out background information relevant to the focus areas. It also involved an initial round of stakeholder meetings held on the islands of Tinian, Rota, and Saipan. Participants brainstormed about coral reef protection challenges, problems and needs related to each focus area and projects to address them. Each focus area was assigned a lead person or “navigator” tasked with taking the information gathered from these meetings and developing draft goals, objectives, and projects. Navigators were given flexibility and creativity in developing their drafts. Many navigators chose to convene small working groups to provide additional input. Others worked one-on-one with key stakeholders. The preliminary LAS drafts were then used as a basis for further development and refinement of the strategies at a two-day stakeholder workshop. Over 60 participants from the three islands representing governmental agencies, non-profits, and business interests

worked in focus groups to develop a second more refined draft of the LAS. This draft was then returned to the navigators for further development; after which, the navigators, agency representatives, and directors reviewed the LAS and made final adjustments and endorsed this document.

The private Hawaii-based firm, Mapping Change, facilitated the two-day stakeholders' workshop and provided other invaluable exercises to improve interagency collaboration. Northern Islands Company and Micronesian Environmental Services provided clerical and logistical support services. Community Planner Mr. Dan Miller on short-term assignment to the CNMI CRI by the U.S. Department of Interior National Park Service, Rivers, Trails, and Conservation Assistance Program provided major support and leadership in the compilation and analysis of the workshop results.

This document contains an overview of each coral reef protection focus area (sheet 1), which lists the goals, objectives, and projects that have been selected as priorities. Each project is then described in more detail (sheet 2), including the estimated time for accomplishment, project lead (person or agency/group), projected costs, outcomes/products generated, potential project partners, and any capacity needed for successfully implementing the project.

Land Based Sources Of Pollution

The stakeholder meetings and workshop emphasized the need to address land based sources of pollution (LBS). Decreased water quality threatens coral reefs and other marine systems that rely on good water quality to thrive. These marine communities are negatively altered in response to nutrient loads, sediment loads, temperature, turbidity, and other water quality parameters. Both point and non-point source pollution are responsible for lowering the quality of the CNMI's surface and near-shore coastal waters. Sewage out-falls, sewer collection overflows, sedimentation from unpaved roads and development, urban runoff, reverse osmosis discharges, and nutrients from landscaping, golf courses, and agriculture are some of the most significant stressors on CNMI's surface and marine water quality.

The geology of the three most Southern and populated Mariana Islands suggests that they were once submerged below sea-level, allowing a layer of coral reef to form over the volcanic rock. This resultant limestone rock is extremely porous in nature and groundwater discharges unknown amounts of pollution that can enter the basal aquifer, and marine system. Lack of knowledge about groundwater flow and water quality is a major impediment to improving conditions for many of CNMI nearshore marine systems.

Fisheries Management

There is a serious lack of baseline data about past and current coral reef fisheries fish stocks and fishing pressure. Despite this lack of data, many fishermen and other interested parties generally agree that fish abundance has been significantly reduced over the years. Fishermen, recreational divers, and snorkelers have observed a decrease in the numbers and average size of fish. The most immediate need is baseline data that could be collected with in-shore creel surveys. Additional important needs are access to published and unpublished data and research findings, measurement of the effectiveness of marine protected areas; and increasing the dialogue between fishermen and managing agencies.

Recreation Use and Misuse

Reef-related recreational pursuits are an important part of life for CNMI residents and coral reef-related tourism. It is a major component of the Commonwealth's economy. Both of these types of uses, if not properly managed, can have detrimental effect to coral reef health, upon which these activities depend. Appropriate

management of all recreational uses is necessary so that reef resources and the tourism economy can both be sustainable. Minimizing impacts from individual usage and tour companies, as well as providing effective marine use planning, through local law enforcement are effective ways to help ensure healthy reef resources for the future.

Public Awareness and Involvement

All stakeholders agreed that education and public awareness are an important component for effective coral reef protection and management in CNMI. The local action strategy reflects the education and public awareness needs of the other four issues. The strategy uses youth programs, multi-lingual campaigns, and community forums to educate local population.

Coral Reef Resources Management

This focus area was developed as a result of the analysis of cross cutting issues and capacity needs. After reviewing goals, objectives, and projects a number of additional staffing, training and technical assistance needs were identified to improve CNMI capacity to implement the LASs. A new set of goals, objectives and projects were developed to address CNMI needs. Important needs include program planning and management staff, enforcement officers, diver training, and interagency coordination.

Acronyms

CNMI

CIP	Capital Improvement Project (CNMI Covenant Funding)
CNMI	Commonwealth of the Northern Mariana Islands
CPA	Commonwealth Ports Authority
CRCC	Coral Reef Coordinating Committee
CRI	Coral Reef Initiative
CRMO	Coastal Resources Management Office (OG)
DBS	Division of Boating Safety (DPS)
DEQ	Division of Environmental Quality (OG)
DFW	Division of Fish and Wildlife (DLNR)
DLNR	Department of Lands and Natural Resources
DPS	Department of Public Safety
DPW	Department of Public Works
EMO	Emergency Management Office
HPO	Historic Preservation Office
MMT	Marine Monitoring Team (interagency)
MPLA	Marianas Public Land Authority
MVA	Marianas Visitors Authority
NMC	Northern Marianas College
NMC CREES	Northern Marianas College Cooperative Research, Extension and Education Service
OG	Office of the Governor
POC	Point of Contact

Federal

CSC	Coastal Services Center (NOAA)
EPA	Environmental Protection Agency
NMFS	National Marine Fisheries Service (NOAA)
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service (USDA)
OCRM	Office of Coastal Resources Management (NOAA)
PSC	Pacific Coastal Service Center (NOAA)
USCG	U.S. Coast Guard
USCOE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture

Local/Regional/NGO/Nonprofit

HANMI	Hotel Association of Northern Mariana Islands
JSTA	Japan Saipan Travel Association
MRCDC	Marianas Resource Conservation Development Council
MSA	Marine Sports Association
NMDOA	Northern Marianas Dive Operators Association
PADI	Professional Association of Dive Instructors
SPC	South Pacific Commission
SPREP	South Pacific Regional Environmental Program
USCRTF	U.S. Coral Reef Task Force
WERI	Water and Environmental Resources Institute Univ. Guam
Westpac	Western Pacific Regional Fisheries Management Council
WestPacFin	Western Pacific Fishery Information Network
WPRFMC	Western Pacific Regional Fishery Management Council

Table of Coral Reef Protection Projects

No.	Focus Area	Goal	Objective	Project	\$ Needs	Sources
A.1	Land Based Sources of Pollution, Laulau Bay	Decrease sedimentation in Laulau Bay	Enhance stakeholder involvement in planning and implementation of conservation projects in Laulau watershed	Form a Laulau Bay stakeholder group	\$5,000	
A.2			Implement projects to reduce sediment loads	Design and implement Laulau Bay road and drainage improvements to reduce erosion and sedimentation	\$425,000	Federal Highway Funds, CIP Funds, Dept. of Transportation
A.3	Land Based Sources of Pollution, Makpo Watershed	Characterize near-shore water quality by studying the surface, groundwater, and marine water quality between Taga Beach and Barcinas Bay.	Conduct intensive near-shore assessments of water quality impairment and potential contributing sources.	Collect and analyze water quality samples taken from the study region during storm events and on other days. Use data to understand where NPS pollution concerns are, and write up a report including the analysis of these data coupled with data on the coral reef health.	\$30,000	WERI, EPA
A.4			Determine land ownership and current land use activities in the watershed.	Map land use activities, permits and ground water flow and determine potential inputs of land-based sources of pollution in the marine environment.	\$15,000	NOAA
A.5	Land Based Sources of Pollution, Talakhaya Watershed	Sedimentation reaching the marine environment in the Talakaya watershed significantly reduced.	Stabilize soils through revegetation.	Design, coordinate, and conduct a native tree, shrub, and grass planting project in “badland” soils	\$85,000 yr 1 \$25,000 yr 2 <u>\$25,000 yr 3</u> \$135,000 3 yr	
A.6			Obtain knowledge of land ownership and land use activities	Identify and map land ownership and current land use activities.	\$1,000	CRM NPS Funds, NOAA

Table of Coral Reef Protection Projects

No.	Focus Area	Goal	Objective	Project	\$ Needs	Sources
B.1	Recreation Use and Misuse	Tourism and recreational activities managed to protect long-term sustainability of marine ecosystems	Develop a sustainable long-term marine use program	Install additional moorings at high-use sites to reduce anchorage	\$24,000	CNMI CRI Funds, US Coast Guard, NOAA
B.2				Monitor vessel routes and activity at MPA borders	\$38,000	
B.3			Minimize degradation of coral reef resources from recreational use through enhanced awareness of indirect and cumulative impacts	Develop a 'low-impact' snorkeling, SCUBA diving, and recreational use of coral reefs video to be played by airlines, hotels, and the visitor channel	\$17,000	CNMI CRI Funds, Project AWARE, Dept. of Interior, Petrol Companies
C.1	Fisheries Management	Long-term sustainable use of coral reef resources	Increase local capacity for enforcement	Continue support of dedicated AG for CRI	\$75,000 yr <u>\$75,000 yr</u> \$150,000 2 yr	CNMI CRI, CNMI Attorney General's Office, Department of Justice, others
C.2				Retain newly hired marine enforcement officer and support marine enforcement operations	\$164,000 yr 2 <u>\$164,000 yr 3</u> \$328,000 2 yr	CNMI CRI, CNMI Legislature, NOAA, WestPac, other?
C.3			Establish a monitoring program for near-shore coral reef fisheries	Develop and Implement a comprehensive in-shore creel survey for Saipan lagoon	\$140,000 yr 1 \$140,000 yr 2 <u>\$140,000 yr 3</u> \$420,000 3 yr	NMFS, WestPacFin
C.4				Continuation of the NOAA Mariana Archipelago Research Assessment and Monitoring Program (MARAMP) Cruises every two years	\$14,000 yr1 <u>\$10,000 yr3</u> \$24,000 3 yr	NOAA, NMFS, CNMI CRI, WestPac

Table of Coral Reef Protection Projects

No.	Focus Area	Goal	Objective	Project	\$ Needs	Sources
C.5			Assess the effectiveness of the Managaha marine protected area	Identify key indicator species or groups	None - DFW	
C.6				Based on the results of project (C.5), initiate tagging studies to establish home ranges on selected species or groups	\$65,000 yr 1 \$45,000 yr 2 \$110,000 2 yr	NMFS, WestPacFin, CRI Coral Reef Ecosystem Funds
C.7			Update Saipan lagoon use management plan	Revise, expand and update the Saipan Lagoon Management Plan to include fisheries	\$65,000	DOI; NOAA; CNMI CRI
C.8			Increase fishermen's participation in fisheries management	Quarterly forums for fishermen to share ideas and concerns for all three islands	\$6,000 yr 1 \$6,000 yr 2 \$6,000 yr 3 \$18,000 3 yr	WPRFMC, NMFS
C.9				Establish a fishing co-op	\$35,000 yr. 1 \$15,000 yr. 2 \$15,000 yr. 3 \$65,000 3 yr	CNMI Legislature, SPC
C.10				Develop a comprehensive interagency library resource database on Mariana archipelago coral reef resources	\$25,000	
C.11				Develop mechanisms allowing CNMI agencies to access research libraries	non-monetary support	NMFS
D.1	Increase Awareness and Involvement	Increase resident, visitor, and guest worker awareness of the need to properly manage watersheds and marine habitats in light of the threats to coral reefs.	Initiate ongoing multi-cultural media program to increase awareness of the many benefits and provisions coral reefs provide the CNMI community and economy, the current threats that place these coral reefs at risk, and the need to protect them.	Broadcast multilingual TV public service announcements (PSA) concerning coral reef focus areas on the local news, NMC, the Visitor, Filipino, and Korean channels and local radio stations.	\$35,000 yr 1 \$35,000 yr 2 \$35,000 yr 3 \$105,000 3 yr	NOAA Section 306, 310, EPA 319, CRI, and Council for the Humanities.

Table of Coral Reef Protection Projects

No.	Focus Area	Goal	Objective	Project	\$ Needs	Sources
D.2				Produce regular press releases and editorials for all CNMI language newspapers, local magazines and newsletters.	\$2,000 yr 1 \$2,000 yr 2 <u>\$2,000 yr 3</u> \$6,000 3 yr	NOAA Section 306
D.3				Produce posters and displays of identified coral reef threats for the airport, hotel lobbies, community centers, dive shops, tackle and snorkel equipment stores, and for seafood restaurants.	\$25,000 yr. 1 \$2,000 yr. 2 <u>\$2,000 yr. 3</u> \$29,000 3 yr	EPA 319, NOAA 306, 310, USFWS, CNMI CRI
D.4				Produce a coral reef series for the local "Teen Talk Live" TV show discussing the current status of CNMI coral reefs, threats, and their future.	\$2,500 yr. 1 \$2,000 yr. 2 <u>\$2,000 yr. 3</u> \$6,500 3 yrs	USEPA 319, NOAA 310, Council for the Humanities, NSF, NFWF, CNMI CRI
D.5		Increase resident, visitor, and guest worker involvement in the protection and enhancement of coral reef health.	Provide residents, guest workers, and visitors with guidance on how they can limit or eliminate their adverse impacts to coral reefs through personal behavior, usage, and lifestyle changes.	Include coral reef ecotourism section in the NMC Tourism Course	\$2,000 yr. 1 \$2,000 yr. 2 <u>\$2,000 yr. 3</u> \$6,000 3 yrs	SeaGrant
D.6				Work with NMDOA to provide a "Reef Friendly" Dive Instructor Train-the-Trainer Certification Workshop.	\$15,000 yr. 1 \$ 5,000 yr. 2 <u>\$5,000 yr. 3</u> \$25,000 3 yrs	Project AWARE, NFWF Funds
D.7				Continue the small grant program for improving coral reef education and outreach.	\$25,000 yr 1 \$25,000 yr 2 <u>\$25,000 yr 3</u> \$75,000 3 yrs	CNMI CRI
D.8				Gather existing and develop new lesson plans and obtain teaching resource material, (e.g., plankton nets, magnifying glasses, textbooks, "Island Ecology and Resource Management", etc) for students.	\$35,000 yr 1 \$23,000 yr 2 <u>\$70,000 yr 3</u> \$128,000 3 yr	CNMI CRI, NSF, Dept of Ed., NOAA 306, SeaGrant

Table of Coral Reef Protection Projects

No.	Focus Area	Goal	Objective	Project	\$ Needs	Sources
D.9			Provide residents, guest workers, and visitors with guidance on how they can limit or eliminate their adverse impacts to coral reefs through personal behavior, usage, and lifestyle changes.	Provide enforcement training for environmental agencies and public safety to improve compliance with local environmental laws and regulations.	\$4,000 yr 1 \$4,000 yr 2 <u>\$4,000 yr 3</u> \$12,000 3 yr	
D.10				Expand Emergency Management Office Hotline to include calls for environmental concerns	\$1,750 Yr 1 \$1,000 yr 2 <u>\$1,000 yr 3</u> \$3,750 3 yr	
D.11				Produce a Multilanguage user-friendly fishing regulations handbook and distribute to all private and public stakeholders.	\$3,500	USFW, NFWF, NOAA 306, CNMI CRI
D.12			Provide opportunity for community hands-on involvement in coral reef protection.	Continue student internship opportunities.	\$10,000 yr 1 \$10,000 yr 2 <u>\$10,000 yr 3</u> \$30,000 3 yr	CNMI CRI, MARPAC, SeaGrant
D.13				Enhance the volunteer marine monitoring program with island youths.	\$13,000 yr 1 \$13,000 yr 2 <u>\$13,000 yr 3</u> \$39,000 3 yr	CNMI CRI, MARPAC, SeaGrant
E.1	Coral Reef Resources Management	Adequate staff, training and technical assistance secured to manage threats to coral reef resources and implement the CNMI coral reef initiative.	Adequate staff to implement CNMI coral reef initiative secured.	Coral reef point of contact / facilitator	\$85,000 yr 1 \$85,000 yr 2 <u>\$85,000 yr 3</u> \$225,000 3 yr	CNMI CRI

Table of Coral Reef Protection Projects

No.	Focus Area	Goal	Objective	Project	\$ Needs	Sources
E.2				Tri-agency coral reef coordinator positions	\$195,000 yr 1 \$195,000 yr 2 <u>\$195,000 yr 3</u> \$585,000 3 yr	
E.3				DFW Marine Management and Protected Areas Specialist	\$75,000 yr 1 \$75,000 yr 2 <u>\$75,000 yr 3</u> \$225,000 3 yr	DOI
E.4				Coral reef outreach and education coordinator	0	NOAA
E.5			Training and technical assistance needed to implement CNMI coral reef action strategies secured.	Scientific and enforcement diver training.	\$35,000 yr 1 \$35,000 yr 2 <u>\$35,000 yr 3</u> \$105,000 3 yr	NMFS, WestPacFin, NOAA, NFWF
E.6				Species identification and assessment training for agency staff.	\$35,000 yr 1 \$35,000 yr 2 <u>\$35,000 yr 3</u> \$105,000 3 yr	SeaGrant, MARPAC, CNMI CRI
E.7				Facilitate improved interagency and agency-stakeholder collaboration, coordination and communication.	\$45,000 yr 1 \$45,000 yr 2 <u>\$45,000 yr 3</u> \$135,000 3 yr	NOAA, DOI, NRCS, EPA
E.8				Complete a CNMI specific coral reef economic valuation.	0	CNMI CRI, NOAA
E.9				Continue and expand CNMI resource agency marine monitoring and research programs.	\$300,000 yr 1 \$300,000 yr 2 <u>\$300,000 yr 3</u> \$900,000 3 yr	SeaGrant, EPA, NOAA, NMFS, WPRFMC, USFW, CNMI CRI
E.10				Develop long-term CNMI marine management plan and marine monitoring and research plan.	\$90,000 yr 1 <u>\$90,000 yr 2</u> \$180,000 2 yr	NOAA, DOI, NRCS, EPA

Section A: Land Based Sources of Pollution

Worksheet 1: Action Strategy		LB Saipan Laulau Bay						
Threat/Focus Area: Land Based Sources of Pollution: Laulau Watershed		<i>Management Tools</i>						
Goal 1: Decrease sedimentation in Laulau Bay	Indicator: A reduction of silt and other sedimentation into Laulau Bay	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 1: Enhance stakeholder involvement in planning and implementation of conservation projects in Laulau watershed	Indicator: Increased level of public participation on project planning and implementation							
A.1	Project 1: Form a Laulau Bay stakeholder group		X			X		
Worksheet 2: Implementation								
<p>Description: Terrigenous based sedimentation issues are believed to be negatively affecting the water quality and benthic resources in the near shore waters of Laulau Bay. Convene a stakeholder committee to ensure involvement and investment of all parties in long-term solutions for the watershed. The group will be composed of key groups including landowners, businesspeople, government agencies, and users of the area. Help the committee develop ground rules for group work, understanding of the project goals and objectives, and develop a common understanding of the problems. This will involve briefings from technical staff, meetings with the community and field trips. The committee will help involve the watershed community at appropriate times and will provide input on project design and implementation. The committee will also help organize and involve community members in implementing the conservation and restoration measures and in developing a long-term conservation plan for the watershed. A measure of the success of this project will be the monthly group meetings.</p>		Lead person: CRM, NRCS or MRCD						
		Proposed partners: DFW, DEQ, NMC, NRCS, Parks and Recreation, Public Works, Mayor’s Office, community stakeholders, MRCD, MPLA						
		When (mm/yr) Jan 04 TO On-going						
		Products or Outputs: Stakeholder group formed and meetings held monthly. Recommendations submitted.						
		Expected Costs: \$5,000						
		Proposed Funding Source: USCRTF						
		New staff, training & technical expertise needs: Need training on stakeholder involvement and group facilitation						

Worksheet 1: Action Strategy		LB Saipan Laulau Bay						
Threat/Focus Area: Land Based Sources: Laulau Watershed		Management Tools						
Goal 1: Decrease sedimentation in Laulau Bay	Indicator: A reduction of silt and other sedimentation into Laulau Bay	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and education	Research	Other
Objective 2: Implement projects to reduce sediment loads	Indicator: Implementation of BMPs to reduce run off.							
A.2	Project 2: Design and implement Laulau Bay road and drainage improvements to reduce erosion and sedimentation.							X
Worksheet 2: Implementation								
<p>Description: Terrigenous based sedimentation issues are believed to be negatively affecting the water quality and benthic resources in the near shore waters of Laulau Bay Design and implement Laulau Bay road improvements and drainage BMPs. Preferably paving the entire road or none of it. Paving only the main access road would not be successful implementation of this project. Conceptual level designs and recommendations will be developed for the broader watershed area. Design plans will be prepared under the technical guidance of a P.E and under contract authority of the CNMI Department of Public Works (DPW).</p>		Lead person: DPW						
		Proposed partners: DEQ, (CRMO, MPLA, Laulau Bay stakeholder group						
		When (mm/yr) Design December 2003-October 2004 Construction: October 2004 TO: March 2005						
		Products or Outputs: Laulau Bay Road Improvements and Drainage BMPs Design (incl. construction drawings and specifications) 2. Construction of Road Improvements and Drainage BMPs						
		Expected Costs: 1. Design and permitting: \$75,000 2. Construction: \$350,000						
		Proposed Funding Source: Federal Highway Funds, CIP Funds, Dept. of Transportation						
New staff, training & technical expertise needs:								

Worksheet 1: Action Strategy		LB Tinian Makpo						
Threat/Focus Area: Land Based Sources of Pollution, Makpo Watershed		Management Tools						
Goal: Characterize near-shore water quality by studying the surface, groundwater, and marine water quality between Taga Beach and Barcinas Bay.	Indicator: Identify locations with impaired water quality	Develop policies/laws	Enforcement	Monitoring	MPA	Education	Research	Other
Objective 1: Conduct intensive near-shore assessments of water quality impairment and potential contributing sources.	Indicator: Identify locations with impaired water quality							
A.3	Project 3: Collect and analyze baseline water quality samples and samples during storm events.							
Worksheet 2: Implementation								
<p>Description: Polluted ground water and run off are thought to have major effects on adjacent marine systems. The overall goal is investigating potential links between impaired water quality and poor coral reef health. Water quality data will be collected from existing wells, surface runoff, and near-shore marine waters to search for non-point source pollution contributions. Adjacent coral reefs will be surveyed by the CNMI Marine Monitoring Team. Water quality monitoring locations will be decided upon by scientists, Tinian residents, and other knowledgeable parties. Water samples will be collected by Tinian based staff and sent to DEQ Laboratory for analysis. A contractor will be hired to assimilate water quality data with GIS map and land use data layers for interpretation. Finally, the contractor will also consider the results of the coral reef surveys in making final recommendations.</p>		<p>Lead person: A hired contractor will serve as the lead for this project. The DEQ Laboratory will analyze all water quality samples. Samples will be collected by Tinian based DEQ, CRM, or NMC CREES staff. The CNMI Marine Monitoring Team will complete all marine assessments. Appropriate GIS personnel from DEQ and CRM will provide maps of land use activities and groundwater flow when available.</p>						
		<p>Proposed partners: Private contractor, DEQ (Saipan and Tinian based), CRM (Saipan and Tinian based), NMC CREES (Tinian Based)</p>						
		<p>When (mm/yr) TO 01/04 – 01/07</p>						
		<p>Products or Outputs: The final study will be published in a report format with all maps and GIS layers available. This report would serve as the basis to implement management actions in the Makpo watershed.</p>						
		<p>Expected Costs: \$30,000</p>						
		<p>Proposed Funding Source: WERI, EPA</p>						
		<p>New staff, training & technical expertise needs: One new staff at DEQ lab for additional workload.</p>						

Worksheet 1: Action Strategy		LB Tinian Makpo					
Threat/Focus Area: Land Based Sources of Pollution, Makpo Watershed		Management Tools					
Goal: Characterize near-shore water quality by studying the surface, groundwater, and marine water quality between Taga Beach and Barcinas Bay.		Develop policies/laws	Enforcement	Mapping and Monitoring MPA	Outreach and Education	Research	Other
Indicator: Identify locations with impaired water quality							
Objective 2: Determine land ownership and current land use activities in the watershed.		Indicator: Identify locations with impaired water quality					
A.4	Project 1: Map land use activities, and determine potential NPS inputs to the near shore marine environment.			X		X	
Worksheet 2: Implementation							
<p>Description: This project will result in the development of a GIS map for the Makpo watershed. Information that will be included in this map would be land use based on aerial photography and field inspections, and land ownership based upon public records. This will serve to understand the nature of the problem and will be a useful resource for stakeholder groups and project leaders alike. Understanding the nature of the problem will be the first step towards the solution. (This is a new project) Tinian based CRM, DEQ, and NMC CREES staff will be trained in all existing regulations set forth by DEQ and CRM regarding land use activities. (This should come before the creation of data layers) Inspections will then be carried out in the Makpo watershed. Data collection will include GPS coordinates, date of inspection, landowners name, stakeholders involved, nature of potential NPS pollution source, and other related comments. If activity is in violation of existing regulations enforcement actions will be taken against violators.</p>		<p>Lead person: Tinian Based DEQ, CRM, and NMC CREES staff would serve as the team leaders.</p>					
		<p>Proposed partners: Appropriate GIS personnel from DEQ and CRM will provide maps of land use activities and groundwater flow when available. Department of Public Lands, Stakeholders Community Group, Tinian Based DEQ, CRM, and NMC CREES staff, and NOAA Mapping Team that provided the Ikonos Imagery. Inspections will be carried out by Tinian based staff from DEQ, CRM, or NMC CREES.</p>					
		<p>When (mm/yr) 01/04 TO 01/07</p>					
		<p>Products or Outputs: Map and GIS Layer(s).</p>					
		<p>Expected Costs: \$15,000 (training and equipment)</p>					
		<p>Proposed Funding Source: NOAA</p>					
		<p>New staff, training & technical expertise needs: None</p>					

Worksheet 1: Action Strategy		LB Rota Talakhaya						
Threat/Focus Area: Land Based Sources of Pollution, Talakhaya Watershed		Management Tools						
Goal 3: Sedimentation reaching the marine environment in the Talakaya watershed significantly reduced.	Indicator: A reduction in sedimentation of the marine environment of the Talakhaya watershed	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 1: Stabilize soils through revegetation	Indicator: Increase of vegetation acting to stabilize “badland” soils							
A.5	Project 1: Design, coordinate, and conduct a native tree, shrub, and grass planting project in “badland” soils							X
Worksheet 2: Implementation								
<p>Description: The highly erodable soil of Talakaya will be stabilized through a mass revegetation project of low growing, forage legumes alternated with bands of leguminous trees, established on the contour and within overseeded grass, to enhance the diversity within the predominately sword grass ecosystem. Legumes are favored because of their ability to grow in nutrient-poor soils. A greater variety of grasses and trees will improve soil retention and increase soil organic matter, thereby improving overall fertility. Sword grass has no value for target deer species except when young shoots emerge after burns. The destructive practice of setting fire to sword grass with the intent of attracting deer results in significant soil erosion and earth slumping. If more appropriate vegetation can be established in this area, then environmental hazards from human-induced fires can be minimized.</p>		Lead person: Luta Soil and Water Conservation District						
		Proposed partners: DEQ, CRM, USDA/NRCS, DFW, Division of Forestry, DPS Fire, and CREES						
		When (mm/yr) TO Fall 2003 TO Spring 2005						
		Products or Outputs: Production of plant nursery seedlings for transplanting, training on revegetation techniques.						
		Expected Costs: Year 1: \$85,000 for seed/plant stock nursery establishment, recruitment and training for revegetation participants, site identification and use approvals, transportation and equipment, plant establishment, and ongoing maintenance. Year 2. \$25,000 for O&M and additional soil improvements as needed. Year 3. \$25,000 for O&M and additional soil improvements as needed.						
		Proposed Funding Source: USCRTF						
New staff, training & technical expertise needs:								
Soils training for Rota DLNR Forestry/Nursery staff; critical area planting training								

Worksheet 1: Action Strategy		LB Rota Talakhaya					
Threat/Focus Area: Land Based Sources of Pollution, Talakhaya Watershed		Management Tools					
<p>Goal 3: Significantly reduce sedimentation reaching the marine environment in the Talakaya watershed through BMPs and other activities, including revegetation.</p> <p>Objective 2: Obtain knowledge of land ownership and land use activities.</p>	<p>Indicator: A reduction in sedimentation of the marine environment of the Talakhaya watershed</p>	Develop policies/laws	Enforcement	Mapping and Monitoring MPA	Outreach and Education	Research	Other
	<p>Indicator: Increased understanding land use activities and land ownership</p>						
A.6	Project 1: Identify and map land ownership and current land use activities.			X			
Worksheet 2: Implementation							
<p>Description: This project will result in the development of a GIS map for the Talakhaya watershed. Information that will be included in this map would be land use based on aerial photography and field inspections, and land ownership based upon public records. This will serve as a planning document and will be a resource to stakeholder groups and project leaders alike to target areas in need of revegetation or other management measures.</p>	<p>Lead person: Appropriate GIS personnel from DEQ, CRM and USDA-NRCS will work together to gather all necessary information and create this map and shapefile.</p>						
	<p>Proposed partners: Department of Public Lands, USDA-NRCS staff, Rota Based DEQ/CRM Staff, and NOAA Mapping Team who provided the Ikonos Imagery.</p>						
	<p>When (mm/yr) 01/04 TO 01/05</p>						
	<p>Products or Outputs: Map and GIS Layer(s)</p>						
	<p>Expected Costs: \$1,000 (travel to Rota, partner group meetings)</p>						
	<p>Proposed Funding Source: CRM NPS Funds, NOAA</p>						
	<p>New staff, training & technical expertise needs:</p>						

Section B: Recreation Use and Misuse

Worksheet 1: Action Strategy		Recreation Use						
Threat/Focus Area: Recreational Use and Misuse		Management Tools						
<p>Goal 1: Tourism and recreational activities managed to protect long-term sustainability of marine ecosystems</p>	<p>Indicator: A decrease in the damage to coral reef resources from tourism and recreation</p>	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
<p>Objective 1: Develop a sustainable long-term marine use program</p>	<p>Indicator: Reduction in damage from marine uses and an increase in protected areas</p>							
B.1	<p>Project 1: Install vessel mooring buoys at high-use sites to reduce anchor damage to benthic resources.</p>				X			

Worksheet 2: Implementation	
<p>Description: Working with partner agencies, dive interests, and relevant stakeholders, high-use recreational sites will be identified and prioritized for installation of dedicated moorings. Case studies from Molikini, HI, the Florida Keys Marine Sanctuary, Bonaire, and Great Barrier Reef will be reviewed to ensure that the appropriate mooring types are used and that their installation does not lead to overuse / degradation of the site. Site selection will also take into account regulatory efficiency so that moorings will not be used as fishing platforms that could result in reduced species richness and biodiversity at the site. Past CNMI CRI funds are being used to purchase new and replacement buoys ropes and hardware as well as a pneumatic drill and compressor to enable buoy installation. Additional moorings at high-use sites in marine manage and protected areas are needed.</p>	<p>Lead person: DFW Director</p> <p>Proposed partners: MPLA, DLNR, DPS Division of Boating Safety, CRM, DEQ, USCOE, USCG, CPA, MMT, NMDOA, Marine Sports Assoc., Tasi Tours Inc.</p> <p>When (mm/yr) 10/03 TO 9/06</p> <p>Products or Outputs: an increased number of government permitted moorings at high-use dive and recreational sites</p> <p>Expected Costs: \$24,000</p> <p>Proposed Funding Source: CNMI CRI, US Coast Guard, NOAA</p> <p>New staff, training & technical expertise needs:</p>

B.2	<p>Project 2: Monitor vessel routes and activity at MPA borders</p>	X	X	X		
Worksheet 2: Implementation						
<p>Description: Using time-lapse video photography, monitor and map vessel routes in relation to the boundaries of the Managaha Marine Conservation Area and its Transportation Corridor. Categorize consistent transgressions by location and vessel activity (i.e. banana boats, para-sailing, tourist shuttle, etc.). Increase signage or marker buoy visibility at locations of consistent</p>	<p>Lead person: DFW Director</p> <p>Proposed partners: DLNR, CRMO, DEQ, DPS Div. Boating Safety, CPA, USCG, Marine Sports Association</p> <p>When (mm/yr) 12/03 TO 04/05</p>					

<p>transgressions. Conduct targeted outreach to consistent transgressors to enhance their awareness of MPA rules, restrictions, and the purpose of boundary limitations. Due to the sensitive nature of information collected, no enforcement activity shall occur as a result of vessel monitoring. However, education and outreach will be adjusted to focus on the informational and routing needs of those types of vessels or activities that consistently cross the MPA's boundaries. A grant proposal for \$17,625 has already been submitted to the USFWS</p>	<p>Products or Outputs: Report of the categories of transgressors.</p>
	<p>Expected Costs: \$55,000</p>
	<p>Proposed Funding Source: USFWS, CNMI CRI, DOI, other</p>
	<p>New staff, training & technical expertise needs:</p>

Worksheet 1: Action Strategy	Recreation Use
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Threat/Focus Area: Recreational Use and Misuse		Management Tools					
<p>Goal 1: Tourism and recreational activities managed to protect long-term sustainability of marine ecosystems</p>	<p>Indicator: A decrease in the damage/degradation to coral reef resources from recreational based activities</p>	Develop policies/laws	Enforcement	Mapping and Monitoring MPA	Outreach and Education	Research	Other
<p>Objective 2: Minimize degradation of coral reef resources from recreational use through enhanced awareness of indirect and cumulative impacts</p>	<p>Indicator: Reduction in damage/degradation of coral reef resources by recreational users.</p>						
<p>B.3</p>	<p>Project 1: Develop a 'low-impact' snorkeling, SCUBA diving, and recreational use of coral reefs video to be played by airlines, hotels, and the visitor channel</p>				X		

Worksheet 2: Implementation

<p>Description: Develop a multi-lingual "low impact" or "reef-friendly" video to be aired on all incoming CNMI flights, and on the local Visitors Channel. The video will focus on proper snorkel, diving, fishing, and boating practices and be designed to act not only to educate but also as a promotional tool. Videos from Oceanwatch, Hanaumau Bay (Peter Rapa), and Guam will be used in assisting CNMI to develop an effective video tool that will work in airlines but also distributed to schools, hotels, and tour operators. The efficacy of the video will be measured by a viewer feedback survey, which will be included on the immigration document filled out by all non-resident travelers to the CNMI.</p>	<p>Lead person: CNMI CRI POC</p>
	<p>Proposed partners: PADI, NMDOA, MSA, DFW, CRM, DEQ, MVA, Airlines, and HANMI</p>
	<p>When (mm/yr) 01/01/2004 TO 01/01/2005</p>
	<p>Products or Outputs: Low Impact, "Reef Friendly" video for broadcasting on incoming flights</p>
	<p>Expected Costs: \$17,000</p>
	<p>Proposed Funding Source: CNMI CRI Funds, Project AWARE, Dept. of Interior, Petrol Companies.</p>
	<p>New staff, training & technical expertise needs: Video production and translation.</p>

Section C: Fisheries Management

Worksheet 1: Action Strategy		Fisheries Management					
Threat/Focus Area: Fisheries Management		Management Tools					
Goal 1: Long-term sustainable use of coral reef resources	Indicator: Greater knowledge of the coral reef resources and decrease in undesired fishing practices	Develop policies/laws	Enforcement	Mapping and Monitoring MPA	Outreach and Education	Research	Other
Objective 1: Increase local capacity for enforcement	Indicator: Greater presence and effectiveness of enforcement						
C.1	Project 1: Continue support of dedicated AG for CRI	X	X		X		

Worksheet 2: Implementation	
Description: There is a need to have a dedicated attorney to work with the three lead natural resource management agencies directly involved in coral reef management and monitoring activities, namely DFW, CRM, and DEQ, to help each agency maximizing their ability protect coral reefs and other associated marine resources.. CNMI CRI FY03 funding will support recruitment of a new Assistant Attorney General (AAG) for one year to assist natural resource agency personnel to identify, adapt, and develop sound and appropriate laws and regulations and administrative legal actions for coral reef conservation, protection, and management.	Lead person: CNMI CRI POC
	Proposed partners: AG Office, DFW, CRMO, DEQ
	When (mm/yr) 11/04 TO 11/06
	Products or Outputs: An Assistant Attorney General position dedicated to marine natural resource issues
	Expected Costs: \$75,000/year (for two years)
	Proposed Funding Source: CNMI CRI, CNMI Attorney General's Office, Department of Justice
New staff, training & technical expertise needs: One new staff with a law degree in environmental issues	

C.2	Project 2: Retain newly hired marine enforcement officer and support marine enforcement operations	X			X		
Worksheet 2: Implementation							
Description: DFW is mandated to manage coral reef fisheries and marine protected areas; however, their main source of support, the US Sports Fish and Restoration funds, cannot be used to support enforcement activities and local CNMI resources are extremely limited. CRI funds have supported the purchase of major equipment including 2 vessels and the hire of three enforcement staff to create a new Marine Enforcement Section. There is a need to support the continuation of these three new positions and the operational costs of the DFW marine enforcement efforts.	Lead person: DFW Director						
	Proposed partners: DLNR, DPS, CRM, DEQ						
	When (mm/yr) 10/04 TO 10/06						
	Products or Outputs: Increased marine enforcement						
	Expected Costs: \$164,000/yr for 2 yr = \$328,000						
	Proposed Funding Source: CNMI CRI, CNMI Legislature, NOAA, WestPac, other?						
New staff, training & technical expertise needs: Enforcement and outreach training for enforcement and conservation officers							

Worksheet 1: Action Strategy		Fisheries Management							
Threat/Focus Area: Fisheries Management		Management Tools							
Goal 1: Long-term sustainable use of coral reef resources	Indicator: Greater knowledge of the coral reef resources and decrease in undesired fishing practices	Develop policies/laws	Enforcement	Mapping and Monitoring MPA	Outreach and education	Research	Other		
Objective 2: Establish a monitoring program for near-shore coral reef fisheries	Indicator: Increased data on near-shore coral reef fisheries								
C.3	Project 1: Develop and Implement a comprehensive in-shore creel survey for Saipan lagoon			X		X			
Worksheet 2: Implementation									
<p>Description: No data collection program or comprehensive management plan presently addresses sustainable fishing issues in the near shore (<100-foot contour) coral reef fisheries. However, several conservation areas, MPA's and gear restriction regulations that have been established. There is a dire need to develop and implement a fisheries data collection program for the near shore (<100-foot contour) coral reef fishery resources found in the Saipan Lagoon. Based on problems experienced in previous attempts to conduct this type of survey, a contractor is being suggested to implement and manage the program. Results from the data collection program will be used as the basis for implementing specific fishery management measures targeted at those species or lagoon resources identified as requiring further protection.</p>		Lead person: DFW Director							
		Proposed partners: DFW, NMFS WestPacFin,							
		When (mm/yr) Fall 2004 TO Fall 2006							
		Products or Outputs: Quarterly reports summarizing the catch and effort data associated with near shore coral reef resources in the Saipan Lagoon.							
		Expected Costs: \$140,000/year: personnel (1 manager and 4 creel census surveyors), vehicle/gas, equipment.							
		Proposed Funding Source: NMFS, WestPacFin							
<p>C.4 Project 2: Continuation of the NOAA Mariana Archipelago Research Assessment and Monitoring Program (MARAMP) Cruises every two years</p>		New staff, training & technical expertise needs: New staff with skills (or background/experience) to conduct creel surveys and sample catch, as well as interview fisherman. A contractor to manage and run the program.							
				X			X		
		Worksheet 2: Implementation							
		<p>Description: While the present MARAMP cruise is very important in establishing baselines for these remote ecosystems, the greatest value of this program for both local and federal resource management agencies will come through long-term monitoring of these ecosystems. For long-term monitoring to succeed, it is important to establish long-term commitments. The real success of these programs is marrying the national and local efforts together as we are during the present cruise. Expected costs noted here are for the CNMI to actively participate this program.</p>		Lead person: MARAMP Chief Scientist					
				Proposed partners: NOAA, DFW, CRM, DEQ					
				When (mm/yr) Fall 2005 and Fall 2007					
Products or Outputs: Long-term data on marine species abundance and distribution in Mariana Chain.									
Expected Costs: \$14,000 in 2005 and \$10,000 in 2007 (travel and training for 6 staff)									
Proposed Funding Source: NOAA, CNMI CRI, NMFS, WestPac									
New staff, training & technical expertise needs: Advanced scuba, scientific research methods, and species identification training for CNMI agency staff									

Worksheet 1: Action Strategy		Fisheries Management						
Threat/Focus Area: Fisheries Management		Management Tools						
Goal 1: Long-term sustainable use of coral reef resources	Indicator: Greater knowledge of the coral reef resources and decrease in undesired fishing practices	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 3: Assess the effectiveness of the Managaha marine protected area	Indicator: Increased knowledge of the effectiveness of the Managaha MPA							
C.5	Project 1: Identify key indicator species or groups						X	

Worksheet 2: Implementation	
<p>Description: Designation of the Managaha MPA boundaries were not established scientifically or with well developed biological objectives. At this point in time, it is necessary to develop specific objectives for the MPA in order to assess its effectiveness. Having a basis of measurement will then allow managers to identify those measure(s) required to make the MPA more effective. Based on the results of this desktop study, coupled with limited additional surveys, the key indicator species or groups can be identified. These will then become the standard from which future MPA effectiveness will be measured.</p>	Lead person: DFW Director
	Proposed partners: DFW, CNMI MMT, NMFS, SPC
	When (mm/yr) Fall 2003 TO Fall 2004
	Products or Outputs: A report identifying specific key species or groups that would be used in a research project (project #2 below) to assess the effectiveness of the Managaha MPA.
	Expected Costs: none, DFW staff can accomplish this project in-house
	Proposed Funding Source: DFW
New staff, training & technical expertise needs:	

C.6	Project 2: Based on the results of Project 1, initiate tagging studies to establish home ranges on selected species or groups			X			X	
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Worksheet 2: Implementation	
<p>Description: Certain representative species of the key species or groups that were identified in Project #1 (above) will be tagged to investigate movement within the MPA as well as growth rates and population sizes. Because the success of the key species or groups is the standard from which MPA effectiveness will be measured, movement patterns will assist in determining whether the present size and habitat distribution is sufficient to support those key species or groups. Additionally, growth rates and population sizes of those target species or groups will also support the assessment of whether the MPA is meeting its stated objectives.</p>	Lead person: DFW Director
	Proposed partners: DFW, NMFS, SPC
	When (mm/yr) Fall 2004 TO Fall 2006
	Products or Outputs: Develop a set of recommendations on present MPA boundaries based on results of the home range research and distribution of benthic habitat types.
	Expected Costs: \$65,000 1st year; \$45,000 2nd year
	Proposed Funding Source: NMFS, WestPacFin, CRI Coral Reef Ecosystem Funds
New staff, training & technical expertise needs: contractor	

Worksheet 1: Action Strategy		Fisheries Management					
Threat/Focus Area: Fisheries Management		Management Tools					
Goal 1: Long-term sustainable use of coral reef resources	Indicator: Greater knowledge of the coral reef resources and decrease in undesired fishing practices	Develop policies/laws	Enforcement	Mapping and Monitoring MPA	Outreach and Education	Research	Other
Objective 4: Update Saipan lagoon use management plan	Indicator: Revised Saipan lagoon management plan including fisheries issues						
C.7	Project 1: Revise, expand and update the Saipan Lagoon Management Plan to include fisheries	X		X	X		

Worksheet 2: Implementation	
<p>Description Saipan Lagoon is a major attraction to both the tourist industry and local island residents. This protected barrier reef lagoon system receives the attention of most water related activities within the CNMI and therefore is very susceptible to impacts associated with overuse and sports interactions. Previous attempts during the late 1980's and late 1990's generated and partially implemented a Saipan Lagoon Use Management Plan (SLUMP). Although only certain portions of the plan were implemented, not all lagoon activities, such as fishing, were addressed. This project would complete a comprehensive plan. The work would revisit the previous SLUMP documents, update management recommendations taking into consideration the present and projected forecast of lagoon use, synthesize and coordinate existing zoning, such as commercial marine sports operations areas, harbor and port restrictions, MPAs, and naval exclusion zones, into a singular consistent plan, and address those specific issues that were not addressed in the previous documents, such as fishing and MPAs. The plan will incorporate substantial and relevant stakeholder and public participation.</p>	Lead person: CRMO and contractor
	Proposed partners: CRMO, DFW, DEQ
	When (mm/yr) Fall 2004 TO Fall 2006
	Products or Outputs: : An updated Saipan Lagoon Use Management Plan
	Expected Costs: \$65,000
	Proposed Funding Source: DOI; NOAA; CNMI CRI
	New staff, training & technical expertise needs:

Worksheet 1: Action Strategy		Fisheries Management						
Threat/Focus Area: Fisheries Management		Management Tools						
Goal 1: Long-term sustainable use of coral reef resources	Indicator: Greater knowledge of the coral reef resources and decrease in undesired fishing practices	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 5: Increase fishermen’s participation in fisheries management	Indicator: Increased input from the fishing communities							
Worksheet 2: Implementation								
C.8	Project 1: Quarterly forums for fishermen to share ideas and concerns for all three islands					X		
Description: Regularly scheduled fishermen’s forums would be held in Saipan approximately one month prior to the normally scheduled quarterly WPRFMC meetings. Issues and concerns to CNMI fisheries would be the primary focus of meeting agendas with relevant issues brought forth and discussed at the next WPRFMC meeting by the CNMI Advisory Panel representatives.		Lead person: DFW Director, and contractor						
		Proposed partners: Jack Ogumoro, WPRFMC –CNMI liaison staff						
		When (mm/yr) Fall 2003 TO Fall 2006						
		Products or Outputs: 4 stakeholder meetings per year						
		Expected Costs: \$6,000/yr for Rota fishermen travel and meeting & advertising.						
		Proposed Funding Source: WPRFMC, NMFS						
		New staff, training & technical expertise needs:						

C.9	Project 2: Establish a fishing co-op	X	X			X		
Worksheet 2: Implementation								
Description: This project is based on the premise that the physical plant for the CNMI Fisheries Co-op at the site of the former Fishing Complex in south Garapan will be in place as part of new improvements planned for the site. A contractor, working under the direction of DFW, will be required to initially set up a Co-op association and continue working with the organization for the first three years or until such time that management authority can be transferred to the stakeholders. Primary goals of the Co-op association would be to organize the CNMI fishermen and provide them with logistical support, as well as a venue for marketing catch.		Lead person: DFW Director, and contractor						
		Proposed partners: : DLNR, DFW, Guam Co-op, CNMI House Committee on Natural Resources						
		When (mm/yr) Fall 2004 TO Fall 2006						
		Products or Outputs: : Establishment of a Co-op association at the former Fishing Complex Center in south Garapan						
		Expected Costs: \$35,000 for initial year contract to establish program and 15,000/year for the next two years to manage association.						
Proposed Funding Source: CNMI Legislature, SPC								
New staff, training & technical expertise needs: Short term contractor required who can organize, manage and maintain a fisheries Co-op association								

Worksheet 1: Action Strategy Management		Fisheries						
Threat/Focus Area: Fisheries Management		Management Tools						
Goal: Long-term sustainable use of coral reef resources	Indicator: Greater knowledge of the coral reef resources and decrease in undesired fishing practices	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 6: Better understanding of coral reef ecosystems and associated resources	Indicator: Increased access to coral reef resources							
C.10	Project 1: Develop a comprehensive interagency library resource database on Mariana archipelago coral reef resources					X	X	
Worksheet 2: Implementation								
Description: A joint effort by all involved resource agencies, in concert with a contractor, will identify and collate all Mariana archipelago research papers, including gray literature, into one database that will identify title, author, publication source, location of document, and possibly the abstract. This Mariana archipelago library resource database would be made available via websites and updated regularly.		Lead person: CNMI CRI-POC and Guam CRI-POC						
		Proposed partners: DFW, CRMO, DEQ, UOG, NMC, Joeten-Kiyu Library, UOG Library and contractor						
		When (mm/yr) <i>Fall 2003 TO Fall 2006</i>						
		Products or Outputs: : A summary document or database identifying all published and gray literature research papers and/or documents addressing coral reef resources in the Mariana archipelago and where the documents can be located.						
		Expected Costs: \$25,000 expected contract costs						
		Proposed Funding Source: CRI						
		New staff, training & technical expertise needs: Short term contractor who can organize, manage and provide search engines for the database.						

C.11	Project 2: Develop mechanisms allowing CNMI agencies to access research libraries					X	X	
Worksheet 2: Implementation								
<p>Description: With adequate marine orientated library resources being so limited in the Marianas, conducting literature searches through currently available means, including internet resources, is not sufficient for research as the much needed access to actual electronic papers and documents are not authorized. The larger universities are more able to afford the high costs required for maintaining these sophisticated search and information retrieval systems. An agreement needs to be established whereby CNMI coral reef researchers are able to utilize the full services of a library that focuses its collection on Pacific marine issues.</p>					Lead person: DFW Director			
					Proposed partners: DFW, CRMO, DEQ, NMC, Joeten-Kiyu Library, NMFS , UOG Library, UOH Library and other yet undetermined University Libraries			
					When (mm/yr) <i>Fall 2003 TO Fall 2006</i>			
					Products or Outputs: Establishing an interagency agreement with NMFS or large mainland universities for use of library facilities by researchers of the DFW, CRMO, DEQ and NMC.			
					Expected Costs: none			
					Proposed Funding Source: NMFS			
New staff, training & technical expertise needs: none								

Section D: Increase Awareness and Involvement

Worksheet 1: Action Strategy		Increase Awareness							
Threat/Focus Area: Increase Awareness And Involvement		<i>Management Tools</i>							
	Goal 1: Increase general awareness of the need to properly manage watersheds and marine habitats in light of the threats to coral reefs.	Indicator: Overall increase in awareness by %30.	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 1:	Initiate ongoing multi-cultural media program to increase awareness of the many benefits and provisions coral reefs provide the CNMI community and economy, the current threats that place these coral reefs at risk, and the need to protect them.	Indicator: Percent increase in awareness of each target audience; 1) residents, 2) visitors, 3) guest workers.							
D.1	Project 1: Broadcast multilingual TV public service announcements (PSA) concerning coral reef focus areas on the local news, NMC, the Visitor, Filipino, and Korean channels and local radio stations.						X		
Worksheet 2: Implementation									
Description: Surveys will be distributed through JSTA, MVA, SCC, SGMA, and schools. Responses from tourists, parents, children, and guest workers will be used to measure: community and tourist awareness of the importance of coral reefs, what places them at risk, and how individuals can limit or eliminate adverse impacts to reef health. Existing PSAs will be gathered from various sources and used to create locally relevant PSAs for broadcasting on TV and on radio stations. PSAs will discuss the recognized threats to coral reef health (erosion, proper fishing practices, importance of marine protected areas (MPA), burning badlands, poor land use practices, sedimentation, walking on the reef, marine sport impacts, successful remediation projects, community success stories, etc.), and will be translated into a language appropriate for the targeted audience. Translated PSAs will be broadcasted regularly and switched frequently enough to keep the message fresh. Follow up surveys will be conducted at the end of each year to measure growing awareness and to provide feedback to the PSA creators for improving the message delivery.					Lead person: CRMO Natural Resource and Planner/GIS Coastal Planner				
					Proposed partners: CRMO, DEQ, DFW, DLNR, PSS, MVA, JSTA, HANMI, NMC, SCC, SGMA, NMDOA, Marine Sport Assn, MCV, local radio stations.				
					When (mm/yr) 10/1/03 TO 09/30/06				
					Products or Outputs: video and radio PSA s produced and broadcasted.				
					Expected Costs: \$35,000/yr (\$25K air time, \$10K PSA production)				
					Proposed Funding Source: NOAA Section 306, 310, EPA 319, CRI, and Council for the Humanities.				
					New staff, training & technical expertise needs: New Outreach Coordinator for CRMO, surveyors, camera, taping, and editing training, translation, marketing and video production.				

D.2	Project 2: Produce regular press releases and editorials for all CNMI language newspapers, local magazines and newsletters.			×			×		

Worksheet 2: Implementation

Description: Baseline data will be collected on the average number of coral reef related articles appearing in the local English, Chinese, and Korean language newspapers each year. The POC/facilitator will ask staff from natural resource agencies, PSS, and NMC to provide regular press releases on coral reef issues (erosion, proper fishing practices, importance of MPAs, burning badlands, poor land use practices, sedimentation, walking on the reef, new research findings, successful remediation projects, community success stories, handbook availability, etc.). The press releases will be translated into Chinese, Korean and Japanese for submission to local newspapers and periodicals on a bi-weekly basis the first year, and quarterly thereafter. The press releases will also include the new Environmental Hotline number to encourage community involvement with monitoring and self-regulation. Follow up data will be collected at the end of the first year to determine the percent increase in coral reef articles published in the local newspapers and on the number of calls placed to the Environmental Hotline.	Lead person: CNMI CRI POC
	Proposed partners: DEQ, CRM, DFW, DLNR, NMC, JSTA, HANMI, Marianas Variety, Saipan Tribune, Japan, Chinese, Korean, and Filipino Assn., Japanese Consulate, Beach Press, and Island Locator Magazine.
	When (mm/yr) 5/1/04 TO 09/30/06
	Products or Outputs: regular articles in local publications, and advertisement of the Environmental Hotline.
	Expected Costs: \$2,000 per yr (Translation)
	Proposed Funding Source: NOAA Section 306
New staff, training & technical expertise needs: CRMO Outreach Coordinator, and Translators.	

D.3	Project 3: Produce posters and displays of identified coral reef threats for the airport, hotel lobbies, community centers, dive shops, tackle and snorkel equipment stores, and for seafood restaurants.			×			×		

Worksheet 2: Implementation

Description: The project lead will work with natural resource agency outreach coordinators to create professional quality posters on coral reef issues (erosion, proper fishing practices, “reef friendly diving practices, importance of MPAs, poor land use practices, sedimentation, walking on the reef, harvesting fish and coral, marine sport impacts, etc.). Permission to reproduce copy written material will be obtained before translating or printing the posters. Poster messages will be translated into Tagalog, Japanese, Korean, Chinese, and English before printing. The project lead will also be responsible for soliciting a request for proposal and hiring a contractor to create a permanent display for the airport’s arrival area. Once posters and display production is underway the project lead will contact the airport, HANMI, SCC, dive, hunting and fishing equipment stores, community centers, DFS Galleria and seafood restaurants to schedule display dates at the various locations. Businesses who have housed a poster display will be asked for feedback on how well it was received by patrons at the end of the display date. Suggestions will be used to improve future posters.	Lead person: CR Outreach Coordinator
	Proposed partners: Airport, DFS Galleria, MVA, JSTA, NMDOA, SCC, HANMI, DFS, DFW, CRMO, DEQ, DLNR and PSS
	When (mm/yr) 08/1/04 TO 09/30/06
	Products or Outputs: Posters and displays of coral reef issues.
	Expected Costs: \$25,000 1st yr (\$2K translated posters, \$23K airport displays), \$2,000 2 yr and \$2,000 3rd yr.
	Proposed Funding Source: EPA 319, NOAA 306, 310, USFWS, CRI
New staff, training & technical expertise needs: New CRMO Outreach Coordinator, design software training	

D.4	Project 4: Produce a coral reef series for the local "Teen Talk Live" TV show discussing the current status of CNMI coral reefs, threats, and their future.				x	
Worksheet 2: Implementation						
<p>Description: Coordinate with "Teen Talk Live" TV producers to schedule five shows (\$500/show) dealing with coral reef issues the first year and once a quarter the following two years. The lead will contact PSS and private high schools to encourage teachers to assign their students to watch the program, as Marianas High School already requires of the radio program. Guest hosts will be selected from the various natural resource agencies, NMC, the University of Guam, and the legislature to appear on scheduled dates. TV hosts will use various contests to encourage viewers to call in and participate in live discussions and debates (e.g., "Name a Reef" contest to personalize dive sites so they may more easily be identified and associated with corresponding watersheds). The programs' success will be measured by teachers during classroom discussion. Teachers will be asked to fill out surveys on the efficacy of the programs. Also, feedback will be taken by the show's production staff during call-in screening. This information will be provided to the lead to improve message delivery in future shows.</p>				Lead person: Joe Ruak (DFW)		
				Proposed partners: CR Outreach Coordinator, PSS, private high schools, NMC, KMCVTV, CRMO, DEQ, DFW, University of Guam		
				When (mm/yr) 10/1/04 TO 9/30/06		
				Products or Outputs: 18 TV broadcasts over a three year period		
				Expected Costs: \$2,500 1st yr (\$500/show), \$2,000 for 2nd yr, and \$2,000 for 3 yr		
				Proposed Funding Source: CRI, USEPA 319, NOAA 310, Council for the Humanities, NSF, NFWF		
New staff, training & technical expertise needs: CRMO Outreach Coordinator, TV production.						

Worksheet 1: Action Strategy		Increase Awareness						
Threat/Focus Area: Increase Awareness And Involvement		Management Tools						
Goal 2: Increase resident, visitor, and guest worker involvement in the protection and enhancement of coral reef health.	Indicator: Overall increase in individuals' involvement.	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 1: Provide residents, guest workers, and visitors with guidance on how they can minimize impacting coral reefs through personal behavior, usage, and lifestyle changes.	Indicator: Workshop participants comprehend and agree with 90% of the guidelines and share guidance material with 60% of their clients.							
D.5	Project 1: Include coral reef ecotourism section in the NMC Tourism Course					X		
Worksheet 2: Implementation								
<p>Description: Meet with the NMC to discuss lesson plan requirements and to schedule the lecture date(s) for the ecotourism segment of the Tourism Course. The CRMO Outreach Coordinator will gather existing materials from organizations here and abroad to create the lesson plan(s). Press releases on the availability of the course will be submitted to HANMI, NMDOA, MVA, JSTA, Tour operators, Marine Sport Association, and the general media emphasizing that the course will provide a voluntary "reef-friendly" focus. The Dean will also invite HANMI to schedule lectures on ecotourism for their hotel guests, which will be presented by a graduate of the Tourism Course. Students attending the Tourism course will be given at least two assignments to successfully complete the course. First they must pose as a tourist and visit hotel information desks, snorkel equipment rental booths, dive or marine sport shops, etc. to see if coral reef posters are displayed and if information about coral reef ecotourism is being disseminated to patrons. Results from the students' survey will be compiled by the lead into a "report card" for HANMI, NMDOA, MVA, JSTA, Tour operators, and the Marine Sport Association to encourage these coral reef related organizations to improve their ecotourism efforts. The students' second assignment will be to give a presentation (with a translator) to guests at participating hotels. The presentation will give attending tourists an appreciation for their surroundings, and an awareness of the purpose of local resource management practices. Attending tourists and students will rate the presentation and classes, as a measure of the program's success.</p>	Lead person: CR Outreach Coordinator							
	Proposed partners: NMC, MVA, HANMI, JSTA, Marine Sports Assoc., NMDOA							
	When (mm/yr) 01/01/2005 TO 09/30/06							
	Products or Outputs: Trained Tourism staff, informed tourists							
	Expected Costs: \$2,000/yr (teaching materials and translators) (NMC classroom facilities at \$100/day are matching funds)							
	Proposed Funding Source: SeaGrant							
New staff, training & technical expertise needs: CRMO Outreach Coordinator, translators for hotel presentations.								

D.6	Project 2: Work with NMDOA to provide a "Reef Friendly" Dive Instructor Train-the-Trainer Certification Workshop.					X	

Worksheet 2: Implementation

<p>Description: Hire a consultant to work with the Northern Marianas Dive Operator Association (NMDOA) and other Dive Masters and Instructors to establish interest in a "Reef Friendly" Dive Instructor Train-the-Trainer Certification Workshop on each island. Consultant will arrange for NMC classroom facilities on each island on a convenient date, gather course material from existing sources (e.g. PADI, NAUI, PADI Japan, etc), and design the workshop lesson plan to include reef protective policies (don't walk on the reef, do not touch, leave nothing behind, all patrons have check out dives, compliance with local regulations, etc). CRMO will encourage all dive operators to send their dive instructors to attend the workshop before renewing their annual permits and to use the certification as a marketing tool. Posters discussing "reef friendly" policies and proper diving techniques to prevent adverse impacts on marine habitats in English, Japanese, and Korean will be given to each Dive Operation that sends instructors to the course. Shop owners will be asked to display the posters at their shop and use them as a teaching tool if they are to be recognized as a "Reef Friendly" facility. The consultant will arrange for translators and speakers for each course date. Workshop participants that agree to follow the "reef friendly" policies including requiring less experienced divers to use less fragile reef environments as dive sites until they demonstrate appropriate skills, will be provided with a certificate from NMDOA at the end of the course. The success of this voluntary program will be measured through the percent of dive shops that participate and by how well "certified" staff abide by the "reef friendly" policies. This will be measured by NMC Tourism college students posing as tourists. The students will see if the posters are displayed and if dive instructors are providing patrons with "reef friendly" guidelines. Results from these visits will be compiled into a "report card" for Dive operators to encourage their enforcement of "reef friendly" diving practices. The certification workshop will be offered yearly.</p>	<p>Lead person: CR Outreach Coordinator</p>
	<p>Proposed partners: NMC, MVA, HANMI, JSTA, Marine Sports Assoc., NMDOA, DEQ, CRM, DFW</p>
	<p>When (mm/yr) 01/01/2005 TO 09/30/06</p>
	<p>Products or Outputs: Lesson Plan, Trained Dive Operators and divers, increased self regulation.</p>
	<p>Expected Costs: \$15,000/yr (lesson plan, presentation, travel, translation), \$5,000 2nd and 3rd yr (presentation, travel, translation)</p>
	<p>Proposed Funding Source: Project AWARE, NFWF Funds</p>
<p>New staff, training & technical expertise needs: Consultant, Japanese and Korean translators, and SCUBA skills.</p>	

D7	Project 3: Continue the small grant program for improving coral reef education and outreach.						X	
Worksheet 2: Implementation								
<p>Description: Each year CRMO solicits proposals for small educational and outreach grants to public and private schools, educators, and community organizations. Proposed projects range in costs from \$1000 to \$10,000 and are aimed at enhancing community concern, coastal resources curriculum, and involvement in coral reef and NPS pollution issues. In subsequent years the CRCT Outreach Coordinator will solicit the proposal and arrange for the CRCT Outreach Group to evaluate and select the proposals that will receive funding. Grantees are responsible for providing and meeting performance measures incorporated into their project proposal.</p>					Lead person: CR Outreach Coordinator			
					Proposed partners: CRMO, DEQ, DFW, NMC, PSS, private schools, NGOs.			
					When (mm/yr) 10/01/03 TO 09/31/06			
					Products or Outputs: Continue education and outreach projects			
					Expected Costs: \$25,000 per yr			
					Proposed Funding Source: CNMI CRI			
					New staff, training & technical expertise needs: CRMO Outreach Coordinator			

D.8	Project 4: Gather existing and develop new lesson plans and obtain teaching resource material, (e.g., plankton nets, magnifying glasses, textbooks, "Island Ecology and Resource Management", etc) for students and guest workers.						X	
Worksheet 2: Implementation								
<p>Description: The first year a consultant will be hired as a Curriculum Developer (CD) with CRI funds. The CD will initially meet with the CRMO Outreach Coordinator to determine those coral reef issues that could be incorporated into school curriculums. The CD will then arrange quarterly meetings with education stakeholders from both public and private schools to determine coral reef curriculum and resource needs on the part of teachers. The CD will gather existing coral reef curriculum and resources from CNMI teachers and from outside sources, e.g., other islands, states, countries, etc. At the end of the first year the CD will have compiled the curriculum and resources and begin adapting the materials for use in the CNMI with input on the part of CRMO Outreach Coordinator and other education stakeholders. By the end of the second year, the CD will complete a draft curriculum package for K-6, 7-12, and the college in keeping with the identified needs. Stakeholders will be asked to review the draft. Their comments will be incorporated into a final draft. The CD will begin printing the final version, along with a list of available resources. By the end of the 3rd yr one package will have been provided to each school and a school representative will have attended an implementation workshop to learn how to use the curriculum and how to obtain necessary resources through available grants or other funding. Success of this project will be measured on school representative satisfaction with the compiled curriculum package.</p>					Lead person: CR Outreach Coordinator			
					Proposed partners: DEQ, DFW, PSS, SGMA, HANMI, SCC, NMC			
					When (mm/yr) 05/01/04 TO 09/30/06			
					Products or Outputs: Lesson Plans for 1-6, 7-12, and college			
					Expected Costs: \$35,000 1st yr (\$20,000 Consultant+ \$5000 meetings+ \$10,000 resources), \$23,000 2nd yr (\$20 000 Consultant + \$3000 meetings), \$70,000 3 yr (\$20 000 Consultant+ \$50 000 for curriculum packages) CNMI CRI, NSF, Dept of Ed., NOAA 306, SeaGrant.			
					New staff, training & technical expertise needs: CRMO Outreach Coordinator, CD Consultant with education and science background, communication, writing, creativity, good public relations, facilitating, computer, budget and grant writing skills.			

Section D: Increase Awareness and Involvement

Worksheet 1: Action Strategy		Increase Awareness						
Threat/Focus Area: Increase Awareness And Involvement		Management Tools						
Goal 2: Increase resident, visitor, and guest worker involvement in the protection and enhancement of coral reef health.	Indicator: Overall increase in individuals' involvement.	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 2: Provide residents, guest workers, and visitors with guidance on how they can minimize impacting coral reef resources through personal behavior, usage, and lifestyle changes.	Indicator: Environmentally associated citations are increased by 30%.							
D.9	Project 1: Provide enforcement training for environmental agencies and public safety to improve compliance with local environmental laws and regulations.	X	X			X		

Worksheet 2: Implementation	
Description: Gather baseline enforcement data (e.g., number of citations, imposed fines, requests for compliance, etc.) from environmental enforcement agencies. Work with NOAA PSC to select the best organization to provide the training. Ask agencies for the best dates to hold the training. Schedule course dates and classrooms with NMC. Send a letter of invitation to all agencies to enroll officers in the training. Hold training(s) either on Saipan, or on each island depending on enrollment numbers. Measure the level of comprehension on the part of attending officers through testing. Work with the CRI AAG to coordinate the deputizing of the natural resource enforcement officers and DPS officers so that each agency can enforce each other's environmental laws. Determine if the number of citations, imposed fines, requests for compliance, etc., has increased since the training and deputizing took place by collecting post-training enforcement data.	Lead person: Robert Jordan (DPW)
	Proposed partners: CRMO, DEQ, DFW, DPS, DPW Solid Waste Division, NOAA PSC, NMC
	When (mm/yr) 01/01/04 TO 09/31/06
	Products or Outputs: Enforcement Officers are more confident and competent.
	Expected Costs: \$4,000 per yr
	Proposed Funding Source: NOAA PSC, 306, NMC, CRI
New staff, training & technical expertise needs: PSC Enforcement Trainer	

D.10	Project 2: Expand Emergency Management Office Hotline to include calls for environmental concerns		X			X		
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Worksheet 2: Implementation	
Description: Establish a database on the number of citizen complaints called into DEQ, DFW, CRMO, and DPS on environmental issues, and the turnaround time for responses. Call a stakeholder meeting to discuss where the Hotline should be housed and how it will operate, e.g. phone tree, voice mail messaging, dispatches, etc. Establish a standard operating procedure and database. Once established purchase necessary phone equipment and run a pilot test using the new system. Adjust system based on problems encounters. Submit press	Lead person: EMO, CRMO
	Proposed partners: EMO, DPS, CRMO, DEQ, DFW, DPW, Verizon and Solid Waste Division
	When (mm/yr) 10/01/04 TO 09/30/06
	Products or Outputs: An Environmental Hotline is established

Section D: Increase Awareness and Involvement

<p>releases to local papers to announce the Hotline’s availability. Include the Hotline number in all agency websites, brochures, and posters. Once the hotline is established, data will be recorded on the number of monthly calls received and the turnaround time for the appropriate agency to respond to the call. This information will be used to measure the success of the project and to provide agency directors with information where resources should be concentrated to best address environmental problems. The Hotline lead will regularly follow up with each agency to record Hotline success stories for inclusion in regular press releases. These stories will encourage island residents to get more involved with maintaining their environment.</p>	<p>Expected Costs: \$1750/yr (5 phone installation with phone tree messaging \$1000 + yearly phone line service \$250 + voice mail service fee \$550)</p>
	<p>Proposed Funding Source: CRI</p>
	<p>New staff, training & technical expertise needs: New telephone lines, voice mail service.</p>

D.11	Project 3: Produce a Multilanguage user-friendly fishing regulations handbook and distribute to all private and public stakeholders.	×	×			×	
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Worksheet 2: Implementation	
<p>Description: The lead conducts an initial study of the number of fishermen and types of fishing related activities used in the CNMI and the languages they use. From those fishermen that are contacted in the study, the lead establishes the percent of those fishermen that already know and understand current fishing regulations. Using Palau and Hawaii handbooks as an example, a clear concise pocket CNMI Fishing Regulations Handbook will be drafted. The draft will be shared with interested fisherman for comments to improve the handbook's contents. Once finalized, the handbook will be translated into the predominate languages used by fishermen and printed. The handbook will also be available from the DFW website. Hardcopy handbooks will be distributed to fishermen, marina managers, boat captains, members of the fishing cooperative, and natural resource agencies for further dissemination. Handbooks will also be available at the Saipan, Tinian and Rota Fishing Derby's. Press releases will be sent to the media advertising the Handbook's availability at natural resource agencies, and by downloading from the DFW website. The lead will conduct a post handbook survey of fishermen's knowledge and acceptance of CNMI fishing regulations to measure success of the project.</p>	<p>Lead person: DFW Director</p>
	<p>Proposed partners: DFW, CRMO, Western Pacific Fishery Management Council</p>
	<p>When (mm/yr) 05/01/04 TO 01/01/06</p>
	<p>Products or Outputs: User-friendly Fishing Regulation Handbook</p>
	<p>Expected Costs: \$3,500 (for \$1000 copies + translation)</p>
	<p>Proposed Funding Source: USFW, NFWF, NOAA 306, CNMI CRI</p>
<p>New staff, training & technical expertise needs:</p>	

Worksheet 1: Action Strategy		Increase Awareness						
Threat/Focus Area: Increase Awareness And Involvement		Management Tools						
Goal: Increase resident, visitor, and guest worker involvement in the protection and enhancement of coral reef health.	Indicator: Overall increase in individuals' involvement.	Develop policies/laws	Enforcement	Monitoring	MPA	Education	Research	Other
Objective 3: Provide opportunity for community hands-on involvement in promoting the sustainable use of coral reef resources.	Indicator: Participants increase by 20%.							
D.12	Project 1: Continue student internship opportunities.					X		
Worksheet 2: Implementation								
Description: Provide Summer marine resource management internships for post-secondary level students with CRMO, DEQ, and DFW. CRMO Outreach Coordinator will contact resource agencies to find openings for students. Once established, internship positions will be announced at NMC, and to other colleges, universities and institutes through the Governor's Scholarship Board. Student interns will develop and complete a research project over the summer in addition to participating with ongoing activities and projects at the host agency.		Lead person: CR Outreach Coordinator						
		Proposed partners: NMC, PSS, Private Schools, Governor's Scholarship Program						
		When (mm/yr) 10/01/03 TO 09/31/06						
		Products or Outputs: Students get hands-on experience in the marine sciences.						
		Expected Costs: \$10,000/summer						
		Proposed Funding Source: CNMI CRI, MARPAC, SeaGrant						
		New staff, training & technical expertise needs: New CRMO Outreach Coordinator						

D.13	Project 2: Enhance the volunteer marine monitoring program with island youths.			X		X	X	
Worksheet 2: Implementation								
Description: The CNMI marine volunteer monitoring program that is based on existing volunteer monitoring programs, e.g. Reef Check, BioSearch, etc will be reevaluated and improved to better address CNMI research and monitoring needs. The MMT leader will contact interested teachers to combine current school curriculum to include hands-on marine monitoring. CNMI MMT will assist with supervising dives, help with arranging transportation, boat fuel, tanks, and teaching students correct monitoring techniques. The youth alliance and NMDOA will provide PADI certification for their volunteer divers and enlist adults as "buddies" during monitoring and underwater clean up events. Success of the program will be measured by the increase in enrollment overtime, and by the percent of returning students each year (taking into account them some students will be graduating and pursuing higher education opportunities off island).		Lead person: MMT leader						
		Proposed partners: CNMI MMT, CNMI Youth Alliance, Pacific Marine Resource Institute, CRMO, DEQ, DFW, Light in the Eve, NMDOA, PSS and private schools						
		When (mm/yr) 10/01/0 TO 09/30/06						
		Products or Outputs: Monitoring data, student participation in the marine sciences.						
		Expected Costs: \$13,000/yr (\$10K from Youth Alliance matching fund, and \$3,000 from CRI)						
		Proposed Funding Source: CNMI CRI, MARPAC, SeaGrant						
		New staff, training & technical expertise needs: SCUBA, Marine monitoring skills, boat captain.						

Section E: Coral Reef Resources Management

Worksheet 1: Action Strategy		Capacity Needs							
Threat/Focus Area: Coral Reef Resources Management		Management Tools							
Goal:	Adequate staff, training and technical assistance secured to manage threats to coral reef resources and implement the CNMI coral reef initiative.	Indicator:							
		Adequate management and training capacity and improved coordination and communication skills.	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 1:	Adequate staff to implement CNMI coral reef initiative secured.	Indicator:							
		6 funded positions							
E.1	Project 1: Coral reef point of contact / facilitator		X	X	X	X	X	X	X

Worksheet 2: Implementation	
<p>Description: The CNMI needs a full time person to coordinate implementation of the CNMI coral reef initiative, to facilitate interagency collaboration and decision making, and to be the point person on coral reef issues in the CNMI, representing, when necessary the Governor and the CNMI to federal, national and international partners. Starting this year, this position will be stationed up at the Governor’s Office as a neutral position from which to coordinate multi-agency, private and public sector action. For FY04 this position and related travel costs will be supported out of the CNMI CRI Coral Management FY03 Grant. In subsequent years, we are looking for other support mechanisms.</p>	<p>Lead person: CNMI Governor’s Office</p> <p>Proposed partners: DFW, DEQ, CRM</p> <p>When (mm/yr) 10/1/03 TO 9/30/05</p> <p>Products or Outputs: staff position(s)</p> <p>Expected Costs: \$90,000/yr.</p> <p>Proposed Funding Source: CNMI CRI</p> <p>New staff, training & technical expertise needs: Group facilitation, conflict resolution, leadership training, and grant management, development and reporting training</p>

E.2	Project 2: Tri-agency coral reef coordinator positions	X	X	X	X	X	X	X
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Worksheet 2: Implementation	
<p>Description: There is a need for each of the three natural resource agencies that lead the CNMI coral reef initiative to have someone dedicated to coordinate their agencies involvement in coral reef efforts and to act as a point person for their agencies on coral reef related matters. Existing staff are already overtasked and cannot handle the extra responsibilities associated with coordinating their agencies input into and actions to implement the CNMI coral reef efforts. Thus, funding is being sought for three new positions (one within each of the three agencies; DFW, DEQ and CRM) to adequately address intra/inter agency and community outreach coral reef initiative coordination.</p>	<p>Lead person: CNMI CRI POC</p> <p>Proposed partners: DFW, DEQ, CRM</p> <p>When (mm/yr) 10/1/03 TO 9/30/05</p> <p>Products or Outputs: staff position(s)</p> <p>Expected Costs: \$195,000/yr.</p> <p>Proposed Funding Source:</p> <p>New staff, training & technical expertise needs: Group facilitation, conflict resolution, leadership training, and grant development, management and reporting training</p>

E.3	Project 3: DFW Marine Management and Protected Areas Specialist		×	×		×	×
Worksheet 2: Implementation							
<p>Description: Position funding for new marine managed and protected areas specialist within DFW needed for evaluation, development and improvement of comprehensive marine managed and protected areas programs for existing and proposed marine managed and marine protected areas throughout the CNMI.</p>		Lead person: DFW Director					
		Proposed partners: DEQ, CRM					
		When (mm/yr) 10/1/03 TO 9/30/05					
		Products or Outputs: staff position(s)					
		Expected Costs: \$75,000/yr.					
		Proposed Funding Source: DOI					
New staff, training & technical expertise needs:							

E.4	Project 4: Coral reef outreach and education coordinator			×	×	×	×
Worksheet 2: Implementation							
<p>Description: The CNMI needs a full time person to coordinate past, current and planned coral reef related outreach, information transfer and education. For a two year period starting this year, this position will be supported by NOAA through a Coral Management Assistantship program. The position will be housed in CRM, but will work in partnership with existing staff at CRM, DFW and DEQ. No additional funding need is anticipated.</p>		Lead person: Natural Resources Planner, CRM					
		Proposed partners: DFW, DEQ, CRM					
		When (mm/yr) 12/1/03 TO 12/30/05					
		Products or Outputs: staff position(s)					
		Expected Costs: \$0					
		Proposed Funding Source: Already funded through NOAA					
New staff, training & technical expertise needs:							

Section E: Coral Reef Resources Management

Worksheet 1: Action Strategy		Capacity Needs						
Threat/Focus Area: Coral Reef Resources Management		Management Tools						
Goal: Adequate staff, training and technical assistance secured to manage threats to coral reef resources and implement the CNMI coral reef initiative.	Indicator: Adequate management and training capacity and improved coordination and communication skills.	Develop policies/laws	Enforcement	Mapping and Monitoring	MPA	Outreach and Education	Research	Other
Objective 2: Training and technical assistance needed to implement CNMI coral reef action strategies secured.	Indicator: Improved local capacity for scientific and enforcement diver training, and species identification.							
E.5	Project 1: Scientific and enforcement diver training		X	X	X		X	

Worksheet 2: Implementation	
Description: To protect the CNMI agencies from liability and to allow CNMI agency staff reciprocity with other marine scientific efforts, CNMI staff involved in marine science and monitoring need advanced dive training. Provide costs for existing staff and/or contract services to provide training to agency staff to improve local scientific and enforcement diver capabilities.	Lead person: DFW Director
	Proposed partners: DFW, DEQ, CRM
	When (mm/yr) 10/1/03 TO 9/30/05
	Products or Outputs: Training Workshop(s)
	Expected Costs: \$35,000/yr.
	Proposed Funding Source: NMFS, WestPacFin, NOAA, NFWF
	New staff, training & technical expertise needs:

E.6	Project 2: Species identification and assessment training for agency staff.		X	X	X	X	X	
Worksheet 2: Implementation								
Description: Provide costs for existing staff and/or contract services to provide training to agency staff to improve readily available information about the diverse Indo-Pacific and endemic coral reef associated species and habitat.	Lead person: DFW Director							
	Proposed partners: DFW, DEQ, CRM							
	When (mm/yr) 10/1/03 TO 9/30/05							
	Products or Outputs: Training Workshop(s)							
	Expected Costs: \$35,000/yr.							
	Proposed Funding Source: SeaGrant, MARPAC, CNMI CRI							
	New staff, training & technical expertise needs:							

Section E: Coral Reef Resources Management

E.7	Project 3: Facilitate improved interagency and agency-stakeholder collaboration, coordination and communication.	✕	✕	✕	✕	✕	✕
Worksheet 2: Implementation							
<p>Description: The CNMI resource agencies are in need of occasional professional assistance to deal with the challenges of interagency and governmental-private sector collaboration. Funding is sought to contract services to facilitate particularly difficult problem solving and to provide training to agency staff to enhance interagency communication, develop coordination mechanisms, and facilitate interaction with community interests involved in CNMI coral reef initiative efforts. Facilitation is needed in the development of the two long-term plans noted below; the marine management and marine monitoring and research plans.</p>		Lead person: CRM Director					
		Proposed partners: DFW, DEQ, CRM					
		When (mm/yr) 10/1/03 TO 9/30/05					
		Products or Outputs: Problem solving and leadership training workshop(s)					
		Expected Costs: \$45,000/yr.					
		Proposed Funding Source: NOAA, DOI, NRCS, EPA					
New staff, training & technical expertise needs:							

E.8	Project 4: Complete a CNMI specific coral reef economic valuation.				✕	✕	✕
Worksheet 2: Implementation							
<p>Description: Economic valuation of our natural resources is important to long-term protection of the CNMI's resources. Currently Commonwealth development and operational decisions are made primarily to maximize economic gain and stimulate the CNMI economy. The Commonwealth does not have a good way to measure the true value of conserving and restoring CNMI's coral reefs and associated ecosystems or a good way to measure the true costs of current impacts or proposed development. This task will help reduce the impacts of increasing development pressure, unmanaged land use and population growth by providing more concrete economic justifications for protecting the health and extent of CNMI coral reef ecosystems. Support has already been secured to complete this project from CNMI CRI funds and NOAA support.</p>		Lead person: Director of CRM					
		Proposed partners: DFW, DEQ, Governor's Office					
		When (mm/yr) 10/1/03 TO 9/30/04					
		Products or Outputs: CNMI specific Coral Reef Economic Valuation					
		Expected Costs: \$0; no additional funding needed					
		Proposed Funding Source: NOAA, CNMI CRI					
New staff, training & technical expertise needs:							

Section E: Coral Reef Resources Management

E.9	Project 5: Continue and expand CNMI resource agency marine monitoring and research programs.				×	×		×	
	Worksheet 2: Implementation								
<p>Description: Our ability to manage the near shore waters is hampered by our limited understanding of the status and trends of marine resources and the diversity, abundance and distribution of marine species. There is a need to continue and expand upon current marine monitoring and research programs. These programs are carried out jointly and separately by the three lead resource agencies, DFW, DEQ, and CRM, and are supported in small part by CNMI Coral Reef Initiative funds. These current programs need to be expanded to (1) increase our ability to assess and monitor resource and human pressure trends in our northern most islands and to (2) measure management effectiveness of specific actions taken to reduce pressures on CNMI's marine systems. The expected costs included continued support for the CNMI CRI Coral Reef Ecosystem Monitoring Grant program as well as for an additional scientific staff member and funding to visit the northern islands more regularly.</p>		Lead person: Directors of DFW, CRM, and DEQ							
		Proposed partners: DFW, DEQ, CRM							
		When (mm/yr) 10/1/03 TO 9/30/06							
		Products or Outputs: Baseline and long-term monitoring data on marine resource status and trends and species diversity, abundance and distribution and evaluations of management effectiveness.							
		Expected Costs: \$300,000/yr (\$900,000 3 yr).							
		Proposed Funding Source: SeaGrant, EPA, NOAA, NMFS, WPRFMC, USFW, CNMI CRI							
		New staff, training & technical expertise needs: Two scientific staff							

E.10	Project 6: Develop long-term CNMI marine management plan and marine monitoring and research plan.		×	×	×	×	×	×	
	Worksheet 2: Implementation								
<p>Description: There is a need to identify a common vision for the future of CNMI's marine resources and to develop a comprehensive long-term plan to achieve that vision that is endorsed by key stakeholders and the CNMI Government. This would include both development of a marine management plan and a marine monitoring and research plan. To accomplish this task, the CNMI is requesting support for one fulltime planner to be dedicated to this important task for two years. Estimated funding includes two years of salary, travel and meeting facilitation support.</p>		Lead person: Director of DFW and/or Director of CRM							
		Proposed partners: DFW, DEQ, CRM							
		When (mm/yr) 10/1/03 TO 9/30/05							
		Products or Outputs: CNMI Long-term Marine Management Plan and CNMI Long-term Marine Monitoring and Research Plan							
		Expected Costs: \$90,000/yr (\$180,000 2 yr).							
		Proposed Funding Source: NOAA, DOI, NRCS, EPA							
		New staff, training & technical expertise needs:							

Section F: Cross Cutting Needs Assessment (WS 3)

Worksheet 3.A Cross-cutting Management Tools - Aggregating Projects							
	<i>List Projects from each worksheet 1 that are in this Management Tool category. Include Projects from all Threat/Focus Areas</i>	LBS of Pollution	Over fishing	Public Awareness	Rec. Overuse	Climate Change	Disease
	Research						
1	Student Intern Opportunities			X	X		
2	Monitor vessels at MPA boundaries		X				
3	Recommendations for new ecologically-based MPAs determined by sound science		X				
4	Saipan Creel Survey		X				
5	Managaha MPA target species study		X				
6	Managaha MPA tagging study		X				
7	Provide access to mainland research libraries		X				
	Developing Laws & Policies						
1	Public/Government Forums		X	X			
2	Update Saipan Lagoon Management Plan		X				
3	High Speed Internet Access to allow for research and information transfer		X				
4	Create/update management plans for MPAs		X		X		
5	Reef friendly certification for tour operators				X		
6	Establish Fisheries Co-op		X	X			
7	Creation of Area of Particular Concern (APC)	X		X			
8	Direct & Fund Laulau Bay road improvements	X			X		
	Outreach and Education						
1	Broadcast Multi-lingual TV PSAs			X			
2	Press Releases			X			
3	Posters of Identified Threats			X			
4	Teen talk live			X			
5	Talk w/ biologist			X			
6	Agency/School fieldtrips			X			
7	Develop coral reef lesson plans			X			
8	NMC tourism course			X			
9	Train dive guides/dive guide certification			X	X		
10	Enforcement training		X	X	X		
11	Student Internship Opportunities			X			
12	Volunteer Youth Monitoring Program			X			
13	Public/government forums			X			
14	Hire Awareness outreach position			X			
15	Multi-language fish reg book			X			
16	Small grant for outreach/enviro ed			X			
17	Don't walk on reef campaign				X		
18	Low impact snorkel/scuba/recreation video			X	X		
19	Reef friendly certification for dive/tour operators				X		
20	Create Natural Resources degree at NMC/Conservation Officers need degree		X				
21	Stakeholder Fishing Forums		X				
22	Interagency Library/resource database		X				
23	Access to mainland research libraries		X				

Section F: Cross Cutting Needs Assessment (WS 3)

Worksheet 3.A Cross-cutting Management Tools - Aggregating Projects							
	<i>List Projects from each worksheet 1 that are in this Management Tool category. Include Projects from all Threat/Focus Areas</i>	LBS of Pollution	Over fishing	Public Awareness	Rec. Overuse	Climate Change	Disease
24	Increase education & awareness about harmful practices	X					
25	Create a demo planting project	X					
26	Creation of a Talakhaya stakeholder group	X					
27	Form Laulau Bay stakeholder group	X					
28	Creation of Laulau Bay conservation area	X					
	Marine Protected Area						
1	Develop motorized vessel corridors in MPAs				X		
2	Monitor vessels at MPA boundaries				X		
3	Create/update Management Plans for MPAs				X		
4	Recommendations for new ecologically-based MPAs determined by sound science				X		
5	Install moorings				X		
6	Managaha MPA target species study		X				
7	Managaha MPA tagging study		X				
	Mapping & Monitoring						
1	Volunteer Youth Monitoring Program			X			
2	Monitor vessels at MPA boundaries				X		
3	Student Internship Opportunities w/ Agencies			X			
4	Recommendations for new ecologically-based MPAs determined by sound science				X		
5	Saipan Creel Survey				X		
6	Rota & Tinian Creel Surveys		X				
7	Create a shared multi-agency GIS database library		X				
8	Talakaya-Identify & Map land ownership & current land use activities	X					
9	Makpo-Expand/increase existing water monitoring	X					
10	Makpo-map land-use, permits, and ground water flow	X					
	Enforcement						
1	Enforcement training and cross training	X	X	X	X		
2	Additional Law Enforcement Officers	X		X	X		
3	Mechanism for cross enforcement (allowing all agencies to enforce other agencies' regulations)	X		X	X		
4	Hotline for Reporting	X	X	X	X		
5	Law Enforcement Equipment	X		X	X		
6	Natural Resources degree at NMC for Conservation Officers	X			X		

Section G: Capacity Assessment (WS 4)

<i>Worksheet 4.A New Capacity Needs Assessment - Aggregation</i>							
	<i>Worksheet 4.A New Capacity Needs Assessment - Aggregation</i>	LBS of Pollution	Over fishing	Public Awareness	Rec. Overuse	Climate Change	Disease
A.	Land-based Sources of Pollution						
	New Human Resources Support (e.g. Staff)						
	CRI outreach and education coordinator	X	X				
	Training						
	Stakeholder involvement training	X	X				
	Group Facilitation	X	X				
	Technical Assistance						
	Legal Expertise	X	X		X		
	GIS Expertise	X	X		X		
B.	Recreational Use and Misuse						
	New Human Resources Support (e.g. Staff)						
	Law Enforcement Officers	X		X			
	Training						
	Law Enforcement Training/Cross-Training		X		X		
	Scuba Diving Skills		X	X			
	Design software training			X			
	Enforcement training/cross enforcement training		X	X	X		
	Scuba training			X			
	Monitoring training			X			
	Technical Assistance						
	Surveying	X			X		
	Translation			X	X		
	Marketing & video production			X	X		
	Filming			X	X		
	Curriculum developing consultant			X			
	Facilitation		X	X			
C.	Fisheries Management						
	New Human Resources Support (e.g. Staff)						
	Law Enforcement Officers		X		X		
	Assistant Attorney General for Environmental Matters		X				
	Training						
	Law Enforcement Training/Cross-Training		X		X		
	Creel Survey Training		X				
	Technical Assistance						
	Creel Survey Management		X				
	Experts on coral bleaching						
	Consultant with experience developing cooperatives		X				
D.	Increase Awareness & Involvement						
	New Human Resources Support (e.g. Staff)						
	CRI outreach and education coordinator	X	X				
	Training						
	Stakeholder involvement training	X	X				
	Group Facilitation	X	X				
	Technical Assistance						
	Legal Expertise	X	X		X		
	GIS Expertise	X	X		X		