UNITED STATES DEPARTMENT OF COMMERCE

FINAL ENVIRONMENTAL IMPACT STATEMENT AND MANAGEMENT PLAN FOR THE PROPOSED FAGATELE BAY NATIONAL MARINE SANCTUARY

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Designation: Final Environmental Impact Statement/Management Plan

Title: Final Environmental Impact Statement and Management Plan for the Proposed Fagatele Bay National Marine Sanctuary

Abstract: The National Oceanic and Atmospheric Administration (NOAA) proposes to designate 163 acres (.25 square mile) of water off the island of Tutuila, American Samoa as a national marine sanctuary. The designation would result in implementation of a plan which will establish a framework for comprehensive management; including surveillance and enforcement, resource studies and interpretive programs.

Specific regulations are proposed that control the taking of coral and the crown-of-thorns starfish, the use of illegal fishing methods, discharges, and the taking of sea turtles. The Interpretive Program provides a broad-based agenda that includes on-site and off-site activities geared for elementary and high school students as well as community college students and the general public. The Resource Studies Plan proposes to gather baseline data, monitor and assess water quality and circulation, coral and fish populations, and develop life history studies on the crown-of-thorns starfish. Data from these studies would be used by managers to make sanctuary management decisions. Alternatives to the proposed action include the status quo, high and low options, a non-regulatory option, and a territorial option.

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Note to Readers:

This document is both a final management plan and a final environmental impact statement for the proposed Fagatele Bay National Marine Sanctuary. Some of the section headings and their order are arranged differently than frequently found in other environmental impact statements. To assist NEPA reviewers, the following table has been developed. Under the heading "NEPA Requirement" are listed those topics normally discussed in an EIS. The corresponding section of this document and the page number are provided in the other two columns.

EXECUTIVE SUMMARY

This Final Environmental Impact Statement and Sanctuary Management Plan (FEIS) proposes the creation of a marine sanctuary in Fagatele Bay, American Samoa to protect and preserve a unique coral terrace ecosystem. The proposed area, encompassing 163 acres (.25 sq. mi.) of Territorial waters, possesses significant marine and shoreline habitats and a diverse array of marine mammals, birds, fish, algae, and benthic marine resources that depend on the integrity and productivity of the bay's waters.

In March 1982, a proposal nominating Fagatele Bay, American Samoa as a candidate for marine sanctuary designation, was submitted to the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. The recommendation, drafted by Governor Peter T. Coleman, cited, among other benefits, a comprehensive Management Plan that would serve to: (1) protect and preserve the bay's natural resources and pristine character; (2) expand public awareness and understanding of marine ecosystems found in Pacific Ocean waters; (3) expand scientific understanding of marine ecosystems found in the Pacific, especially coral reefs that have been infested by the crown-of-thorns starfish and apply scientific knowledge to the development of improved resource management techniques; and (4) allow uses of the sanctuary that are compatible with the sanctuary designation, giving highest priority to subsistence and public recreational uses.

In April 1982, the nominated area was placed on the List of Recommended Areas (LRA) and, after preliminary public and agency consultation, was subsequently designated an Active Candidate. An Issue Paper was prepared and distributed by NOAA in May 1982 and a public workshop was held in American Samoa to solicit further comments on the feasibility of further consideration for sanctuary designation.

Based on the workshop results and consultation with other Federal agencies and the American Samoa Government, a decision was made to proceed to the next step toward designation - development of a draft management plan and environmental impact statement on the proposed sanctuary. This decision was published in the Federal Register on August 17, 1982. A Public Hearing on the DEIS was held on January 18, 1984 in American Samoa. Based on the results of the Hearing and comments received on the DEIS, NOAA and the American Samoa Government agreed to proceed with the process and develop this Final Environmental Impact Statement and Sanctuary Management Plan.

The plan developed by NOAA for managing the proposed sanctuary in American Samoa is the product of a cooperative evaluation process between the ASG and NOAA and is geared towards: (1) increasing coordination between Federal and Territorial resource protection programs; (2) promoting management-related research programs to improve the basis for decisionmaking; and (3) establishing public awareness and education programs aimed at the long-term protection of Fagatele Bay's unique natural resources. Full financial responsibility for sanctuary management rests with the Federal Government.

Calling for a coordinated management regime between the appropriate ASG agencies, the plan recognizes that existing controls may not be specific enough to fully protect and preserve the bay's resources. It therefore proposes a set of regulations to protect the Sanctuary's resources. However, it also intends to promote the non-regulatory aspects of resource management, i.e., public

education and awareness, promoting and coordinating research within the Sanctuary and making available any resulting product, and coordinating the activities of Federal and Territorial agencies in carrying out their respective roles in resource management.

The provisions of the Sanctuary Management Plan will be applied to Fagatele Bay in its entirety at mean high high water. The boundary represents NOAA's Preferred Alternative, a result of the recommendations received from the ASG, and focuses on protecting the bay, which has been described by various agencies as being an area of "pristine reefs, diverse fish fauna, and extensive coral resources" that should be protected in recognition of its "rich marine environment."

PART I. INTRODUCTION

A. Authority for Designation

Title III of the Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA) 16 U.S.C. 1431 et seq., as amended, authorizes the Secretary of Commerce, with Presidential approval, to designate ocean waters as marine sanctuaries for the purpose of preserving or restoring their conservation, recreational, ecological, or aesthetic values. Marine sanctuaries may be designated as far seaward as the outer edge of the continental shelf, in coastal waters where the tide ebbs and flows, or in the Great Lakes and their connecting waters. Marine sanctuaries are built around the existence of distinctive resources whose protection and beneficial use requires comprehensive planning and management. The National Oceanic and Atmospheric Administration (NOAA) administers the program through the Sanctuary Programs Division (SPD) within the Federal Office of Ocean and Coastal Resource Management (OCRM).

B. Goals of the National Marine Sanctuary Program

Consistent with the mission of developing a system of national marine sanctuaries for the purposes of serving the long-term benefit and enjoyment of the public, the following goals were established for the program:

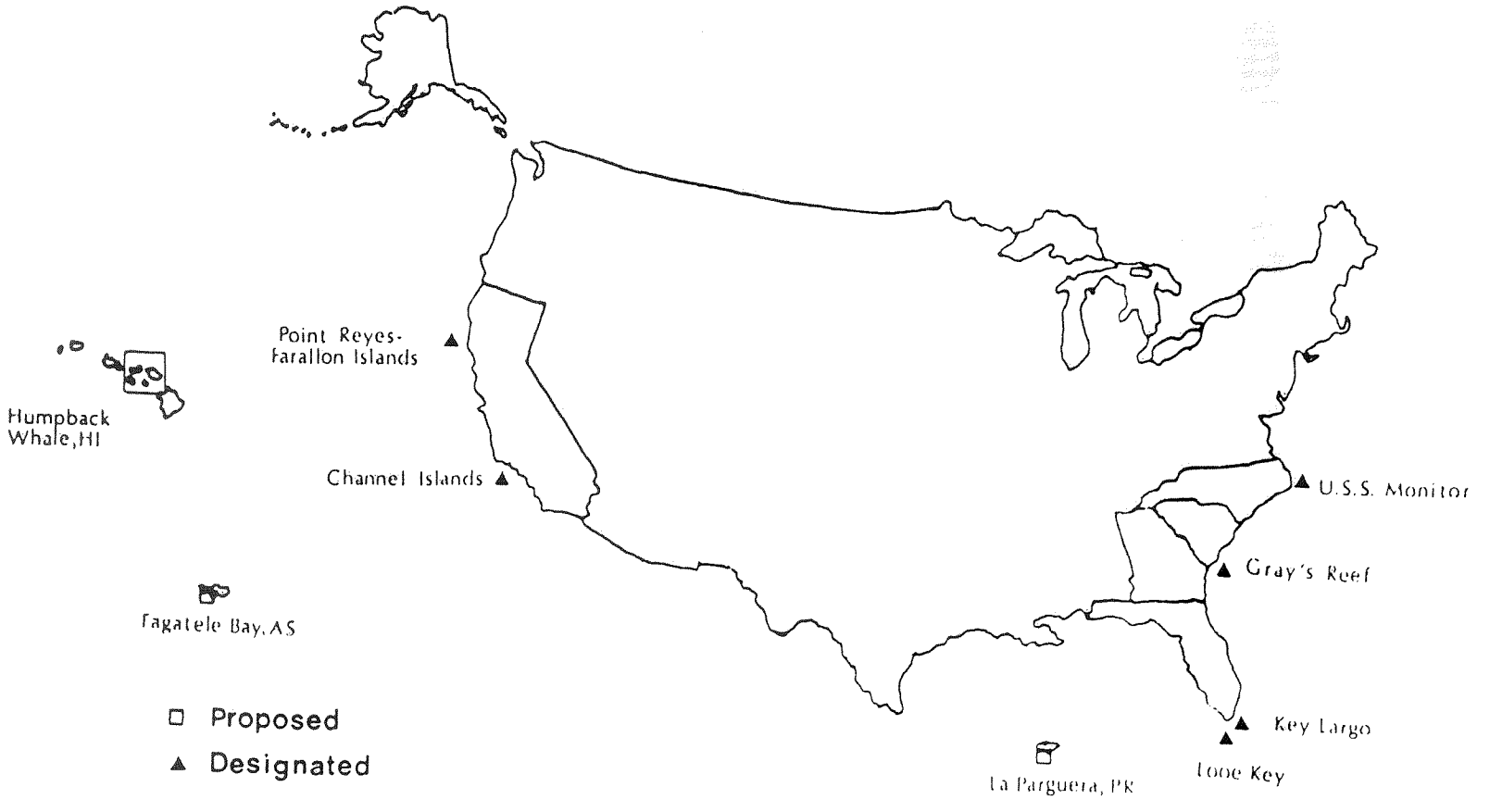
- Enhance resource protection through the implementation of a comprehensive, long-term management plan tailored to the specific resources;
- Promote and coordinate research to expand scientific knowledge of significant marine resources and improve management decision-making;
- Enhance public awareness, understanding, and wise use of the marine environment through public interpretive abd recreational programs; and
- Provide for optimum compatible public and private use of special marine areas.

C. Status of the National Marine Sanctuary Program

Six national marine sanctuaries have been established since the program's inception in 1972 (Figure 1):

- The Monitor National Marine Sanctuary - This sanctuary serves to protect the wreck of the Civil War ironclad, U.S.S. MONITOR. It was designated in January 1975 and is an area one mile in diameter 16 miles southeast of Cape Hatteras, North Carolina.
- The Key Largo National Marine Sanctuary - This sanctuary, designated in December 1975, provides protection and management of a 100 square mile coral reef area south of Miami, Florida.

fig. 1 Status of the National Marine Sanctuary Program



- The Channel Islands National Marine Sanctuary - This sanctuary, designated in September 1980, consists of an area approximately 1,252 square nautical miles off the coast of California adjacent to the northern Channel Islands and Santa Barbara Island. The sanctuary ensures that valuable habitats for marine mammals, including extensive pinniped assemblages, and seabirds are protected.

- The Looe Key National Marine Sanctuary - The sanctuary consists of a five square nautical mile submerged section of the Florida reef tract southwest of Big Pine Key. The site includes a beautiful "spur and groove" coral formation supporting a diverse marine community and a wide variety of human uses. It was designated in January 1981.

- The Gray's Reef National Marine Sanctuary - The site, designated in January 1981, is a submerged live bottom area located on the South Atlantic continental shelf due east of Sapelo Island, Georgia. The sanctuary, which encompasses about 17 square nautical miles, protects a considerably productive and unusual habitat for a wide variety of species including corals, tropical fish, and sea turtles.

- The Point Reyes - Farallon Islands National Marine Sanctuary - This 948 square nautical mile area off the California coast north of San Francisco contains a diverse array of marine mammals and birds as well as fishery, plant, and benthic resources. The sanctuary was designated in January 1981 and ensures that the area receives long-term, comprehensive protection.

Other sites presently under consideration by NOAA as active candidates include the waters off La Parguera, Puerto Rico, Cordell Bank off the coast of California, and certain Hawaiian waters frequented by humpback whales.

D. Purpose and Need for Designation

NOAA proposes that, as an area of exceptional natural resources, the waters of Fagatele Bay, Tutuila Island, American Samoa deserve special recognition, protection, and management as a national marine sanctuary.

The avifauna is very abundant around the study area, using the shore, rocky cliffs, and heavily forested ridges surrounding the bay for nesting and/or feeding on the bay's abundant aquatic life. The coastal forest between Seumalo Ridge and Fagatele Point at the southwestern terminus of Fagatele Bay is the main roost for thousands of flying foxes, or fruit bats (*Pteropus samoensis*), the only mammal endemic to American Samoa.

Besides the diverse coral reef community of fish, algae, and invertebrates, endangered and threatened species have been observed in the waters and vicinity of the bay. Endangered species sited include the hawksbill (*Eretmochelys imbricata*) and leatherback (*Dermochelys coriacea*) turtles and humpback (*Megaptera novaeangliae*) and sperm (*Physeter catodon*) whales. The bay also provides an important habitat for the threatened green sea turtle (*Chelonia mydas*).

To date, human activities in the area have been sparse, confined mostly to subsistence fishing, and have not posed serious threats to the preservation of significant marine resources. The bay's pristine character, however, owes less to the exercise of legal authority than it does to the bay's physical inaccessibility. At the present time, there is no permanent management and coordination system geared to area-wide marine resource protection. Recent and future trends on human development pressures could render the reliance on geographic remoteness and existing institutional arrangements inadequate for the effective monitoring of activities and the prevention of ecological harm to this rich marine system.

For instance, in the land-poor Pacific, increasing population and land-use pressure is being brought to bear on the limited flat land available in the volcanic South Pacific Islands. In order to meet the demand for more flat land, many reef and mangrove areas have been filled during the twentieth century, often by Federal agencies or under Federal permits. This practice has contributed to serious shoreline erosion problems elsewhere on Tutuila.

Many agencies currently regulate or have authority over one element or another of the specific activities and particular natural resources of the study area. However, no single authority is charged with protecting the ecological and biological value of the entire ecosystem.

E. The Plan for Managing the Sanctuary

Purpose and Scope

A plan for managing the proposed Sanctuary has been developed and is intended to carry out the terms of the Designation. The plan is oriented towards preserving and maintaining the rich, tropical coral reef ecosystem of the bay while allowing compatible uses. Specific management strategies intended to implement the plan provide for: (1) on-site administration; (2) development and implementation of a coordinated management-related research agenda; (3) enhancement of public awareness and education programs; and (4) the coordination of Federal and Territorial resource protection programs, including enforcement of existing regulations.

Goals and Objectives of the Plan

The primary effect of sanctuary designation will be the implementation of a comprehensive management plan that is designed to realize the goals of sanctuary designation. The goals and objectives for the Fagatele Bay National Marine Sanctuary are an extension of the rationale for establishing such a sanctuary. The following goals constitute the long-range, non-time specific mission of the proposed sanctuary:

Goal 1: Protect and preserve Fagatele Bay's natural resources and pristine character.

Goal 2: Expand public awareness and understanding of marine environments found in the warm waters of the Pacific Ocean, and thereby foster a marine conservation ethic.

Goal 3: Expand scientific understanding of marine ecosystems found in the warm waters of the Pacific Ocean, especially coral reefs that have been infested by the crown-of-thorns starfish, and apply scientific knowledge to the development of improved resource management techniques.

Goal 4: Allow uses of the sanctuary that are compatible with Goals 1-3 above; give highest priority to subsistence and public recreational uses.

The following objectives represent short-term, measurable steps which will be undertaken in pursuit of full realization of each goal.

01. Coordinate and, where necessary, refine administration of existing authorities by responsible government agencies to ensure that the sanctuary's resource values, including its pristine character, are protected and preserved.

    a. Upon sanctuary designation, create and periodically convene a Fagatele Bay Research Coordinating Commitee.

    b. Under the auspices of the committee, monitor and, if necessary, improve the coordinated exercise of sanctuary research, as described in the Final Management Plan. Secure a boat as necessary to monitor and enforce proper uses of the sanctuary.

    c. Under the auspices of the committee and the American Samoa Coastal Management Program, (ASCMP) review and, if necessary, revise existing regulations of land-based activities which may affect Fagatele Bay and explore alternatives to regulation.

    d. Install one or more anchor buoys to protect the benthic community following a determination by the committee that the need for such buoys exists and that their installation will not interfere with realization of the sanctuary goals (e.g., by promoting excessive use of the bay thereby threatening maintenance of its pristine character, or disrupting ongoing scientific studies).

02. Develop and implement a comprehensive public awareness program designed to promote understanding of the natural and human resource values of Fagatele Bay and marine environments.

    a. Develop and implement a curriculum program that will expand understanding of the sanctuary and marine environments for use in Samoan schools.

    b. Develop a public outreach program for Samoans and visitors.

    c. Establish links with similar marine reserve efforts located in the warm waters of the Pacific and encourage cross-fertilization of public awareness program ideas.

d. Construct an interpretive center for the public that describes and explains the natural and human resource values of the sanctuary and the marine environment.

e. Facilitate access to the sanctuary for public awareness purposes by developing a boat launch and mooring site in Leone Bay and acquiring a boat suitable for the public awareness program's needs.

03. Establish a coordinated research program for the sanctuary.

a. Upon sanctuary designation, establish a Fagatele Bay Research Committee to monitor, assist, and, if necessary, improve the coordinated research efforts conducted in accordance with the five-year research agenda included in the Final Management Plan.

b. Facilitate access to the sanctuary for scientific research purposes by developing a boat launching and mooring site and acquiring a boat suitable for the research program's needs (see Objective 02e).

04. Promote other sanctuary uses, including subsistence and public recreation, which are deemed compatible with Goals 1-3, and monitor such uses to ensure that they do not interfere with the realization of those goals.

a. Facilitate access to the sanctuary for subsistence and recreational uses by developing a boat launch and mooring site (see Objective 02e and 03b).

b. Facilitate access to the sanctuary and protect the benthic community by installing one or more anchor buoys in Fagatele Bay, following a determination by the committee that the need for buoys exists and that they will not interfere with realization of sanctuary goals (see Objective 01.d)

c. Facilitate access to the sanctuary by seeking to develop an overland access route to the sanctuary if deemed feasible and prudent by the committee. Explore the purchase of access and/or limited development easements from adjacent land holders.

PART II. MANAGEMENT CONTEXT

This section describes the major factors considered in preparing the management plan by establishing the context within which the goals and objectives, management direction, and boundaries have been formulated. Although plan development may be influenced by current changing and natural human conditions, it may also affect those conditions through its implementation. It is therefore essential for the plan to reflect a firm understanding of those conditions, which serve as the setting or context within which the preparation of the plan occurred. This will insure that the resulting product addresses the need for effectively managing the Sanctuary's resources.

The following sections describe the location and geographical description of the Sanctuary, its resources, social and economic factors, the legal/institutional background, and implications for management.

A. Proposed Sanctuary Location and Geographical Description

Fagatele Bay is a 163-acre bay centered on 14°23'45" S latitude and 170° 46' 7" W longitude, about 7.5 miles southwest of Pago Pago Harbor (Figures 2,3). It is located along the southwestern shore of Tutuila, the largest and most populated island of the seven islands comprising the U.S. Territory of American Samoa. Lying approximately 1000 miles south of the equator, American Samoa constitutes the eastern portion of the Samoan archipelago. It is the only U.S. Territory south of the equator and is composed of five volcanic islands (Tutuila, Aunuu, Ofu, Olosega, and Tau) and two small coral atolls (Rose and Swains Island) lying in a westward trending chain between 168° and 173° W longitude (Davis, 1963).

The area and maximum altitude of these islands are shown in Table 1 below.

Table 1: Area and Maximum Altitude of the Islands of American Samoa (from Nelson, 1964; Inder 1977; Sea Engineering Services, Inc. and R.M. Towill, 1980)

ISLAND	AREA (Square Miles)	MAXIMUM ALTITUDE (feet)
Tutuila	52	2,142
Aunu'u	1	280
Ofu	3	1,621
Olosega	2	2,095
Tau	17	3,056
Rose	1	n.d.
Swains Island	-	103
	76	

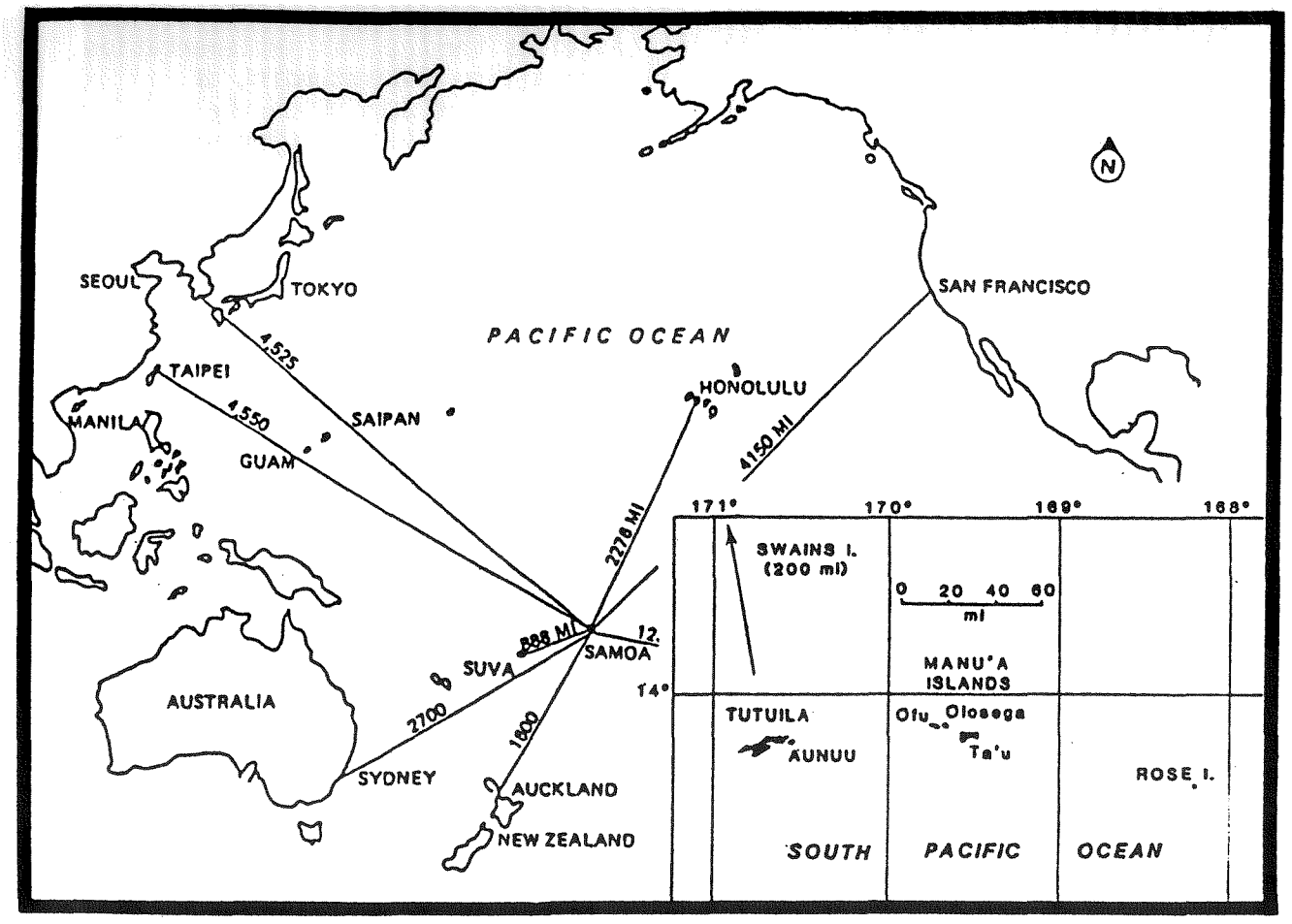


Figure 2. Location of American Samoa

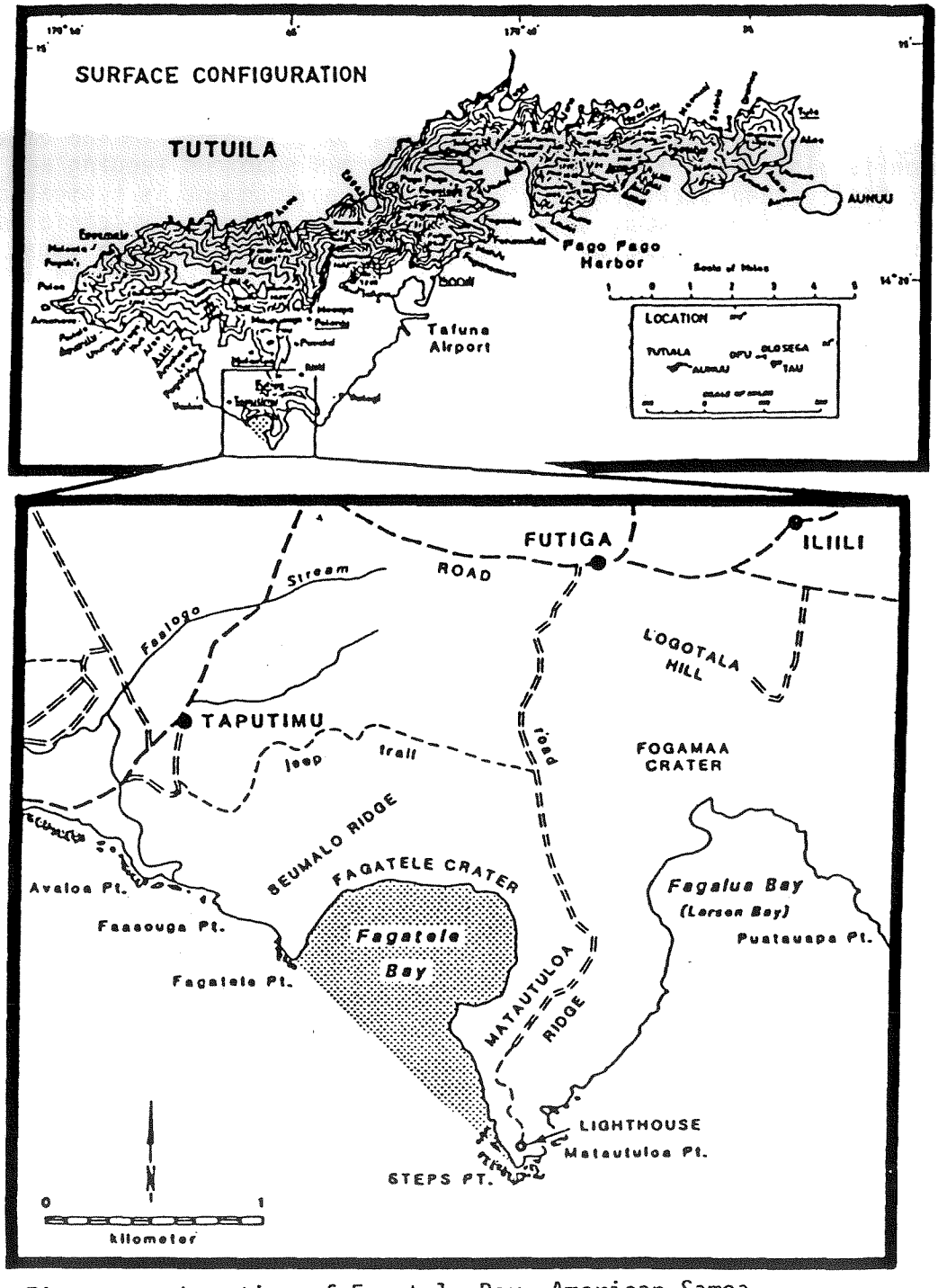


Figure 3. Location of Fagatele Bay, American Samoa

B. Sanctuary Resources

1. Introduction

The waters of Fagatele Bay can be characterized as a pristine environment with a highly productive coral reef community and a collection of threatened and endangered species, such as the hawksbill turtle (Eretmochelys imbricata), and endemic species, such as the flying fox, or fruit bat (Pteropus samoensis), which nest and feed in the coastal forests that rim the bay. The region is also rich in avifauna, with numerous seabirds feeding and nesting along the bay's steep cliffs. The bay's marine environment is typical of the terraced coral reef ecosystems associated with high islands (volcanic in origin) which lie in the warm waters of the Pacific Ocean and possesses a coral reef community of limited distribution and a complex ecosystem with a naturally high level of productivity.

2. Physical Characteristics

a. Geology of Tutuila

Tutuila Island is of Pliocene or early Pleistocene volcanic origin, having been described by Stearns (1944) as having been "built by five volcanoes over two or possibly three parallel rifts trending N 70° E." He describes the island mass as consisting primarily of basaltic rocks, with the bulk of the islands being formed by a'a (rough) and pahoehoe (ropey) lava flows with small amounts of trachyte, andesite, alluvium, coral beach sand, and fringing coral reefs. Because of rapid submergence during the last period of Pleistocene sea level rise, the limited areas of fringing reefs around Tutuila are discontinuous and consist primarily of bedded calcareous sand and silt rather than coral reef colonies.

Tutuila, approximately 20 miles long and ranging from 2.5 to 5.5 miles in width, is the top of a composite volcano rising approximately three miles from the ocean floor, resulting in deep water depth contours nearshore (URSRC, 1974). A high, irregular ridge extending along the length of the island has relatively low relief because there are no major streams and alluvial valleys and is only slightly altered by erosion (Davis, 1963). The coastline, except at the mouths of the drowned alluvial valleys, is irregular, rocky, and composed of steep cliffs ranging from a few tens of feet to several hundred feet in height.

Soil quality varies greatly because of the diverse terrain and leaching due to high precipitation. Soil depths, deepest in the valleys, are very thin on the steep slopes. Three categories of latosolic soils present on Tutuila are derived from: 1) basic tuff and basaltic ash, 2) basalt, and 3) basic andesite and basalt. A fourth category (recent soils) consists of alluvium and colluvium found in river valleys and at the base of slopes, calcareous sands found on beaches, and marsh soils found in wetlands (USDI, 1968).

Fagatele Bay formed in recent geologic times when the seaward side of the Fagatele Crater volcanic tuff cone was breached by the ocean and flooded. The volcanic rocks around the bay are lithic-vitric tuff from Vailoatai, Fagatele, and Fogama'a Craters, with tuff from Fogama'a Crater overlying unconformably the tuff from Fagatele Crater (DPO, ASG, 1981). Seumalo Ridge rises over 400 feet in elevation along the western and northern sides of Fagatele Bay, while the eastern side of the bay is bounded by Matautuloa Ridge over 200 feet high.

Soils on the steep slopes surrounding the bay are silty clay loams derived from basic tuff and basaltic ash. Less than a third of American Samoa has a slope of 30 percent or less, with most of this found on the Tafuna-Leone Plain of Tutuila (SESI and RMT, 1980b).

The steep cliffs surrounding the bay make it relatively inaccessible from the landward side of the island. The beaches along the bay shore are accessible via a foot trail, which connects to a dirt trail running northsouth along Matautuloa Ridge. The beaches are composed primarily of calcareous sand with a small amount of volcanic sand (AF and AECOS, 1980). The sand deposits extend subaqueously offshore for about 20 to 30 feet until it merges with the reef platform, which is composed primarily of consolidated limestone and encrusting coralline algae (Appendix D).

The platforms in the vicinity of the beaches, approximately 200 feet wide and lying at a depth of 2 feet, have a bottom reliefs of 1 foot. The platforms fringe the interior bay shore to varying widths, with the widest platform being found along the eastern shore of the bay. The reef front drops almost vertically to a 5 to 10-foot depth, then gradually slopes seaward to depths of 15 to 20 feet. The reef front slope, which extends up to 300 feet offshore, contains widely separated pinnacles rising from depths of 15 to 20 feet to within 4 to 5 feet of the surface. The bay bottom reaches a depth of 120 feet approximately 1100 feet due west of the pocket beach and is covered with rubble (AF and AECOS, 1980).

b. Physical Oceanography

Waves in the area are generated either by local wind conditions or result from sea and swell associated with local and distant storms and hurricanes (SESI and RMT, 1980a). On the average, 80 percent of the waves approach the island from the east and southeast from June through November, and during the remainder of the year, 75 percent of the waves come from the northeast, east, and southeast (URSRC, 1974). In Fagatele Bay, however, wave action is damped by the encircling reef platform and by the fact that the bay, with its opening to the southwest, is sheltered from waves approaching from the northeast through southeast sectors.

Since there are no tide gauges in Fagatele Bay and because of its proximity to Pago Pago, the tidal data for Pago Pago Bay are considered applicable. Tides are diurnal with the mean and spring tidal ranges for Pago Pago Bay being 2.5 and 3.1 feet.

c. Climate

American Samoa has a warm, humid tropical climate with yearly temperatures ranging between 70 degrees and 90 degrees F and an average humidity of 80 percent. The average rainfall is about 200 inches, with the heaviest rains occurring from December through March.

American Samoa is located in the zone of the southeast trade winds. From May to November the winds are moderate from the southeast, and during the remainder of the year, the winds are variable. The strongest winds occur during the winter months of June through August, with the weakest winds being from December through February when the intertropical front moves southward (Davis, 1963). The average wind speed recorded between 1975 and 1980 was 8.9 mph.

American Samoa also lies in the area of the southern hurricane belt and experiences major hurricanes approximately once every five years. Maximum winds of 150 miles per hour can be expected during hurricanes which normally approach the area from the north, but occassionally from the east, southeast, or west.

Although the islands have experienced tsunamis, only Pago Pago has experienced any sizeable runup. The tsunami generated by the Chilean earthquake in 1960 produced a runup of 4.5 feet at the harbor entrance and 10.7 feet at the extreme inner end of the harbor. No earthquakes have been recorded in American Samoa.

d. Water Quality

Fagatele Bay was proposed as a marine preserve area by the Office of Marine Resources (OMR) of the ASG because of its "relative pristine and untouched state." Although there are no water quality data specifically dealing with Fagatele Bay, it has been assumed that the water quality parameters for the area correspond to those in similar areas around Tutuila where, in general, the water quality is very high in areas removed from the direct influence of urban, industrial, and agricultural discharges (COE, 1979). There is no urban or industrial runoff into the bay to affect its water quality and agricultural activities on the surrounding ridges are limited and there are no permanent streams discharging into the bay to affect its salinity, turbidity, and nutrient load. Water temperatures in the area range between 80° and 82°F, with little seasonal or diurnal change, while salinity ranges from 35.5 percent and 36.0 percent (SESI and RMT, 1980a).

Studies to determine baseline water quality data for American Samoa were undertaken by the COE in 1979. Their data statistically describes the ecologically important parameters for the two main types of ecosystems found in the bay (open coastal nearshore and embayment). In general, fecal coliform are not present in sea water environments, and the pH level for marine embayments and ocean waters range between 7.9 and 8.6. Dissolved oxygen levels should be

at 80 percent saturation or above, and suspended solids should have geometric mean values between 1 and 2 mg/l. Within Fagatele Bay, visibility is normally at least 50 feet (AF and AECOS, 1980).

3. Biological Characteristics

a. Vegetation

American Samoa's vegetation is typical of tropical wet forests which have high species diversity, but not as high as that found in tropical climates on continents. Previous to environmental modification, endemism was fairly high among the floral constituents around Tutuila. But, with increased modification of the environment by man, introduced species have replaced the natural forest vegetation in the lower areas. Presently, natural tropical wet forests vegetation is confined to the steep mountain slopes, ridges, and valleys not utilized and inaccessible to man. The U.S. Fish and Wildlife Service (USFWS), in a recent study, recorded a total of 488 vascular plant species plus 32 new tree species. Ten flowering plant species were reported as endemic to American Samoa and 68 endemic to the Samoan Archipelago. Nearly all the plant species found in undisturbed habitats were native species (312 flowering plants).

Much of the undeveloped land on Seumalo and Matautuloa Ridges and on the Tafuna-Leone Plain is managed for crops or coconut tree plantations. The steepness of the cliffs surrounding the bay has helped ensure that this area remains coastal and littoral vegetation, with a strong possibility of the existence of native species of plants in the study area (DPO;ASG, 1981).

b. Avifauna

The avifauna are the dominant wildlife forms in American Samoa. Of the 60 species of birds listed by the USFWS, 24 are seabirds and 36 are waterfowl. Only 8 of these species are introduced.

Around the bay, the abundant avifauna use the shore, rocky cliffs, and the surrounding heavily forested ridges for nesting and/or feeding. Some of the birdlife recorded as nesting or feeding in the vicinity of Fagatele Bay are listed in Appendix E, Table 1.

The area around the bay provides sea and shorebirds with comparatively remote, favorable physical environments for nesting, along with ready access to rich foraging areas that are necessary during the breeding season.

c. Marine Mammals

Fagatele Bay and adjacent waters are important to a group of the endangered humpback whales (Megaptera novaeangliae) of the southern hemisphere breeding population. Each year, from July through October, this population

uses the waters around American Samoa for breeding and calving. Occasionally, endangered sperm whales (Physeter catodon) are sighted in the offshore waters surrounding American Samoa and may venture into the waters seaward of Fagatele Bay (NMFS, 1982).

In addition to these two species of great whales, the waters of and in the vicinity of the bay also host other cetacean species including the Pacific bottlenose (Tursiops truncatus) and spinner (Stenella sp.) dolphins.

d. Rare, Threatened and Endangered Species

Fagatele Bay and its surrounding waters host several threatened or endangered species (Table 2). In addition to the great whales indicated above, the bay serves as an important habitat for the endangered hawksbill turtle (Eretmochelys imbricata) and the threatened green sea turtle (Chelonia mydas). Other occasional visitors to the bay include the endangered leatherback turtle (Dermochelys coriacea) and the threatened olive ridley (Lepidochelys olivacea) and loggerhead (Caretta caretta) turtles.

e. Fish Resources

Fish resources are abundant throughout Fagatele Bay. Because of the bay's configuration, the area also provides a protective habitat for many fish species. Surveys of fish located on the reef flat to the reef front west of the pocket beach indicate that the fish fauna is very diverse, with species being moderately to highly abundant (AECOS, 1980). During the late 1970's, 86 species of fish were recorded from this area. A more detailed list of species recorded during a 1978 survey (Wass, 1978a) of the Fagatele Bay reef front and reef flat is included in Appendix E. Consistently abundant species include the damselfishes Stegastes albofasciatus, Glyphidodontops cyanea, and G. leucopomus, the surgeonfish Acanthurus nigrofuscus, and the wrasse Thalassoma hardwickei. Other conspicuous species include the surgeonfishes Ctenochaetus striatus, Acanthurus lineatus, and A. triostegus, the butterflyfish Chaetodon reticulatus, the damselfish Glyphidodontops glaucus, adult and juvenile parrotfish (Scarus sp.), and the anemonefish Amphiprion melanopus.

The waters off the southeastern tip of the bay harbor a highly diverse fish fauna of moderate abundance, with the damselfish Plectroglyphidodon dickii and Chromis acares being the most abundant of the 114 species recorded in this area. Green sea and hawksbill turtles also inhabit this area.

f. Benthic Community

The most conspicuous members of the benthos in Fagatele Bay are the corals. The extensive coral reef system found in American Samoa, constructed by corals and coralline algae, is typical of shallow, clear tropical seas where the mean annual temperature is 70°F (AECOS and AF, 1980). Coral reefs, with their enormous rates of organic production, are among the most biological productive of all natural communities. This community is very diverse, with a wide variety of habitats supporting populations of larger fish which have traditionally

Table 2. Threatened and Endangered Species Sited in Vicinity of Fagatele Bay

COMMON NAME	SCIENTIFIC NAME	HISTORIC RANGE	STATUS
Turtle, green sea	Chelonia mydas	circumglobal in tropical and temperate seas and oceans	T
Turtle, hawksbill (=Carey)	Eretmochelys imbricata	tropical seas	E
Turtle, leatherback sea	Dermochelys coriacea	tropical, temperature and subpolar seas	E
Turtle, loggerhead sea	Caretta caretta	circumglobal in tropical and temperate seas and oceans	T
Turtle, olive (Pacific) Ridley sea	Lepidochelys olivacea	circumglobal in tropical and temperate seas and oceans	T

T= Threatened E= Endangered

supplied high-quality protein to native populations living near the sea where other sources of protein are often inadequate. The fringing coral reefs, such as those found in Fagatele Bay, also help to moderate shoreline erosion by buffering ocean waves.

Along the eastern edge of Fagatele Bay, 10 percent of the reef flat lying at a depth of about 2 feet is covered by coral, while another 5 percent contains dead coral heads (AF and AECOS, 1980). The most conspicuous coral species are Pocillopora verrucosa, Favia sp., Galexea sp., Goniastrea sp., Acropora humilis, Porites lutea, and the soft coral Palythoa sp. Dominant algae include Cheilosporum sp., Bryopsis sp., and Halimeda sp.

Other species recorded in Leone Bay, just west of Fagatele Bay, and which may also be present in Fagatele Bay, include the hard corals Leptastrea purpurea, Pavona frondifera, and Montipora sp.; the encrusting coralline alga Porolithon sp.; and the thalloid algae Halimeda sp., Dictyosphaera sp., Actinotrichia sp. and Ralfsia sp.

The proposed sanctuary also possesses other invertebrates which serve as important subsistence food sources. These include anemones, lobsters, limpets, clams, octopi, sea cucumbers, and sea urchins.

C. Social and Economic Factors

1. Regional Characteristics

The proposed FBNMS is located near the village of Leone, the center of activities for West Tutuila. The village is the regional center for public and private services and is second only to the Tafuna - Pago Pago Bay area as an employment center, accounting for 15 percent of those employed in West Tutuila. The village economy, however, remains in a transitional stage of development from a communal, subsistence economy to a market and cash economy. The village remains primarily a residential community, although it serves as a regional center for education and government services.

This village of nearly 1,700 inhabitants contains a dispensary and a district courthouse, as well as two elementary schools. Three high schools are located adjoining its borders, and there are ten commercial outlets in the village area, including groceries, dry goods, and a theater. Leone is also a religious center, serving as a parochial school district as well. The 1970 census data indicate that approximately 21 percent of the village population were employed. This underestimates the number of individuals who are working due to reporting difficulties associated with subsistence economies. It may be assumed that a rural agricultural community would have 30-40 percent of its population working or employed, given the age-cohort structure of the community (MKGK/Yamamoto, Inc., 1980).

The employment composition of Leone residents is similar to the territorial pattern, although there are some striking differences. These differences include a disproportional share of retailing jobs, higher wage and salary workers, and a higher median and mean income. There are, however, no dramatic differences in labor force educational characteristics.

The village economy consists of three basic sources of income: gainful employment/businesses, subsistence agriculture, and income transfers. There are no data available to describe the magnitude of each source of the village income. The territorial trend is to rely more on the former and the latter and less on subsistence farming. This trend is supported by the fact that lands found in communal plantations are being withdrawn for residential uses.

2. Local Characteristics

The population in the immediate vicinity of Fagatele Bay reside in the villages of Taputimu, Vaitogi, and Vailoatai (Figure 4). Old maps of Tutuila mark Fagale'a and Fagatele, two small villages formerly located along the margins of Fagatele Bay, but since abandoned (AF and AECOS, 1980). Like other village economies in American Samoa, these are also in a transitional stage of development. Most people in these villages either farm and/or fish at the subsistence level, or work for the American Samoa government either in Leone or the Pago Pago Bay area.

3. Uses

The most common activity in Fagatele Bay is sport and subsistence fishing. A recent survey conducted by the American Samoa Development Planning Office indicates that although varying numbers of people fish the bay, a small group of 20 to 25 people from all parts of Tutuila do so on an irregular basis (Wass, 1984; personal communication). Because of its relative inaccessibility through overland routes, most fishermen reach the area by boat (AF and AECOS, 1980). There is some on-going research being conducted in the bay regarding coral recolonization and changes in the composition and structure of inshore fish communities within the area. Presently, some commercial fishing activities occur within the outer portions of the bay. However, there are no shipping activities within the confines of the bay, nor are there any military operations in the area. However, non-consumptive activities, such as swimming, diving, and boating may increase in the future.

D. Legal and Institutional Background

1. Introduction

The proposed Fagatele Bay National Marine Sanctuary is situated entirely within the Territorial waters of American Samoa. These waters are controlled by various Territorial and Federal statutes and regulations. Those laws and regulations that control activities both in the water and on the land which might impact the proposed sanctuary are identified and described below. This section provides an overview of those relevant laws and enforcement agencies.

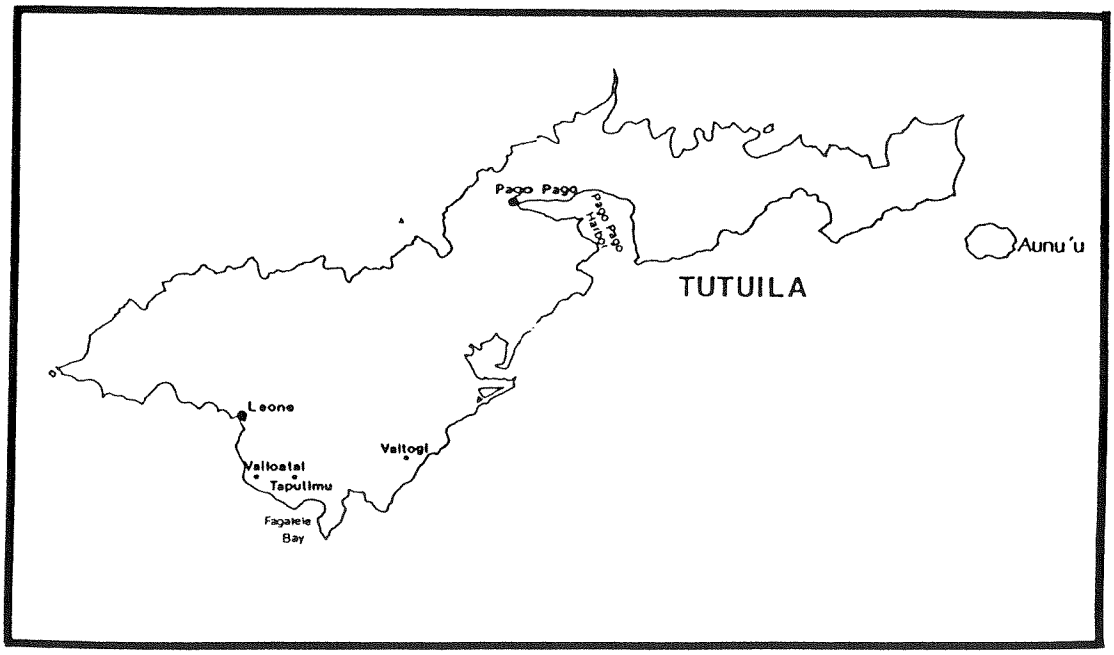


Figure 4. Fagatele Bay and Surrounding Villages

2. Territorial and Federal Laws

American Samoa is an unincorporated Territory of the United States in which most, but not all, of the Articles of the U.S. Constitution apply. In its consideration of specific legislation, the Congress may include or exclude the territories. American authority resides with the Secretary of the U.S. Department of the Interior, as delegated by President Truman in 1951. Prior to that time, the U.S. Navy administered the islands as a Territory of the United States. The citizens of American Samoa are U.S. nationals who may visit or emigrate to the U.S. without passports and who may apply for full U.S. citizenship after establishing U.S. residency. American Samoa citizens elect their own Governor and legislative representatives.

The Territorial government is semi-autonomous, rather than a branch of the U.S. Government, and operates under a constitution adopted in 1960. It obtains revenues from Congressional appropriations as well as local income and excise taxes. The Territorial Government is represented in Washington, D.C. through a Congressman, an office created in 1970.

The Territorial Government is an American-styled system with three branches. The Executive Branch is headed by an elected Governor. A bicameral Legislature, the Fono, has law-making authority under the Territorial constitution. Members of the House of Representatives are elected for two-year terms and may include residents of all social strata. Senators are registered chiefs who are selected by County Councils for four-year terms. The judicial branch includes a High Court and five District Courts. For administrative purposes, the Government of American Samoa operates at the local level through a network of 51 villages, 14 counties, and three districts. The system is administered by the Government's Office of Samoan Affairs. The officials representing the local units have limited authority but are delegated tasks and serve as liaisons between the Territorial government and local residents.

The traditional Samoan lifestyle is known as Fa'a Samoa and places great importance on the dignity and achievements of the group rather than on individual achievements (see Appendix C). The traditional communal lifestyle revolves around the aiga, or extended family. The aiga is headed by a selected matai, or chief, who manages the communal economy, protects and distributes family lands, is responsible for the welfare of all in his aiga, and represents the family in councils.

The traditional system of land tenure in American Samoa is based on communal lands held by aigas. The claim of each aiga is recognized and respected by every other aiga; the land belongs to a particular aiga and land is rarely transferred for any purpose. Land alienation laws aimed at preserving this Samoan system have existed since the first U.S. Navy administration in 1900. The laws have been so effective in protecting communal Samoan land ownership that 92 percent of all land is still communally owned by aigas, a

fraction of one percent has a freehold status and may be sold only to those with 50 percent or more Samoan blood, and the remaining 7 percent of the land is held about equally by the Government of American Samoa and churches. Thus, more than 99 percent of all land in American Samoa belongs to the people.

Pursuant to Federal Public Law 93-435, the American Samoa Government owns all submerged lands from the mean high tide line out to the limit of the territorial sea, including the mineral rights (Omnibus Territory Bill, signed March, 1980 by the President of the United States).

a. Territorial Authorities

While it is recognized that the regulations governing the sanctuary will be Federal regulations, it is instructive to review the existing authorities of American Samoa which may be applicable for inclusion in Federal regulations. Current regulation of Samoa's marine environment is limited by existing authorities. The Territory regulates the discharge of effluent or other pollutants into ocean waters, and prohibits the use of poison or dynamite to harvest fish or other living marine resources. In addition, many village councils informally regulate use of reefs adjacent to their villages in accordance with customary (noncodified) Samoan law under which villages control adjacent reef flats.

The discussion below briefly describes the various authorities which may be applicable to sanctuary management.

Executive Order 3-80 (Appendix B), which established the American Samoa Coastal Management Program (ASCMP), contains 16 policies which govern the use of Samoa's coastal zone, including Fagatele Bay and the entire territorial sea. Implementation of those policies is provided for in Section 4 of the Executive Order, which directs "all departments, offices, agencies, and instrumentalities of the American Samoa Government... [to] act consistent with territorial coastal zone management policies." In order to ensure that the Government's various components did act consistently with the policies, Section 3 of the Order vested the American Samoa Development Planning Office (DPO) with authority "to designate uses subject to management and to review, comment upon, approve, or disapprove... all applications for permits for uses, developments, or activities which in any way whatsoever impact the American Samoa Coastal Zone." Section 5 of the Order authorized DPO to propose regulations to the Governor which DPO considers "necessary and proper for the effective implementation of (Executive Order 3-80). The ASCMP policies provide the substantive basis for promulgation of generic and/or site-specific regulations. Of the 16 ASCMP policies, six have direct relevance to the management of the proposed sanctuary: Reef Protection, Marine Resources, Unique Areas, Shoreline Development, Territorial Administration, and Recreation/Shorefront Access. The objectives (goals) which these policies are designed to promote are also included in the Executive Order and are reproduced below.

Reef Protection: Protect and restore coral reefs.

Marine Resources: Protect marine resources for present and future generations.

Unique Areas: Protect unique areas and their values from insensitive development.

Shoreline Development: Assure that lands adjacent to the sea are developed in a way least damaging to coastal resources.

Territorial Administration: Provide more effective and sensitive administration of laws, regulations, and programs.

Recreation/Shorefront Access: Improve and increase recreation opportunities and shorefront access for both residents and visitors.

Executive Order 3-80 (Section 2) also specifically recognized and provided for establishment of Special Management Areas in Samoa's Coastal Zone. As described in Chapter VI of the ASCMP document, Special Areas are designated to call attention to the importance of a site and to provide additional, intensive management in areas that are environmentally sensitive or may be subject to intense development pressure in the near future. Special Area designation proposals are reviewed by DPO and the Governor, who has the exclusive authority to designate such areas and adopt policies and, if deemed necessary, regulations to govern uses in Special Areas consistent with the purposes for which the Special Area is being designated.

Under Section 6 of Executive Order 3-80, the Department of Public Works (DPW) receives applications for dredge, fill, and excavation permits which affect all of Samoa's waters. DPW must obtain the approval of all agencies with jurisdiction over such waters and water-bottoms before it may issue such permits.

Also under Section 6, the Environmental Quality Commission (EQC) is charged with issuing water quality certifications, pursuant to Section 401 of the Federal Clean Water Act (CWA) on behalf of the ASG. Such a certification states that proposed discharges into Samoan waters comply with certain provisions of the CWA and the water quality standards adopted by the territory and approved by the Environmental Protection Agency (EPA). Section 401(d) of the CWA authorizes the EQC to use the certifications to attach conditions to permits granted by EPA and the Corps of Engineers (COE) under Sections 402 and 404 of the CWA when such conditions are necessary to assure compliance with any "appropriate requirement of...law," including Executive Order 3-80 or any other territorial law (e.g., an Executive Order establishing a Fagatele Bay Special Area). (Section 402 of the CWA establishes the NPDES--National Pollution Discharge Elimination System; Section 404 establishes a Federal permit system for the discharge of any fill material into waters or wetlands of the U.S.). Under the authority of Title 13 of the American Samoa Code, the EQC has adopted air and water quality standards for the territory and instituted a permit system to regulate the discharge of pollutants into American Samoa's atmospheric or aquatic environments.

Under Title 32 of the American Samoa Code, the recently established American Samoa Department of Parks and Recreation (DPR) is authorized to classify (i.e., zone) all areas within the American Samoa Parks System. Title 32 specifically includes the benthic environment, from mean high water line to the 10 fathom line, in the parks system. The parks system may be expanded to include other land and water areas in the territories. Five land classifications are provided, including Natural Reserves, which are to remain unimproved; and Conservation Preserves, which may be improved for the purpose of making them accessible to the public in a manner consistent with the preservation of their natural features. DPR is authorized to "grant permits and charge fees (for the use of) any part of the park system". Violation of park rules subjects the transgressor to punishment by fines and/or imprisonment.

Public Law 16-58 prohibits the use of poison in territorial waters and provides for punishment by fines and/or imprisonment.

Executive Order 1-70 prohibits all but U.S. vessels from exploiting the living marine resources in Samoa's territorial sea, unless the commander of a foreign vessel first receives the written approval of the territorial governor.

b. Federal Authorities

Like territorial authorities, Federal programs vary greatly in approach and scope, ranging from broad-based legislation providing for resource management such as the Fishery Conservation and Management Act to control of specific threats and protection of specific resources.

The following Federal laws and regulations are known to be enforceable in the waters proposed for national marine sanctuary designation in American Samoa.

(1) Clean Water Act (CWA) (33 U.S.C. 1251 et seq.)

The Clean Water Act (CWA) establishes the basic scheme for restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters. The CWA contains two basic mechanisms for preventing water pollution: (1) the regulation of discharges from known sources, and (2) the regulation of oil and hazardous substances discharges. The Act also regulates the disposal of vessel sewage and dredged material.

(a) Discharges

The CWA's chief mechanism for preventing and reducing water pollution is the National Pollutant Discharge Elimination System (NPDES), administered by EPA. Under the NPDES program, a permit is required for the discharge of any pollutant from a point source into navigable waters (which include State waters, the contiguous zone, and the ocean). EPA can delegate NPDES permitting to the State for state waters.

(b) Oil Pollution

Discharges of oil and hazardous substances in harmful quantities are prohibited by the CWA. When such discharges do occur, the National Contingency Plan (NCP) for the removal of oil and hazardous substance discharges, will take effect. The Coast Guard, in cooperation with EPA, administers the Plan, which applies to all discharges of oil in the contiguous zone and to activities under the Outer Continental Shelf Lands Act. The NCP establishes the organizational framework whereby oil spills are to be cleaned up.

(c) Recreational Vessels

The CWA (33 U.S.C. §1322) requires recreational vessels with toilet facilities to contain operable marine sanitation devices. The regulations state that boats, 65 feet in length and under, may use either Type I, II, or III MSD's which must be certified by the Coast Guard. Types I and II are chemical treatment devices and Type III is a holding tank. The CWA requires non-commercial crafts to comply with marine sanitation device regulations issued by EPA and enforced by the U.S. Coast Guard.

(d) Dredging and Discharging Dredged Materials

Section 404 permits, from the Army Corps of Engineers (based on EPA developed guidelines), are required prior to filling and/or discharging dredged materials within three miles of shore including wetloads, or the transportation of dredged material for the purpose of dumping it into ocean waters.

(2) Marine Protection, Research, and Sanctuaries Act of 1972, Title I, (33 U.S.C. 1401 et seq.)

The Ocean Dumping Act prohibits the dumping of certain toxic materials into the ocean waters and regulates the dumping of other materials into such waters. Section 101 prohibits the transportation of any materials from within or outside the U.S. for the purpose of dumping them into ocean waters without a permit from EPA (or the Corps in the case of dredge material disposal).

(3) Marine Mammal Protection Act of 1972 (MMPA) (16 U.S.C. 1361 et seq.)

The MMPA applies to U.S. citizens and foreign nationals subject to U.S. jurisdiction and is designed to protect all species of marine mammals. The MMPA is jointly implemented by the National Marine Fisheries Service (NMFS), which is responsible for whales, porpoises, and pinnipeds other than the walrus,

and the Department of the Interior's Fish and Wildlife Service (FWS), which is responsible for all other marine mammals. The Marine Mammal Commission advises these implementing agencies and sponsors relevant scientific research. The primary management features of the Act include: (1) a moratorium on the "taking" of marine mammals; (2) the development of a management approach designed to achieve an "optimum sustainable population" for all species of population stocks of marine mammals; and (3) protection of populations determined to be "depleted."

(4) The Rivers and Harbors Act (33 U.S.C. 401 et seq.)

Section 10 (33 U.S.C. 403) prohibits the unauthorized obstruction of navigable waters of the United States. The construction of any structure in the territorial sea or on the outer continental shelf is prohibited without a permit from the U.S. Army Corps of Engineers (COE). The COE will not issue a Section 10 permit unless construction or obstruction has been found to be consistent with the American Samoa Coastal Zone Management Program.

Section 13 of the Rivers and Harbors Act (33 U.S.C. §407, the Refuse Act) prohibits the discharge of refuse and other substances into navigable waters, but has been largely superceded by the CWA. In effect, such discharges are regulated under this section only insofar as they affect navigation or anchoring.

(5) Fishery Conservation and Management Act of 1976 (FCMA) (16 U.S.C. et seq.)

The FCMA authorizes regional fishery management councils to provide for the conservation and management of all fishery resources in the zone generally extending 3 to 200 miles offshore (the zone beyond the territorial sea). The National Marine Fisheries Service establishes guidelines and approves fishery management plans for selected fisheries. These plans outline the management measures needed for a fishery to achieve the objectives of the plan, which are to determine levels of sport and commercial fishing for achieving and maintaining an optimal yield. Review of the plans are made in cooperation with the Department of State, U.S. Coast Guard, and other agencies concerned in any particular case. If they meet the guidelines established, they are approved by the Secretary of Commerce, although this action is delegated in most cases to the Assistant Administrator for Fisheries. The Western Pacific Regional Fishery Management Council is responsible for the area outside the territorial waters of American Samoa. There are no fishery management plans or other fisheries projects planned for the proposed sanctuary area at the present time.

(6) Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531-1543 et seq.)

The Endangered Species Act of 1973 (ESA) provides protection for listed species of marine mammals, birds, fish, invertebrates, and plants. The USFWS and NMFS determine which species need protection and maintain a list of endangered and threatened species. The most significant protection provided by the ESA is the prohibition on taking of listed species. The term "take" is defined broadly to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage such conduct"

(16 U.S.C. 1532 (14)). The FWS regulations interpret the term "harm" to include significant environmental modification or degradation and acts which annoy listed species to such an extent as to significantly disrupt essential behavior patterns (50 CFR 17.3).

The ESA also protects endangered species and their habitats. This is accomplished through a consultation process designed to insure that projects authorized, funded, or carried out by the Federal agencies do not jeopardize the continued existence of endangered or threatened species or "result in the destruction or modification of habitat of such species which are determined by the Secretary (of the Interior or Commerce) to be critical" (16 U.S.C. 1536). Critical habitat for endangered species is designated by the FWS or NMFS depending on the species.

(7) Coastal Zone Management Act of 1972 (16 U.S.C. 1451 et seq.)

In 1972, Congress passed the Coastal Zone Management Act (CZMA) in response to public concern about balancing needs for preservation and development in coastal areas. The Act authorizes a Federal grant-in-aid program to be administered by the Secretary of Commerce, who in turn delegated this responsibility to NOAA's Assistant Administrator for Ocean Services and Coastal Zone Management.

The CZMA was substantively amended on July 16, 1976 (P.L. 94-370) and on October 1, 1980 (P.L. 96-464). The Act and its amendments affirm a national interest in the effective protection and careful development of the coastal zone, by providing assistance and encouragement to coastal states and territories with the means for achieving these objectives.

Broad guidelines and the basic requirements of the CZMA provide the necessary direction to states for developing their coastal management programs. The program development and approval regulations are contained in 15 CFR Part 923, revised and published March 28, 1979, in the Federal Register.

The American Samoa Coastal Management Program (ASCMP) was approved September 29, 1980 and announced in the Federal Register on October 29, 1980 (45 FR 71640). The ASCMP provides a comprehensive management program for coastal lands and waters as well as uses of these areas.

3. Enforcement

a. Department of Parks and Recreation

The area of the proposed sanctuary is under the jurisdiction of the ASG with the main enforcement agency being the American Samoa Department of Parks and Recreation (DPR). Under Title 32 of the American Samoa Code, the DPR is authorized to classify all areas within the American Samoa Parks System and enforce regulations promulgated under their authority.

Section 32 ASC 205 provides that "all land including underwater land, and water areas of the Territory of American Samoa extending from the mean high waterline seaward to ten fathoms is included in the park system and

be administered...in accordance with Section 204..." This "seashore reserve" provision is an especially important means for the preservation of the most important reef areas in nearshore waters.

32 ASC 206(b) authorizes DPR to "grant permits and charge fees to individuals ...to...use any part of the parks system." Section 208 further provides that "any person who injures or damages any property within the parks system, or who removes, destroys or defaces any...attraction of any nature on or in that property..." is punishable by a fine.

Finally, 32 ASC 401 establishes a Parks and Recreation Commission appointed by the Governor which succeeds the former Board of the same name and the duties it had. The former Board had the authority under 29 ASC 1218(b) to approve the erection of structures along those shorelines zoned "recreation conservation." On October 13, 1982, the DPR designated Fagatele Bay as a Marine Park to be included in the American Samoa Park System.

The authorities discussed above provide for the control of all lands including most submerged lands and waters of the Territority. The Development Planning Office will review all applications for zone classifications, variances and permit actions, as well as determine, in cooperation with the agencies administering these authorities, how the authorities can best guide development and uses to appropriate locations.

b. Federal Coordination

Although the Department of the Interior has administrative oversight of the Territority of American Samoa, there is only a limited amount of direct Federal involvement there. The Federal government owns no land on American Samoa except for an uninhabited atoll 150 miles from Tutuila. The limited amount of Federally-leased land is used for standard Federal operations, including airport administration, weather stations, military recruiting, and the Post Office. There are no military installations in the Territory, nor any energy facilities serving an area outside the Territory. The primary Federal agencies with interests in American Samoa are resource protection oriented. With the exception of the U.S. Coast Guard, all relevant Federal authorities concerned with Federal resource protection laws have their offices located over 2000 miles away in Honolulu, or over 4000 miles away in Seattle or San Francisco. Due to this lack of a continual presence, enforcement of Federal resource protection laws is irregular at the Federal level.

E. Issues and Problems Associated with the Resources of the Proposed FBNMS

This section focuses on the issues and problems associated with the resources that are important to the ecology of the proposed sanctuary, that are valuable to man, and that are threatened or potentially threatened. Discussed are the enforcement of resource protection statutes, public awareness and information, the coral reef ecosystem, threatened and endangered species, and water quality and population growth. How the management of the sanctuary will address these roles is presented later in this chapter.

1. Issues and Problems Associated with Enforcement

Both Federal and Territorial agencies are responsible for enforcing resource protection statutes and regulations in the area of the proposed sanctuary: DPR, U.S. Coast Guard, U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS). However, lack of sufficient enforcement personnel, coordination among the enforcement agencies, and Federal enforcement presence is hampering effective resource protection.

The territorial agency responsible for enforcement in coastal and marine waters is the DPR. This recently established department and its enforcement division have the authority to enforce regulations that have been promulgated under the American Samoa Parks System as well as those pertaining to fish and game. Although still in the formative stages, it is foreseen that DPR will have an effective enforcement presence in the Fagatele Bay area, as it has recently been declared a marine park.

NMFS and FWS do not have a continual presence in American Samoa. The nearest offices, located in Honolulu, over 2000 miles away, make enforcement of Federal statutes nearly impossible at the Federal level. Although the U.S. Coast Guard does have a presence in American Samoa, its limited number of units and numerous responsibilities limit its ability to perform daily patrols of the proposed sanctuary as part of its routine activities. However, the lighthouse located at Steps Point on the eastern edge of Fagatele Bay requires some routine maintenance by the U.S. Coast Guard. It is during these maintenance checks that they may have the opportunity to check for violations of Federal laws.

2. Issues and Problems Associated with Public Awareness and Information

Relatively little educational information is provided to the general public and visitors regarding Fagatele Bay's pristine marine environment. Neither information nor a coordinative and comprehensive approach to providing this information, or other literature is readily available at any educational level. Although the ASCMP, in cooperation with the American Samoa Department of Education, conducts reef walk programs for youths, the lack of published information and general access to the proposed sanctuary area restricts them from including Fagatele Bay's pristine ecosystem as part of their program.

3. Issues and Problems Associated with Coral Reefs

Human impact on the Fagatele Bay ecosystem has been minimal. However, with increased visitor use, it is likely that human activities will affect the reefs within the bay. Although not documented in American Samoa, it is known that dredging around coral weakens the fragile framework of the reef and causes colony fragmentation while anchor damage from fishing, boating, diving and other recreational activities among similar Hawaiian reefs can be severe (Maragos, et al., 1977). Specific regulations promulgated to protect the bay's benthic environment (such as providing mooring buoys and prohibiting the taking of live and dead coral) will lessen human impact on the ecosystem.

In late 1978, a crown-of-thorns starfish infestation devastated the coral reefs around Tutuila, including Fagatele Bay. Although a problem of Pacific-wide magnitude, the causes of such infestations and the recovery process

of corals after such a perturbation has not been thoroughly studied. The pristine environment of Fagatele Bay presents a unique opportunity to study *in situ* the restoration and recovery process of coral reefs that have been affected by crown-of-thorns starfish. Results of such studies will provide a better understanding of tropical coral reefs and will result in more sophisticated and efficient management techniques.

4. Issues and Problems Associated with Threatened and Endangered Species

a. Sea turtles

The threatened green sea turtle (*Chelonia mydas*) and the endangered hawksbill turtle (*Eretmochelys imbricata*) are known to frequent the waters of Fagatele Bay. The sheltered bay provides an ideal foraging area for these species. Other occasional visitors to the bay include the threatened olive ridley (*Lepidochelys olivacea*) and loggerhead (*Caretta caretta*) turtles and the endangered leatherback turtle (*Dermochelys coriacea*). Although it is not known to what extent these animals are caught by fishermen, all these species are protected under the Federal Endangered Species Act (ESA). However, due to insufficient personnel, enforcement of the ESA is presently inadequate.

b. Marine Mammals

Each year from July through October, a segment of the southern hemisphere population of the endangered humpback whales (*Megaptera novaeangeliae*) can be found in the vicinity of Fagatele Bay. An occasional visitor to the offshore waters seaward of Fagatele Bay is the endangered sperm whale (*Physeter catodon*). Both species of great whales are protected under the ESA and Marine Mammal Protection Act. Again, present enforcement of Federal laws regarding these species is almost non-existent.

5. Issues and Problems Associated with Population Growth

As with other islands in the land-poor Pacific, there is an increasing demand for flat land suitable for cultivation and construction. Although modern public works and the emerging cash economy are displacing the need to settle in traditional patterns, the land adjacent to the shorefront continues to experience intense development pressure. To meet these demands, many reef and mangrove areas have been filled in other Pacific islands as well as in American Samoa, often by Federal agencies or under Federal permits. Though the Federal and territorial governments now have policies and authorities in place to prevent such actions, enhanced public understanding of the importance of maintaining healthy coral reef ecosystems is needed to complement the laws and ensure that they are not weakened as the need for additional flat lands increases.

F. Implications for Management

Should Fagatele Bay be granted sanctuary status, the resulting management activities will address some of the problems associated with the area's natural resources. Some will be addressed through the surveillance and enforcement program while others will be approached through the Interpretive and Resource Studies Plans. The following highlights those management

strategies as they apply to resources and related issues and problems. More detail is found under the individual sections of the management plan:

Interpretive Program, Administration and Operations, and the Resource Studies Plan.

The Interpretive Program will:

- Raise public awareness concerning the value of marine resources, the importance of coral reef ecology, and the role healthy reefs play in enhancing fishery resources;
- Provide a coordinated curriculum development program between American Samoa, Hawaii, Guam, the South Pacific Commission, and other agencies throughout the Western Pacific;
- Provide a Visitor/Interpretive Center;
- Inform the public about the crown-of-thorns starfish and their role in coral reef ecology; and
- Encourage compatible recreational activities, such as snorkeling, SCUBA, underwater photography, swimming, sports fishing, and boating.

The Resource Studies Plan will:

- Provide information on the life-history and ecology of the crown-of-thorns starfish that will aid in the development of coral reef management techniques;
- Evaluate the long-term effects of coral destruction by the crown-of-thorns starfish;
- Monitor and assess restoration and recovery processes of coral reefs that have experienced natural perturbations;
- Provide baseline data on the fish, invertebrate, and algal populations of Fagatele Bay;
- Encourage cooperative research projects between those institutions and agencies concerned with the crown-of-thorns starfish problem; and
- Assess the long-term chronic effects of toxins, such as heavy metals, petroleum hydrocarbons, pesticides and other chlorinated hydrocarbons, and nutrients from sewage and other land drainage.

The Administration and Operations Program will:

- Provide administrative staff to manage resources of the proposed FBNMS;

- Provide a focus for coordination between DPO, OMR, DPR, the Department of Education (DOE), and other relevant territorial agencies concerned with resource management;

- Provide a focus for coordination between territorial and Federal resource management agencies; and

- Provide a coordinated enforcement effort with regard to Federal and territorial resource protection statutes, including:

    1. prohibiting the taking of corals or bottom formations except by permit for scientific or educational purposes;

    2. prohibiting the harvesting of the crown-of-thorns starfish, except by permit for scientific or educational purposes, to allow for controlled research on its life history;

    3. prohibiting commercial fishing in selected areas;

    4. prohibiting the use of fishing poles, handlines seines, trawls, trammel nets, or any fixed net, and the use of poisons, dynamite, and spearguns for sport and subsistence fishing;

    5. prohibiting the discharge of any pollutant or material, including flushing of ships' tanks and disposal of items overboard, except as authorized for scientific or educational purposes;

    6. prohibiting the disturbance of the benthic community by dredging, filling, dynamiting, and trawling; and

    7. prohibiting taking by harassment of marine mammals and endangered species as defined by the Marine Mammal Protection Act and Endangered Species Act.

Some existing or potential land-use issues such as any development upland of Fagatele Bay are beyond the scope of sanctuary authority. However, the onsite sanctuary manager would work cooperatively with the appropriate agencies involved to minimize the potential impacts to the proposed sanctuary.

PART III. MANAGEMENT MEASURES

One of the principal purposes for designating the proposed Fagatele Bay National Marine Sanctuary is to enhance resource protection through the development of a comprehensive management plan tailored to the specific goals of the National Marine Sanctuary Program and the area's unusual and significant resources. Implementation of such a management plan involves coordination of a variety of activities that affect the proposed sanctuary. Such a comprehensive and long-term management program is not available through any other agency currently operating in American Samoa.

This part of the plan presents the strategies for managing the proposed site as a national marine sanctuary. Management measures include the Goals and Objectives, Boundaries, Sanctuary Administration and Operation, Interpretive Program and Resource Studies Plan for the proposed sanctuary. These strategies have been developed following the national goals for the program and emphasize maximum compatible public use combined with long-term resource protection. In addition, the program has been based on the analysis and assessment of the resources and attempts to address and remedy some of the issues and problems raised in Part II, Management Context.

The Management Plan for the proposed Fagatele Bay National Marine Sanctuary spans a period of five years. This will allow sufficient time for the development of certain aspects of the Interpretive Program, hiring of personnel, the development of an Interpretive/Visitors Center, and implementation of the Resource Studies Plan.

Section A, Goals and Objectives, provides the framework from which the rest of the management strategies develop. Information of importance in formulating the objectives and all consequent policies includes the resource data collected and evaluated. The goals and objectives direct the activities towards the dual purposes of public use and resource conservation and are consistent with the intent of the national program. In Section B, Sanctuary Administration and Operation, the roles of the various agencies and personnel involved with the operations of the sanctuary are discussed. The proposed regulations and a discussion on the mechanisms to be used in enforcement and surveillance are also included.

In Section C, the Interpretive Program provides information on how the proposed sanctuary will inform and educate the public about the resources of Fagatele Bay while providing an enjoyable recreational experience. The Resource Studies Plan, outlined in Section D, is aimed at providing the necessary data on the resources and human impacts on the area upon which sound management decisions can be based.

A. Sanctuary Goals and Objectives

The primary effect of sanctuary designation will be the implementation of a comprehensive management plan that is designed to realize the goals of sanctuary designation. The goals and objectives for the Fagatele Bay National Marine Sanctuary are an extension of the rationale for establishing such a sanctuary. The following goals constitute the long-range, non-time specific mission of the proposed sanctuary:

Goal 1: Protect and preserve Fagatele Bay's natural resources and pristine character.

Goal 2: Expand public awareness and understanding of marine environments found in the warm waters of the Pacific Ocean, and thereby foster a marine conservation ethic.

Goal 3: Expand scientific understanding of marine ecosystems found in the warm waters of the Pacific Ocean, especially coral reefs that have been infested by the crown-of-thorns starfish, and apply scientific knowledge to the development of improved resource management techniques.

Goal 4: Allow uses of the sanctuary that are compatible with Goals 1-3 above; give highest priority to subsistence and public recreational uses.

The following objectives represent short-term, measurable steps which will be undertaken in pursuit of full realization of each goal.

01. Coordinate and, where necessary, refine administration of existing authorities by responsible government agencies to ensure that the sanctuary's resource values, including its pristine character, are protected and preserved.

    a. Upon sanctuary designation, create and periodically convene a Fagatele Bay Research Coordinating Commitee.

    b. Under the auspices of the committee, monitor and, if necessary, improve the coordinated exercise of sanctuary research, as described in the Final Management Plan. Secure a boat as necessary to monitor and enforce proper uses of the sanctuary.

    c. Under the auspices of the committee and the ASCMP, review and, if necessary, revise existing regulations of land-based activities which may affect Fagatele Bay and explore alternatives to regulation.

    d. Install one or more anchor buoys to protect the benthic community following a determination by the committee that the need for such buoys exists and that their installation will not interfere with realization of the sanctuary goals (e.g., by promoting excessive use of the bay thereby threatening maintenance of its pristine character, or disrupting ongoing scientific studies).

02. Develop and implement a comprehensive public awareness program designed to promote understanding of the natural and human resource values of Fagatele Bay and marine environments.

    a. Develop and implement a curriculum program that will expand understanding of the sanctuary and marine environments for use in Samoan schools.

b. Develop a public outreach program for Samoans and visitors.

c. Establish links with similar marine reserve efforts located in the warm waters of the Pacific and encourage cross-fertilization of public awareness program ideas.

d. Construct an interpretive center for the public that describes and explains the natural and human resource values of the sanctuary and the marine environment.

e. Facilitate access to the sanctuary for public awareness purposes by developing a boat launch and mooring site in Leone Bay and acquiring a boat suitable for the public awareness program's needs.

03. Establish a coordinated research program for the sanctuary.

a. Upon sanctuary designation, establish a Fagatele Bay Research Committee to monitor, assist, and, if necessary, improve the coordinated research efforts conducted in accordance with the five-year research agenda included in the Final Management Plan.

b. Facilitate access to the sanctuary for scientific research purposes by developing a boat launching and mooring site and acquiring a boat suitable for the research program's needs (see Objective 02e).

04. Promote other sanctuary uses, including subsistence and public recreation, which are deemed compatible with Goals 1-3, and monitor such uses to ensure that they do not interfere with the realization of those goals.

a. Facilitate access to the sanctuary for subsistence and recreational uses by developing a boat launch and mooring site (see Objective 02e and 03b).

b. Facilitate access to the sanctuary and protect the benthic community by installing one or more anchor buoys in Fagatele Bay, following a determination by the committee that the need for buoys exists and that they will not interfere with realization of sanctuary goals (see Objective 01.d)

c. Facilitate access to the sanctuary by seeking to develop an overland access route to the sanctuary if deemed feasible and prudent by the committee. Explore the purchase of access and/or limited development easements from adjacent land holders.

B. Sanctuary Administration and Operation

This section of the management plan describes the roles of the agencies that would be involved in sanctuary operations and proposes strategies to coordinate their activities and to provide for periodic evaluation of the effectiveness of the management plan.

The various aspects of the roles of the American Samoa Development Planning Office (DPO) and NOAA are described in the Designation Document (Appendix A) which acts as a "constitution" for the proposed sanctuary as well as an interagency agreement between DPO and NOAA which specifically designates DPO as the lead agency for onsite implementation of the management plan. The Designation Document can only be modified by going through the entire designation process again, including a draft and final environmental impact statement and presidential approval.

1. National Oceanic and Atmospheric Administration (NOAA)

The Administrator of NOAA has the primary responsibility for the National Marine Sanctuary Program (Program) pursuant to the delegation of authority from the Secretary of the U.S. Department of Commerce. The Program is administered by the Sanctuary Programs Division (SPD) within the Office of Ocean and Coastal Resource Management, National Ocean Service, NOAA. SPD's responsibilities with regard to the proposed Fagatele Bay National Marine Sanctuary are to:

- o Develop, and revise as necessary, policy statements, concerning the Program and site-specific sanctuary management issues; synthesize, analyze, and resolve sanctuary management problems and issues over time;

- o Coordinate national Program activities with those of the proposed Fagatele Bay NMS; ensure that the sanctuary is operated in a manner consistent with established Program policies, and with applicable national, international, state, and local laws, and recommend changes if necessary; cooperate and provide guidance to sanctuary managers including conveying information requests, policy statements, and directives;

- o Develop, and revise as necessary, guidelines for the development of the sanctuary's management plan;

- o Develop in cooperation with the onsite manager comprehensive, long-term management plans for the sanctuary; and revise the management plan as necessary; and

- o Advise and assist the sanctuary manager in the implementation of management plans as necessary.

    - Advise and assist the sanctuary manager or other contractors to conduct appropriate baseline studies or other research, education/interpretive and recreation programs;

    - Advise and assist the manager in preparing a cost/benefit analysis of proposed or existing management and regulatory activities;

    - Evaluate effectiveness of sanctuary management and regulatory regimes; and

- Review recommendations by the onsite manager and take appropriate action.

o Prepare Program budget for the sanctuary.

- Determine how the budget for new or existing resources (such as capital and research) can be allocated;

- Advise and assist the onsite manager in the preparation and administration of the sanctuary budget; and

- Monitor the sanctuary's financial performance, including transferred funds, contracted studies, and management grants and contracts.

o Review and grant permits, with the recommendations of Director of DPO, for activities to ensure consistency with sanctuary regulations, and provide additional technical review where necessary;

o Establish a data management capability (i.e., storage and retrieval) for information collected on the sanctuary and transfer relevant information and data from one sanctuary to another and make information available to the public; and

o Pursue in cooperation with the manager the establishment of a Sanctuary Research Committee.

- Approve committee chairperson and vice chairperson;

- Approve or reappoint committee members;

- Assist sanctuary manager in convening Committee meetings and review and approve agenda of topics to be addressed; and

- Review recommendations of the Committee and take appropriate action.

o Coordinate with Federal and Territorial government agencies, as well as the various matai, and public, private and international entities concerning protection and management of marine resources.

2. Development Planning Office

The American Samoa Development Planning Office (DPO) shall act as the onsite manager for the proposed Fagatele Bay National Marine Sanctuary and carry out the local day-to-day responsibilities for sanctuary management in accordance with the site-specific management plan. Their responsibilities are as follows:

o Assist in the preparation, evaluation, and necessary revision of the comprehensive, long-term management plan for the proposed sanctuary;

o Implement the management plan:

- Coordinate a monitoring program to obtain information on natural resources and human activities in the sanctuary over time;

- Make recommendations on environmental assessment, research, user activities, interpretation and information programs, and recreation;

- Coordinate and cooperate with interested parties in research, monitoring, interpretation and recreational activities in the sanctuary;

- Establish a data management capability for information collected on the sanctuary compatible with the national Program data management system;

- Coordinate with NOAA/SPD in the review of research proposals and permit requests; develop and coordinate an onsite process for reviewing and evaluating research proposals and permit requests, ensuring input from concerned individuals, interest groups, and Territorial agencies;

- Publicize the sanctuary as appropriate and develop a local constituency by means of brochures, presentations, structured events, articles for publication, and other activities consistent with the management plan;

- In cooperation with NOAA, establish and operate a sanctuary information center, if feasible, to increase public awareness and appreciation for the resources of the sanctuary and provide information and interpretive services; and

- Provide quarterly reports on (1) administrative activities; (2) research committee meetings; (3) environmental quality of the sanctuary area; (4) research activities; (5) interpretive program; (6) surveillance and enforcement; and (7) additional or future management needs.

o Establish a Sanctuary Research Committee (SRC) as approved by NOAA:

- Maintain contact with committee members and initiate periodic mailings to committee members announcing sanctuary activities;

- Convene SRC meetings and prepare agenda of topics to be addressed; and

- Review recommendations of the SRC and recommend appropriate action to NOAA/SPD.

o Ensure that onsite management activities are consistent with applicable state and local laws, rules and regulations; and

- o Coordinate with territorial agencies, organizations and private citizens concerning sanctuary management.

a. Sanctuary Manager

The sanctuary manager shall be hired within the first year of operations, and will be the primary spokesperson for the sanctuary at the onsite level. The manager will report to the Chief of the SPD. The sanctuary manager's duties will include:

- o Acting as direct liaison between the Territory and NOAA on sanctuary related issues;
- o Coordinating the various parties involved in sanctuary activities, the Director of DPO, NOAA, DPR, OMR, and the public;
- o Monitoring plans for land and water development around Fagatele Bay that may affect the proposed sanctuary;
- o Reviewing existing regulations and proposed rules, regulations, and permit procedures and recommending modifications and revisions.
- o Disseminating information about the national marine sanctuary program (for assessing public opinion and reaction to the sanctuary);
- o Overseeing development of any facilities constructed for the proposed sanctuary, awarding contracts, and reviewing site analyses and design specifications, securing leases, easements, etc.;
- o Developing detailed surveillance and enforcement designs for the sanctuary, including equipment and staffing needs and patrol schedules;
- o Overseeing day-to-day operations of the sanctuary, including administrative functions such as bookkeeping, financial, personnel, visitor record keeping, and purchasing;
- o Supervising sanctuary staff and other staff assigned to the sanctuary, including the activities of the rangers, maintenance workers, and interpretive employees;
- o Representing the sanctuary viewpoint on local issues and at public forums;
- o Working with Federal, territorial, and village authorities to prevent activities outside the sanctuary which might adversely impact sanctuary waters;
- o Commenting on any requests for permits to conduct prohibited activities (such as coral and crown-of-thorns starfish collection); and
- o Providing technical training to sanctuary staff and enforcement personnel.
- o Recording whale sitings and reporting them to the appropriate agencies.

b. Staffing Levels

Management of the proposed sanctuary will rely partially on the use of existing DPO and DPR personnel as well as hiring new personnel as part of the proposed sanctuary management. During the first year, a sanctuary manager and an assistant manager or secretary will be hired. The sanctuary staff will work with DPR enforcement personnel in providing enforcement and surveillance in the area of the proposed sanctuary. DPR, in turn, will provide enforcement training for sanctuary staff. The details of further staffing needs will be determined during the first year of operation.

c. Sanctuary Research Committee

In the interest of providing a mechanism for ensuring a coordinated effort in the area of management-related research among interested parties, a Sanctuary Research Committee will be established as part of the implementation plan. This committee will provide a review mechanism in which the types of research and proposals to conduct research in Fagatele Bay will be coordinated with sanctuary goals. The following representatives will make up the Sanctuary Research Committee: Sanctuary Manager, NOAA Representative, Director of DPO, and a representative from the scientific community.

The Committee will operate under the following guidelines:

- The Committee will meet at least two times per year;
- The Committee will be limited to no less than four (4) and no greater than six (6) members to assure a workable and productive body;
- Committee members will be asked to serve three year terms with the initial appointments being staggered to ensure continual Committee action and expertise. The Committee chairperson and vice chairperson will be selected to serve one-year terms;
- The Director of DPO will appoint the chairperson with NOAA approval;
- Criteria for committee membership will require selection of individuals who are experts in specific fields and whose judgement would be objective, not subject to a conflict of interest due to a particular affiliation; and
- The onsite manager will maintain close contact with the comittee. Committee members will be advised of sanctuary activities through periodic mailings or meetings with the onsite manager.

3. Sanctuary Headquarters/Visitor Center Facilities

In order to ensure that local citizens and visitors to the FBNMS gain a better understanding and appreciation of the rich natural resources of Fagatele Bay and provide a center of operations for sanctuary management, a Headquarters/Visitor Center will be constructed or incorporated into existing facilities. At a minimum, the site will be large enough to house the sanctuary manager, provide room for displays such as posters and aquaria, and provide space for presentations and lectures to small audiences. Although the exact site has yet to be chosen, it will be near either the Leone area or possibly at the American Samoa Community College in Mapusaga. During the first two years of operation, a site selection process and feasibility study will be undertaken. Local ideas and comment will be considered in the final decision.

Construction of the facility, if desireable, will begin during the second or third year of operations. It will house the regular and part-time staff and provide an orientation and information facility for visitors and village residents. As the focal point for the proposed sanctuary, it will offer information and orientation programs for visitors and schools alike. As part of the center's activities, brochures will be given to all visitors and films, lectures, slide shows, and other visual presentations focused on the resources of Fagatele Bay and the need for the wise use of its resources will be used.

4. Surveillance and Enforcement Program

a. General Enforcement Responsibilities

The DPR enforcement officers will be designated as the primary enforcement authority for the FBNMS and enforce sanctuary regulations. The officers will carry out these enforcement duties in coordination with other members of the FBNMS staff. Details of the surveillance and enforcement plan, such as patrol schedules and any necessary interagency agreements, will be developed during the first and second years of operation. A high priority will be placed on training the officers in both enforcement and education techniques.

While patrolling the waters of the FBNMS, the officers will check the condition of equipment such as buoys and other markers and report problems to the sanctuary manager in order to maintain facilities essential to the safety of sanctuary visitors. They will perform search and rescue operations and other emergency procedures within the proposed boundaries, an important part of their duties.

The sanctuary manager will train sanctuary staff and volunteers to recognize situations within the proposed sanctuary which could potentially threaten environmental quality and to identify their causes. The manager will also train the staff to assist all law enforcement agents with missions within the proposed sanctuary boundaries. This surveillance activity will deserve the highest priority. Enlistment of all staff volunteers to become part of this "early warning system" will be essential to the program. All sanctuary staff and volunteers will be trained to report problems and potential violations in an organized, effective manner to the proper authorities.

b. Stage I

Upon designation, the DPR will assign enforcement officers to the FBNMS to establish an enforcement presence. The officer(s) will cover Western Tutuila as well as the proposed sanctuary area. During the first year, a needs assessment will be prepared and a detailed enforcement schedule developed.

c. Stage II

During Stage II (year 2 of operations), sanctuary enforcement operations will be evaluated and the necessary changes made.

d. Sanctuary Regulations

1. Introduction

These regulations were developed to address the resource issues and problems discussed in Part II, Management Context, and protect resource values which make the proposed FBNMS an important natural ecosystem.

The boundaries of the proposed sanctuary are delineated in Section 941.4. Section 941.6 establishes DPO as the lead agency in the administration of the Sanctuary and DPR as the enforcement entity responsible for controlling the activities outlined in Section 941.8. These regulations provide Federal penalties for the violation of sanctuary regulations.

Section 941.10 establishes penalties for committing violations of these regulations. Section 941.11 provides for permits to undertake otherwise prohibited activities for scientific and educational purposes while Section 941.11 (b) outlines the guidelines for submission of permit applications. Section 941.12 provides procedures for administrative appeals if a permit is denied.

Activities that do not harm or deplete the resources, including subsistence fishing, recreational diving, underwater photography, and non-destructive research and interpretive activities are not regulated and are encouraged as they are consistent with sanctuary goals.

The final sanctuary regulations that appear on the following pages will be promulgated and announced in the Federal Register.

PART 941 - FAGATELE BAY NATIONAL MARINE SANCTUARY PROPOSED REGULATIONS

Sec.

Authority: Title III of Pub. L. 92-532, 86 Stat. 1061, 1062 (16 U.S.C. 1431-1434).

941.1 Authority

The Sanctuary has been designated by the Secretary of Commerce pursuant to the authority of Section 302(a) of the Marine Protection, Research and Sanctuaries Act of 1972 as amended (the Act). The following regulations are issued pursuant to Title III of the Act.

941.2 Purpose

The purpose of designating the Fagatele Bay National Marine Sanctuary is to protect a unique deepwater terrace formation and a coral reef ecosystem representative of the warm water tropical Pacific Islands in its natural state and to regulate uses within the Sanctuary to ensure the health and integrity of the ecosystem and its associated flora and fauna.

941.3 Scope of regulations

The provisions of this Part apply only to the area defined by regulation as the Fagatele Bay National Marine Sanctuary (the Sanctuary). Neither these provisions nor any permit issued under its authority shall be construed

to relieve a person from any other requirements imposed by statute or regulation of the Territory of American Samoa or of the United States. In addition, no statute or regulation of the Territory of American Samoa shall be construed to relieve a person from the restrictions, conditions, and requirements contained in this Part.

941.4 Boundaries

The Sanctuary is a 163-acre (.25 sq. mi.) coastal embayment formed by a collapsed volcanic crater on the island of Tutuila, American Samoa. The site is divided into two Subzones, A and B, and includes Fagatele Bay in its entirety up to mean high high water (MHHW). The seaward boundaries are defined by straight lines between the following points:

Point	Pt. No.	Subzone	Latitude	Longitude
Fagatele Point	1-1	A	14° 22' 15" S	170° 46' 5" W
Matautuloa Benchmark	1-2	A	14° 22' 18" S	170° 45' 35" W
Fagatele Point	2-1	B	14° 22' 15" S	170° 46' 5" W
Steps Point	2-2	B	14° 22' 44" S	170° 45' 27" W

941.5 Definitions

(a) "Administrator" means the Administrator of the National Oceanic and Atmospheric Administration (NOAA).

(b) "Assistant Administrator" means the Assistant Administrator for Ocean Services and Coastal Zone Management, National Ocean Service, National Oceanic and Atmospheric Administration, or his or her successor, or designee.

(c) "Benthic Community" means the assemblage of organisms, substrate, and structural formations found at or near the bottom that is periodically or permanently covered by water.

(d) "Commercial Fishing" means any activity that results in the sale or trade for intended profit of fish, shellfish, algae, or corals.

(e) "Cultural Resources" means any historical or cultural feature, including archaeological sites, historic structures, shipwrecks, and artifacts.

(f) "Designation" means the action taken by the Secretary of Commerce, to prescribe through a Designation Document and implementing rules and regulations, the terms for establishing the Sanctuary.

(g) "Director" means Director of the Development Planning Office, Territory of American Samoa or the head of any successor agency.

(h) "The Management Plan" means the document that outlines the day-to-day operations of the Fagatele Bay National Marine Sanctuary and

includes but is not limited to provisions for Research, Interpretation, Surveillance and Enforcement, and Administration.

(i) "Permit" means any document issued under Federal or territorial authority, signed by an authorized official, and specifying the permitted actions.

(j) "Persons" means any private individual, partnership, corporation, or other entity; or any officer, employee, agent, department, agency or instrumentality of the Federal Government, or any State or local unit of government.

(k) "The Sanctuary" means the Fagatele Bay National Marine Sanctuary.

(l) "Secretary" means the Secretary of Commerce, or his or her successor or designee.

941.6 Management and enforcement

The National Oceanic and Atmospheric Administration (NOAA) has primary responsibility for the management of the Sanctuary pursuant to the Act. The American Samoa Development Planning Office (DPO) will assist NOAA in the administration of the Sanctuary, and act as the lead agency, in conformance with the Designation Document, these regulations, and the terms and provisions of any grant or cooperative agreement. The American Samoa Department of Parks and Recreation (DPR) shall conduct surveillance within the Sanctuary and shall enforce these regulations pursuant to 14 U.S.C. 89, 16 U.S.C. 1432(f)(4), 16 U.S.C. 7421(b), 16 U.S.C. 3375(a), or other appropriate legal authority.

941.7 Allowed activities

All activities except those specifically prohibited by Section 941.8 may be carried out within the Sanctuary subject to all prohibitions, restrictions, and conditions imposed by other authorities.

941.8 Activities prohibited or controlled

(a) Unless permitted by the Assistant Administrator in accordance with Section 941.11, or as may be necessary for national defense, or to respond to an emergency threatening life, property or the environment, the following activities are prohibited or controlled in Subzones A and B of the Sanctuary. All prohibitions and controls will be applied consistently with international law. Refer to Section 941.10 for penalties for commission of prohibited acts.

(1) Taking and Damaging Natural Resources

(i) No person shall gather, break, cut, damage, destroy or possess in the Sanctuary any invertebrate, coral, bottom formation, or marine plant including any species listed as threatened or endangered under federal or territorial law.

(ii) No person shall gather, cut, damage, destroy or possess in the Sanctuary any crown-of-thorns starfish (Acanthaster planci).

(iii) No person shall possess or use toxic chemicals, poisons electrical charges, explosives, or similar environmentally destructive methods.

(iv) No person shall possess or use spearguns, including such devices known as Hawaiian slings, pole spears, arbalettes, pneumatic and spring-loaded spearguns, bows and arrows, and bang sticks.

(v) No person shall possess or use seines, trammel or trawl nets, thrownets, or any standing net of the type commonly referred to as gill nets.

(vi) There shall be a rebuttable presumption that any items listed in these paragraphs found in the possession of a person within the Sanctuary have been used, collected, or removed from within the Sanctuary.

(2) Operation of Vessels

(i) No vessel shall approach closer than 200 feet to a vessel displaying a dive flag except at a maximum speed of three knots.

(ii) All vessels from which diving operations are being conducted shall fly in a conspicuous manner the international code flag alpha "A."

(iii) All vessels shall be operated to avoid striking or otherwise causing damage to the natural features of the Sanctuary.

(3) Discharges. No person shall litter, deposit, or discharge any materials or substances of any kind into the waters of the Sanctuary.

(4) Disturbance of the Benthic Community. No person shall dredge, fill, dynamite, and bottom trawl or otherwise disturb the benthic community in the waters of the Sanctuary.

(5) Removing or Damaging Cultural Resources. No person shall remove, damage, or tamper with any historical or cultural resource within the boundaries of the Sanctuary.

(6) Use of Dangerous Weapons. Except for law enforcement purposes, no person shall use or discharge explosives or weapons of any description within the Sanctuary boundaries. Distress signaling devices, necessary and proper for safe vessel operation, and knives generally used by fishermen and swimmers are not considered weapons for purposes of this Subsection.

(7) Other Prohibitions. No person shall mark, deface, or damage in any way, or displace or remove or tamper with any signs, notices, or placards, whether temporary or permanent, or with any monuments, stakes, posts, or other boundary markers related to the Sanctuary.

(b) In addition to those activities prohibited or controlled in accordance with Section 941.8(a), the following activities are prohibited or controlled in

Subzone A:

(1) No person shall possess or use fishing poles or handlines.

(2) Commercial fishing shall be prohibited.

941.9 Other Authorities

No license, permit or other authorization issued pursuant to any other authority may validly authorize any activity prohibited by Section 941.8 unless such activity meets the criteria stated in Section 941.11(a), (c) and (d), and is specifically authorized by the Assistant Administrator.

941.10 Penalties for commission of prohibited acts

Section 303 of the Act authorizes the assessment of a civil penalty of not more than $50,000 for each violation of any regulation issued pursuant to the Act, and further authorizes a proceeding in rem against any vessel used in violation of any such regulation. NOAA will apply to all enforcement matters under the Act, the consolidated civil procedure regulations set forth at 15 CFR 904.100 through 904.243, and the seizure, forfeiture, and disposal procedure regulations set forth at 50 CFR Part 219.

941.11 Permit procedures and criteria

Under special circumstances where an activity otherwise prohibited by Section 941.8 of these regulations is required for research or educational purposes designed to enhance understanding of the Sanctuary environment or to improve resource management decisionmaking, and the activity is judged not to cause long-term or irreparable harm to the resources, a permit may be granted by NOAA in cooperation with DPO.

(a) Any person in possession of a valid permit issued by the Assistant Administrator after consultation with the Director in accordance with this Section may conduct the specified activity in the Sanctuary if such activity is: (1) related to research involving Sanctuary resources; (2) to further the educational value of the Sanctuary; or (3) for salvage or recovery operations.

(b) Permit applications shall be addressed to the Assistant Administrator for Ocean Services and Coastal Zone Management, ATTN: Sanctuary Programs Division, National Ocean Service, National Oceanic and Atmospheric Administration, 3300 Whitehaven Street, N.W., Washington, D.C. 20235. An application shall include a description of all proposed activities, the equipment, methods, and personnel involved, and a timetable for completion of the proposed activity. Copies of all other required licenses or permits shall be attached.

This information collection has been approved by the Office of Management and Budget (approval number 0648-0141).

(c) In considering whether to grant a permit, the Assistant Administrator shall evaluate such matters as: (1) the general professional and

financial responsibility of the applicant; (2) the appropriateness of the methods being proposed for the purpose(s) of the activity; (3) the extent to which the conduct of any permitted activity may diminish or enhance the value of the Sanctuary as a source of recreation, education, or scientific information; and (4) the end value of the activity.

(d) Permits may be issued by the Assistant Administrator for activities otherwise prohibited under Section 941.8. In addition to meeting the criteria in Section 941.11(a) and (c), the applicant must also satisfactorily demonstrate to the Assistant Administrator that: (1) the activity shall be conducted with adequate safeguards for the environment; and (2) the environment shall be returned to the condition which existed before the activity occurred. A permit issued according to these provisions shall be appropriately conditioned and the activity monitored to ensure compliance.

(e) In considering an application submitted pursuant to this Section, the Assistant Administrator shall seek and consider the view of the Sanctuary Manager and Director. The Assistant Administrator may also seek and consider the views of any other person or entity, within or outside of the Territorial Government, and may hold a public hearing, as he or she deems appropriate.

(f) The Assistant Administrator may, at his or her discretion, grant a permit which has been applied for pursuant to this Section, in whole or in part, and subject the permit to such condition(s) as the Assistant Administrator deems necessary. A permit granted for research related to the Sanctuary may include, but is not limited to, to the following conditions: (1) the Assistant Administrator, Director, or their designated representatives may observe any activity permitted by this Section; (2) any information obtained in the research site shall be made available to the public; and (3) the submission of one or more reports of the status of progress of such activity may be required.

(g) A permit granted pursuant to this Section is non-transferrable.

(h) The Assistant Administrator may amend, suspend, or revoke a permit granted pursuant to this Section, in whole or in part, temporarily or indefinitely, if the applicant or permit holder has acted in violation of the terms of the permit or regulations, or for other good cause shown. Any such action shall be communicated in writing to the applicant or permit holder and shall set forth the reason(s) for the action taken. Procedures governing permit sanctions and denials for enforcement reasons are found at Subpart D of 15 CFR Part 904.

941.12 Appeal of Permit Action

(a) Except for permit actions which are imposed for enforcement reasons and covered by the procedures at Subpart D of 15 CRF Part 904, an applicant for a permit, the permittee, or any other interested person (hereafter Appellant) may appeal the granting, denial, conditioning or suspension of any permit under Section 941.11 to the Administrator of NOAA. In order to be considered by the Administrator, such appeal must be in writing, must state the action(s) appealed and the reason(s) therefor, and must be submitted within 30 days of the action(s) by the Assistant Administrator. The Appellant may request an informal hearing on the appeal.

(b) Upon receipt of an appeal authorized by this Section, the Administrator may request the Appellant to submit such additional information and in such form as will allow action upon the appeal. The Administrator shall decide the appeal using the criteria set out in Section 941.11(a), (c) and (d) and any information relative to the application on file, any information provided by the Appellant, and such other consideration as is deemed appropriate. The Administrator shall notify the Appellant of the final decision and the reason(s) therefor, in writing normally within 30 days of the date of the receipt of adequate information required to make the decision.

(c) If a hearing is requested, or if the Administrator determines that one is appropriate, the Administrator may grant an informal hearing before a Hearing Officer appointed for that purpose. The Apellant and other interested persons may appear personally or by counsel at the hearing and submit material and present arguments as determined appropriate by the Hearing Officer. Within 30 days of the last day of the hearing, the Hearing Officer shall recommend a decision in writing to the Administrator.

(d) The Administrator may adopt the Hearing Officer's recommended decision, in whole or in part, or may reject or modify it. In any event, the Administrator shall notify the interested persons of his or her decision, and the reason(s) therefor in writing within 30 days of receipt of the recommended decision of the Hearing Officer. The Administrator's decision shall constitute final action for the Agency for the purposes of the Administrative Procedure Act.

(e) Any time limit prescribed in this Section may be extended by the Administrator for good cause for a period not to exceed 30 days, either upon his or her own motion or upon written request from the Appellant, permit applicant or Holder, stating the reason(s) therefor.

C. Interpretive Program

1. Introduction

This section of the Management Plan establishes a framework for the Interpretive Program of the proposed Fagatele Bay National Marine Sanctuary. The goal of this program is to expand public awareness and understanding of tropical marine environments found in the Pacific and thereby foster a conservation ethic. In pursuit of this goal, the main objective will be to develop and implement a comprehensive public awareness program designed to promote understanding of the natural and human resource values of Fagatele Bay and other marine systems. The program will be administered in close cooperation with affected villages and users of the proposed sanctuary to encourage wise use and a better appreciation of the island's marine resources. Working in conjunction with DPO and the American Samoa Department of Education, the sanctuary manager will plan and initiate recreational and informational activities which will be compatible with sanctuary goals and objectives.

Although surrounded by water and dependent on the sea as a major source of protein, it is not commonly recognized by many island people that the health of the ecosystem and the continued availability of its resources are intimately linked. It is also a common misconception among non-islanders that all island inhabitants are keenly aware of the ecology, utility, and vitality of their surrounding coral reef ecosystems, often resulting in poor management practices. In addressing this problem, the Interpretive Program will focus on selected topics in order to educate the public about resource issues and concerns by expanding their understanding of the natural environment and how humans may impact upon it. Interpretation of this complex ecosystem will allow visitors to better understand and enhance their appreciation and enjoyment of the sanctuary and generate concern for the protection of its resources. Audiovisual materials, publications, exhibits, and activities, prepared in both Samoan and/or English, will aid in providing the essential information that leads to increased knowledge and understanding of this pristine ecosystem. The awareness of the human and social value of natural systems will enable visitors to better understand some of the issues and problems related to the sanctuary and how human actions may affect it in both positive and negative ways. Exhibits and media presentations will inform the public and visitors about coral reefs and issues that affect them, such as water quality degradation and natural perturbations. The program will also stress the importance of maintaining the biological integrity of such systems, thus enabling people to recognize the need to conserve natural resources. Media presentations will focus the public's attention on the value of ecosystem maintenance to the biological productivity of coral reefs and their importance to the protection of coastal property.

Information on sanctuary rules and regulations will inform the public of regulated activities. Exhibits and audiovisual programs will focus on the natural resource issue of coral loss due to dredging, filling, sedimentation, and pollution to show the importance and fragility of coral reef ecosystems. Information on rare, threatened, and endangered species will focus people's attention on the importance of the various habitats to the continuing existence of such species, thereby providing a fundamental approach to understanding the relationship of species and habitats to the overall health of the ecosystem.

2. Methods and Approach

This section establishes the actions planned for structuring interpretation of the sanctuary. It describes the projects and sets out preliminary priorities according to present needs. Although a wide range of actions are listed, NOAA can fund only a portion of them each year. Sanctuary management will seek other sources to fund priority projects. Coordination between the following entities will facilitate implementation of the program: American Samoa Department of Education (DOE), American Samoa Community College (ASCC), Department of Parks and Recreation (DPR), the University of Hawaii, and the Development Planning Office (DPO).

In addressing the major topic of ecosystem maintenance and preservation, the following methods are planned to carry the message of the proposed sanctuary to the general public throughout American Samoa, as well as to visitors and users. Specific programs will have to be developed by the sanctuary manager and incorporated into the management plan after designation.

Stage I, years 1 and 2 of operation, will focus on identifying the sanctuary to the public and disseminating that information. Stage II (years 3-5) will expand on Stage I to include other areas outside the sanctuary and emphasize the cultural and historic aspects of the site.

The Interpretive Program spans five years and will be updated annually. The following actions are proposed for this program:

Stage I - Sanctuary Identification and Information Dissemination

Action 1.1: User Profile Preparation
Action 1.2: Develop and Implement Curriculum Program
Action 1.3: Develop Public Outreach Program
Action 1.4: Preparation of Resource List
Action 1.5: Development of Interpretive Center
Action 1.6: Integration with Resource Studies

Stage II - Expansion of Stage I and Incorporation of Cultural and Historic Aspects

Action 2.1: Establish Link with other Marine Reserve Systems
Action 2.2: Natural History and Cultural Interpretation
Action 2.3: Interpretation of On-Going Projects
Action 2.4: Preparation of Year-Round Schedule

Stage I

I. Action 1.1: Prepare a Detailed Profile of Use of Fagatele Bay

II. Needs and Objectives

Presently, very little data regarding the current uses of Fagatele Bay exists. Information on the current usage, patterns of usage, age of the users, their cultural and economic background, length and time of visits, and other information the manager needs to incorporate into a program tailored for the users' specific needs must be gathered. Therefore, in the development of the Interpretive Program a detailed study will be conducted to gather this information.

III. Description of Proposed Action

A. Methods

Gathering information about visitor use will be an ongoing activity which will provide program personnel with the necessary data to adjust plans and activities. In order to begin the Interpretive Program as soon as possible, the manager and sanctuary staff will work with local expertise in developing a census of the current users while recognizing that adjustments should be made when additional data become available.

B. Products

1. A comprehensive report on use patterns in Fagatele Bay that can be used in the formulation and implementation of a user education program.

C. Related Interpretive Actions

1. Action 1.3

D. Timing/Phasing: 3 months

Stage I

I. Action 1.2: Curriculum Program Development

II. Needs and Objectives

In the American Samoa school system, general information on marine science is part of its curriculum. However, the opportunity to participate in field work relating to marine science is lacking due to limited access to undisturbed areas like Fagatele Bay. The development of a curriculum that includes a field area to provide "hands-on" experiences for students is needed.

III. Description of Proposed Action

A. Methods

The sanctuary manager will work closely with specialists from the DOE and ASCC in the development of a curriculum that can be intergrated with

courses currently being taught in schools. The curriculum will revolve around the use of Fagatele Bay as a field laboratory to complement classroom work at all levels, including the ASCC.

B. Products

1. A report outlining a curriculum designed to include Fagatele Bay as the focal point for marine science courses at the elementary, high school, and community college levels.

C. Related Interpretive Actions

1. Action 1.3
2. Action 1.6
3. Action 2.4

D. Timing/Phasing: 1 year, with continual updating as needed

Stage I

I. Action 1.3: Public Outreach Program

II. Needs and Objectives

Presently, there are no continuing education programs that address the issues of marine conservation and resource management. Beyond what is taught in the school system, there is no mechanism to bring this type of information to the general population other than through the news media. Therefore, a program designed to reach those beyond the school setting is desireable.

III. Description of Proposed Action

A. Methods

Similar to Action 1.2, the sanctuary manager will work with specialists from the DOE and ASCC in formulating a public outreach program. Programs and techniques similar to those used in the Cooperative Extension Service and the Sea Grant Advisory Service will be evaluated for their appropriateness. Emphasis will be on developing portable exhibits and formulating a slide/lecture series for both offsite and onsite activities. These interpretive tools will focus on marine resource management issues as well as recreational and public safety aspects.

B. Products

1. A comprehensive report delineating the interpretive needs of the general public.

2. A set of portable exhibits for offsite interpretive activities.

3. A slide/lecture series for onsite and offsite use.

4. A map showing the sanctuary location and pointing out its major features with directions by land and water.

C. Related Interpretive Actions

1. Action 1.1
2. Action 1.2
3. Action 1.5
4. Action 2.4

D. Timing/Phasing: 6 months, with continual updating as needed

Stage I

I. Action 1.4: Resource List Preparation

II. Needs and Objectives

Dissemination of basic information about the sanctuary ranks a high priority. However, the types of interpretive programs and exhibits to be presented in the initial phase of sanctuary operations will depend to some extent on the facilities and other resources that are available. For example, although visitor center exhibits may not be possible immediately, portable displays will be developed for both onsite and offsite interpretive activities. A center of operation where visitors receive information about sanctuary activities, from which programs emanate and in which staff prepare exhibits, store materials and administer the sanctuary are essential from the outset.

Included among the factors to be considered in gathering future information are:

1. the amount of knowledge about the sanctuary that visitors have prior to their visit;

2. what users expect from their visits;

3. what kind of activities they engage in while in the sanctuary;

4. what kind of activities they would like to explore if not offered; and

5. what they did or did not enjoy about their visit.

III. Description of Proposed Action

A. Methods

In preparing the assessment of potential resources, the manager will focus on facilities, materials, and equipment.

1. Facilities

- Agreements for use of the American Samoa Community College (ASCC) or Leone High School and/or other existing

facilities on Tutuila Island by sanctuary visitors will be investigated with appropriate officials.

- o Other villages will be investigated as to the availability of buildings for adaptation as satellite interpretive program centers.

B. Products

1. An inventory of available exhibit materials and audiovisual equipment. Materials and equipment to be acquired and possible sources for them will be listed.

2. A list of persons and groups who are known to have collections of pertinent natural resources that might be loaned or donated to the sanctuary.

C. Related Interpretive Actions

1. Action 1.3
2. Action 1.5
3. Action 2.5

D. Timing/Phasing: 1 year, with continual updating as needed

Stage I

I. Action 1.5: Development of Interpretive Center

II. Needs and Objectives

Visitors to the sanctuary will need an Interpretive Center that will provide pertinent information about the sanctuary as well as serving as the focal point for interpretive activities. In conjunction with Action 1.4, Interpretive Center activities and exhibits will be developed.

III. Description of Proposed Action

A. Methods

An assessment of the spatial and programmatic needs of the Interpretive Center will be undertaken. Working with DOE and ASCC specialists and a graphic artist, sanctuary management will develop a schedule of interpretive activities and exhibits that emphasize the importance of sanctuary resources and the reasons for its designation. This group will work with other institutions such as the Waikiki Aquarium, Bernice Pauahi Bishop Museum, the University of Hawaii, and others to exchange ideas, programs, and interpretive techniques.

B. Products

1. A detailed description of Interpretive Center needs.
2. Exhibits, such as aquaria and posters, for Interpretive Center displays.

3. One or more brochures containing information such as: Interpretive Center hours, boat schedules (when appropriate), activity schedules, levels of difficulty, and equipment needs and sources. A small map of the sanctuary and surrounding villages will be included.

C. Related Interpretive Actions

1. Action 1.3
2. Action 1.4
3. Action 1.6
4. Action 2.1
5. Action 2.2
6. Action 2.3
7. Action 2.4

D. Timing/Phasing: 1 year, with continual updating as needed

Stage I

I. Action 1.6: Integration with Resource Studies Program

II. Needs and Objectives

An essential element of the Interpretive Program is the provision of a mechanism that integrates the work and results of resource studies with interpretive activities. Although much of the research conducted in the sanctuary will affect Samoans and other Pacific islanders, most of the general population will never know about the work unless a conduit is provided to bridge the gap between the scientist and the populace.

III. Description of Proposed Action

A. Methods

The exact procedures for implementing this action will be developed during Stage I. The principal investigator for each study will be responsible, in addition to the technical work, for the drafting of layman's version of individual studies suitable for use in the Interpretive Program. The investigator will continue to provide updated information for the duration of the study. The sanctuary manager will be responsible for incorporation of the material into the Interpretive Program.

B. Products

1. A draft of the procedures for implementing this action.

C. Related Interpretive Actions

1. Action 2.4

D. Timing/Phasing: 6 months for draft; 6 months for final version with continual updatine as needed.

Stage II

Since initial contact with western culture, many island areas have experienced a move away from subsistence towards a cash economy. With this trend, there has been an attendent shift in the values that once linked island people with their natural surroundings. Although cultural conditions have changed to a great extent, the natural conditions that played a major role in forming the culture have not. During Stage II (years three to five) of sanctuary management, the Interpretive Program will focus on increasing the awareness of the importance of coral reef ecosystems to everyday life in American Samoa beyond the immediate area of Fagatele Bay and developing programs that expand on the cultural and historic aspects of the site and other similar areas around American Samoa and the Pacific, emphasizing man's relationship to the ecosystem.

Stage II

I. Action 2.1: Establish Link with other Marine Reserve Systems

II. Needs and Objectives

As a newly designated National Marine Sanctuary, the problems of similar systems will be magnified without proper guidance and input. Of major importance in its formative stages will be the gathering of ideas from marine reserve systems that have become established in similar areas. Although the individual programs and problems may differ, valuable insight can be provided to avoid pitfalls that can be disastrous to such a program.

III. Description of Proposed Action

A. Methods

Although part of this work will be done during portions of Stage I, sanctuary management will make this action a high priority during Stage II. Along with DOE and ASCC specialists, the sanctuary manager will contact other similar management programs such as the State of Hawaii's Natural Areas Reserve System (NARS) and Marine Life Conservation District (MLCD) programs and the United Nations Environment Programme (UNEP), and agencies such as the International Union for Conservation of Nature and Natural Resources (IUCN) and the South Pacific Commission (SPC), to exchange ideas on interpretive activities and set up a line of communication (via newsletters and monthly activities reports) between the sanctuary and these systems.

B. Products

1. A detailed report outlining a program to establish links with other reserve systems, focusing on mechanisms to encourage cross-fertilization of ideas and development of a communication link with these systems.

C. Related Interpretive Actions

1. Action 1.4
2. Action 1.5

D. Timing/Phasing: 6 months, with continual updating as needed.

Stage II

I. Action 2.2: Cultural and Natural History Interpretation

II. Needs and Objectives

Among many island people, there exists a relationship between folklore and the conservation ethic; American Samoa is no different. However, with exposure to western thought and practice, many of these legends have lost their place in Samoan life. To promote the conservation ethic, especially among young people, stories that show the essential link between Samoans and the sea's resources will be researched and incorporated into the Interpretive Program.

III. Description of Proposed Action

A. Methods

In interpreting the natural history and culture of the area, the use of exhibits and accompanying audiovisual materials will best meet these needs. Using objects as much as possible, exhibits will provide glimpses of the natural history of the proposed sanctuary area and its adjoining waters, show the interrelationship of man and his marine environment, both past and present, and introduce visitors to the sanctuary environment. Emphasis will be placed on the fragility of coral reef ecosystems, the importance of maintaining its habitats to the ecological balance of the proposed sanctuary, and those conservation practices that man could adopt to protect these resources. In order to keep labor intensive exhibits to a minimum, audio tapes will be used, with the use of videotapes to be explored in the future.

Specific topics to be considered for exhibit purposes will be selected in consultation with the American Samoa Office of Samoan Affairs, the ASCC, the Bernice Pauahi Bishop Museum and the Waikiki Aquarium in Honolulu, and other organizations and individuals who may have artifacts that could be used in exhibits.

Literature and guidelines about sanctuary usage and safety, as well as general information about the coral reefs in the proposed sanctuary will be available at the visitor center as well as other locations.

Working with specialists from the DOE and the Bernice Pauahi Bishop Museum and Kamehameha Schools in Honolulu, sanctuary management will research Samoan and other Pacific island folklore that promotes a conservation ethic and incorporate them into the Interpretive Program at the school levels, for the general public, and at the Interpretive Center. Since the availability and applicability of many legends is unknown, the strategy for implementing this action will be developed during and after the research phase of this action.

B. Products

1. A report detailing the folklore to be used in promoting a conservation ethic complete with a written account of the themes and messages of each legend.

a conservation ethic complete with a written account of the themes and messages of each legend.

2. A comprehensive document outlining the strategy for implementing this action.

C. Related Interpretive Actions

1. Action 1.2
2. Action 1.3
3. Action 1.4
4. Action 1.5
5. Action 2.1

D. Timing/Phasing: 1 year

Stage II

I. Action 2.3: Interpretation of On-Going Projects

II. Needs and Objectives

Although a high priority is given to the interpretation of the sanctuary, the Interpretive Program must also expand its area of knowledge to include other areas around the globe. Related to Action 1.6, this will go beyond the resource studies of Fagatele Bay to include projects in similar areas throughout the Pacific. In this manner, much important information about resource management in other areas as well as the sanctuary can be transferred to people via the Interpretive Program.

III. Description of Proposed Action

A. Methods

In reaching the objective of this action, the implementation of Action 2.1 is essential. Once this has occurred, additional communication links will be established with research institutions such as the Universities of the South Pacific (Suva, Fiji), Guam, and Hawaii, and others that are in the field of tropical marine resource management. An interpretive exhibit will be set up to inform the public about these projects as well as those of the Resource Studies Plan. A series of portable mini exhibits will be developed to explain each project. As news of the projects reach sanctuary management, the results, if applicable, may be published in the local paper and broadcast on radio and television.

B. Products

1. Report detailing research projects in similar areas throughout the Pacific, complete with an outline of each project and its applicability to the sanctuary.

2. Exhibits for offsite and onsite interpretive activities.

C. Related Interpretive Actions

1. Action 1.5
2. Action 1.6

D. Timing/Phasing: 6 months, with continual updating as needed

Stage II

I. Action 2.4: Preparation of Year-Round Schedule

II. Needs and Objectives

Being located in the tropics, visitation to the sanctuary will occur throughout the year. This represents an opportunity for the sanctuary manager and staff to present the message of the sanctuary to a wide range of audiences that will include schools and groups throughout the island.

III. Description of Proposed Action

A. Methods

Working with the DOE and ASCC, the sanctuary manager will develop an outdoor exhibit displaying a map of the sanctuary area that points out its main features. To be included with this display will be photos of the various habitats, flora, and fauna of the bay along with short narratives explaining them. This exhibit will be a portable one that may be placed outside the Interpretive Center or moved to an area of specific activities, such as the Convention Center during Flag Day or taken to the various schools.

A 15-30 minute film will be prepared for offsite presentation as well as to provide an orientation for visitors by informing them about the sanctuary, its goals, and its significance to marine conservation. Its content will be oriented to a general audience and will present the significant features of the sanctuary, the importance of the coral reefs to the bay's environment, important bird nesting sites, the rules and regulations of the sanctuary, and the necessity of conserving these biological resources.

A program with slides and printed materials will be prepared for presentations to specific user groups to be selected by the sanctuary manager. Content will be oriented to the special needs and concerns of user groups such as snorkelers and SCUBA divers and subsistence fishermen.

The sanctuary manager, in consultation with the appropriate agencies and organizations, will prepare these presentations and will enlist the help of other people familiar with the topics to lead discussions.

As staffing needs will undoubtedly increase beyond available funding levels, non-paid staff will play an important role in sanctuary interpretation. To meet this need, the sanctuary manager will conduct workshops to train teachers, volunteers, and staff in interpretive methods. The manager will seek the assistance of DOE specialists and other organizations in the field of communications and natural science to aid in the preparation and

conduct of these workshops. These sessions will provide staff and volunteers with the necessary information and materials for their classroom and in the preparation for future class visits to the Interpretive Center and sanctuary site.

B. Products

1. Outdoor interpretive exhibits
2. Sanctuary information film
3. User-specific slide/lecture shows
4. Schedule and topics for volunteer workshops

C. Related Interpretive Actions

1. Action 1.2
2. Action 1.3
3. Action 1.5
4. Action 2.2
5. Action 2.3

D. Timing/Phasing: 1 year for initial products, continual updating as needed

3. Priority Projects for the FBNMS

Interpretive Program

As the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Ocean and Coastal Resource Management, Sanctuary Programs Division will fund the proposed actions depending upon availability of funds, sanctuary management will be encouraged to seek other funding sources. The following priority recommendations, based on merit rather than monetary consideration, reflect the first four years of operation. The fifth year will be used for the continual funding of priority or newly proposed projects, as determined during the course of operations.

FY	Action	Topic	Time Requirement (Est.)
84	1.1	User Profile	3 months
	1.2	Curriculum Development	1 year/continuous
	1.4	Resource List	1 year/continuous
	1.5	Interpretive Center	1 year/continuous
85	1.3	Outreach Program	6 months/continuous
	1.6	Resource Studies Interpretation	Continuous
86	2.1	Link With Other Systems	6 months/continuous
	2.2	Cultural Interpretation	1 year/continuous
	2.4	Year-Round Schedule	1 year/continuous
87	2.3	Interpretation of On-Going	6 months/continuous

D. Resource Studies Plan

1. Introduction

One of the primary purposes of establishing the proposed Fagatele Bay National Marine Sanctuary (FBNMS) is to promote and coordinate research to expand scientific knowledge of significant marine resources and improve management decisionmaking. As part of long-term, comprehensive management, research is an essential element. Designating the waters of Fagatele Bay as a national marine sanctuary will provide an excellent laboratory or control site for performing the needed research to understand and interpret the oceanic processes of the area. Projects will include, but will not be limited to, multidisciplinary studies on living marine resources (species diversity, abundance, composition, etc.); community structure and function; successional processes; and physical, chemical, geological, and meteorological conditions within the proposed sanctuary. Information gathered from these investigations will be used to further understanding of the importance of coastal resources and to develop sound coastal ecosystem management practices. Management-related research will address practical, use-oriented or "cause-and-effect" studies. Long-term monitoring and its resultant data base will provide the foundation for interpreting or predicting natural or man-induced events in the sanctuary and related areas.

2. Resource Management Units

To help the sanctuary manager, users, and others to visualize the resources and uses of the proposed sanctuary and to see how the various segments share common characteristics, yet differ from one another, it is necessary to identify these various segments, or units. Based mainly on substrate and depth, as these are the most significant physical factors contributing to the range of variation in characteristics exhibited by subtidal benthic communities, resource management units (RMUs) have been identified. These units help to establish the different opportunities and constraints for uses inherent in different segments of the proposed sanctuary as well as provide a framework for instituting different management policies throughout the area.

Fagatele Bay has been divided into four basic units based upon depth and exposure, and further divided into subunits based on substrate composition. However, many of the significant marine resources of the sanctuary may also be found throughout much of the area. Similarly, human uses are dependent only in part on substrate and depth. For this reason, the characterization of each unit provides only a general framework for analyzing the resources and uses of the sanctuary.

The following describes each RMU identified in Fagatele Bay along with their basic subunits:

Resource Management Units for Fagatele Bay, American Samoa

1. Terrestrial Unit - Seldom or never submerged and subject to little or no ocean spray.

   a. Densely Vegetated Shoreline - Characterized by a dense and diverse stand of vines, bushes, and trees offering shelter to roosting and nesting seabirds and fruitbats.

   b. Sand and Rubble Beaches - The upper portions of about four small beaches comprised of loose coral rubble and sand.

   c. Basalt Cliffs and Boulders - Rugged and often vertical basalt surfaces surround the exposed portions of the bay and provide nesting and roosting sites for a variety of seabirds.

2. Intertidal Unit - Alternately submerged and exposed by tidal and wave action and including areas subject to heavy spray.

   a. Basalt Cliffs and Boulders - The substrate is the same as that described above under 1.c. and provides habitat for a diverse assemblage of algae and invertebrates adapted to living in conditions of turbulence and heavy surge.

   b. Sand and Rubble Beaches - The beaches described above under 1. b. are largely submerged at high tide. Because of the instability of the substrate and the lack of relief, only a few crustaceans, molluscs, worms and fishes are found within this habitat.

   c. Exposed Reef Flat - A fairly well-developed fringing reef flat exists within the protected portion of the bay. The portion of the reef flat uncovered at low tide provides habitat for a number of algae and invertebrates adapted to short periods of exposure as well as to a number of fishes (especially surgeonfishes) found in the area when the flat is submerged by the tide.

3. Submerged Reef Unit - Continuously submerged to depths of 80 m.

   a. Submerged Reef Flat - Depth varies from 1/2 to 2 m. and the habitat is characterized by turbulence and breaking waves. The substrate is hard and supports a sparse coverage of corals (Pavona, Porites, Acropora, Pocillopora and Millepora). Surgeonfishes (Acanthuridae), parrotfishes (Scaridae) and damselfishes (Pomacentridae) are dominant.

   b. Reef Terrace - Depths vary from 2 to 10 m. and strong surge and currents exist in exposed areas. The substrate is hard and is composed of calcium carbonate in sheltered areas and basalt in exposed areas serving as a foundation for a large number of corals (Acorpora, Porites, Pocillopora, Montipora, etc.) of extensive coverage (30-100% before the crown-of-thorns starfish infestation). Surgeonfishes, parrotfishes and damselfishes, again, are dominant.

c. Reef Front - This habitat borders the seaward edge of the calcium carbonate reef terrace and consists of the portion of the forereef (5-40 m. deep) that slopes steeply to deepwater. Prior to the starfish infestation, the upper portions of this habitat supported the most luxurient and diverse assemblage of corals in the bay. The largest fish biomass is also found within this habitat as well as the greatest species diversity. Dominant families are those listed above under 3.b. plus the snappers (Lutjanidae).

d. Basalt Cliffs - Nearly vertical basalt cliffs and faces extending from the surface to as deep as 80 m. exist along the exposed outer portions of the bay. Strong currents and surge characterize the upper portions of this habitat but water movement decreases considerably with depth. Scattered corals grow on these walls including large fan corals at depths below 40 m. Dominant fishes belong to the families Scaridae, Pomacentridae, Lutjanidae and Acanthuridae.

4. Deep Water Unit - Depths greater than 30-80 m.

a. Pelagic Surface Water - This habitat is more or less similar to that found in the open ocean. Pelagic and semi-pelagic tunas (Scombridae), jacks (Carangidae), dolphins (Coryphaenidae) and billfishes (Istiophoridae) routinely move in and out of the surface waters of the bay.

b. Deep Bottom - A sand and rubble bottom slopes to very deep water at depths beyond the seaward edges of the reef fronts and basalt cliffs. Dominant fishes are deepwater snappers (Lutjanidae), groupers (Serranidae) and jacks (Carangidae).

3. The Plan

This section of the proposed Fagatele Bay National Marine Sanctuary Draft Management Plan establishes a long-term Resource Studies Plan for structuring marine research, resource assessment, and monitoring in Fagatele Bay. It describes needed projects and sets out priorities according to sanctuary management needs. A wide range of potential studies are listed, although NOAA can only fund a portion of them each year. Other funding sources will be sought by sanctuary management to fund priority projects. A coordination of effort will be established with the following agencies to conduct these studies: Samoa's Department of Parks and Recreation, Office of Marine Resources, and Development Planning Office, American Samoa Community College, University of Hawaii, University of Guam, the University of the South Pacific in Suva, Fiji, and the South Pacific Commission. The Resource Studies Plan spans five years and will be updated annually. The Plan describes studies that fall under four main topics:

1. Marine Ecology

2. Oceanography (physical, chemical, and geological)

3. Data and Information Management

4. Special Projects and Studies

The following studies are proposed for the Fagatele Bay National Marine Sanctuary:

Topic 1. Marine Ecology

Study 1.1: Biological Resource Description
Study 1.2: Biological Monitoring Program
Study 1.3: Plankton Survey Program

Topic 2. Oceanography

Study 2.1: Circulation Patterns
Study 2.2: Water Quality Monitoring

Topic 3. Data/Information Management

Study 3.1: Comprehensive Sanctuary Resource Data Base (Literature Search)
Study 3.2: Data/Information Management System

Topic 4. Special Projects and Studies

Study 4.1: Environmental Impacts of Human Uses on the FBNMS
Study 4.2: Field Guide to the Plants and Animals of Fagatele Bay
Study 4.3: Catch/Effort Survey of Fisheries in Fagatele Bay

TOPIC NO. 1: Marine Ecology

I. Study 1.1: Biological Resources Description

II. Information Needs and Study Objectives

Almost no baseline information exists regarding the biological resources within Fagatele Bay. The different habitats within the bay must be mapped and defined in terms of the physical and biological parameters which distinguish them. The organisms associated with each habitat must be identified and quantified so that a detailed description of community structure can be made.

III. Study Description

A. Methods

A general reconnaissance of the bay should be made through use of aerial photographs, a fathometer and visual observations using snorkeling and SCUBA equipment to assess the major features of the bay including bottom topography, degree of exposure to swell and composition of substrate. The major habitats will be delineated on the basis of the above factors plus floral and faunal composition.

Transects and/or quadrats will be established within each of the habitats. Standard enumeration techniques will be used by qualified specialists to identify and quantify substrate characteristics and the associated algae, corals, invertebrates and fishes. Transect and quadrat sites will be

permanently marked or identified to enable repeated observations at later dates in order to quantify changes in abundance and community structure on a long-term basis. Enumeration techniques will be objective and defined to the extent that they may be repeated by future observers. The methods should be as non-damaging to the resources as possible. Voucher specimens will be retained at a centralized location and be made available for study to scientists and students.

B. Products

1. A map of the major features of the bay and the boundaries of each identified habitat.

2. A detailed and quantitative description of the organisms associated with each of the habitats and an analysis of community structure.

3. A detailed description of survey techniques that can be used to monitor changes in species abundance and composition with time.

4. Permanent reference points established within each habitat to enable relocation of study sites and sampling locations.

5. A collection of voucher specimens retained at a central location and available for study.

C. Study Area: Fagatele Bay

D. Related FBNMS Studies

1. Studies 1.2 - 1.4

2. Other Related Studies

A brief survey of the flora and fauna of the bay was conducted in 1979 and documented in the American Samoa Coral Reef Inventory (Aquatic Farms and AECOS (AF & AECOS), 1980, U.S. Army Corps of Engineers, Honolulu District, prepared for the Development Planning Office, American Samoa Government, Part A: Text, Part B: Atlas, 314 pp.). More comprehensive surveys of the fishes associated with the reef flat, reef front, and basalt terrace habitats were conducted by the Office of Marine Resources, American Samoa Government, in 1977 and 1978. These data are unpublished at present.

E. Timing/Phasing: 1 year

TOPIC NO. 1: Marine Ecology

I. Study 1.2: Biological Monitoring Program

II. Information Needs and Study Objectives

An ongoing program will be established to monitor changes in the composition and structure of the biological communities associated with each of the habitats in Fagatele Bay. Particular emphasis will be placed on the

description of successional stages and measuring rates of recovery by corals and other organisms which were severely damaged by the crown-of-thorns starfish (Acanthaster planci) infestation in 1978.

III. Study Description

A. Methods

The permanent study sites and sampling stations established for each habitat during the initial description of the biological resources will be resurveyed annually by the same techniques to measure long-term changes. Corals and other organisms affected by the starfish infestation will be monitored at shorter invervals initially to document their recovery and return to normal population levels.

B. Products

1. Annual reports on the status of the biological resources within the bay. Changes in resource levels and composition will be noted and factors potentially responsible for the changes will be discussed.

2. Changes in the composition and structure of reef communities resulting from starfish infestations will be described, damages will be assessed and rates of recovery will be documented in a series of reports dealing specifically with this subject.

C. Study Area

Routine monitoring will be confined to Fagatele Bay. Efforts to assess starfish damage and reef recovery will be concentrated in the bay but may also occur in several other areas around Tutuila where damage is heavy.

D. Status

The portion of the study dealing with recovery from the effects of starfish predation should begin immediately as considerable time has already elapsed since the damage was inflicted.

E. Related FBNMS Studies

1. Study 1.1

2. Other Studies

Unpublished reports by Birkland and Randall (1979). Report on the Acanthaster planci (Almea) studies on Tutuila, American Samoa, prepared by University of Guam Marine Laboratory for the Director, Office of Marine Resources, Government of American Samoa, (53 pp. + appendices) and Wass (1978). Current status of the crown-of-thorns starfish (Acanthastaer planci = Alamea) around Tutuila Island, report to Governor P.T. Coleman, prepared by Office of Marine Resources, Government of American Samoa (7 pp. + figures),

describes the rise and fall of the starfish infestation around Tutuila and includes mention of Fagatele Bay. A report in preparation by Birkland and Randall will document the initial stages of recovery.

F. Timing/Phasing: Continual

TOPIC NO. 1: Marine Ecology

I. Study 1.3: Plankton Survey

II. Information Needs and Study Objectives

Almost no information exists regarding the plankton resources within Fagatele Bay. The different plankton communities must be described in terms of diversity, abundance, and species composition. Information is needed in the areas of species identification, life histories, temporal and spatial distribution, population and community dynamics, trophic structures and relationships, and identification of "indicator" species.

III. Study Description

A. Methods

A general survey of plankton within Fagatele Bay should be made using standard plankton sampling techniques and materials. Samples should be taken at regular intervals over the period of one year to determine periodicity and seasonality of the plankton populations. Towing patterns and periods, to be determined by the principal investigator, will be recorded on a map for future reference and to enable repeat sampling to quantify long-term changes. Standard identification techniques will be used by qualified specialists to quantify and identify the plankton collected. Voucher specimens will be retained at a centralized location and be made available for study to scientists and students.

B. Products

1. A detailed and quantitative description of the plankton of Fagatele Bay.

2. A permanent record of sampling patterns and techniques to enable repeated sampling.

3. A collection of voucher specimens retained at central location and available for future study.

C. Study Area: Fagatele Bay

D. Related FBNMS Studies

1. Studies 1.1 and 1.2

E. Timing/Phasing: 1 year

TOPIC NO. 2: Oceanography

I. Study 2.1: Circulation Patterns in Fagatele Bay

II. Information Needs and Study Objectives

The circulation patterns found in the area of the proposed sanctuary are largely unknown. Throughout other areas of the Pacific Basin, the complex physical processes associated with coastal circulation have been studied to a great extent. However, this has yet to be done specifically in Fagatele Bay. Since coastal currents are the main driving forces that contribute to the transport and distribution of sediments, pelagic larvae, marine pollution, and other water-borne elements, it is essential, from the management point of view, to gather comprehensive field data for description and quantitative analysis of the dynamic processes and water circulation pattern in and surrounding the proposed sanctuary. Sanctuary management could use this information to predict sediment movement, larval settlement and distribution patterns, and pollution transport within the bay.

III. Study Description

A. Methods

Current meters would be used to measure the direction and magnitude of currents in situ. Surface drogues containing fluorecin dye would be used to measure surface currents while drift patterns would be photographed from an airplane and tracked from shore by theodolite station. Tidal fluctuations would be measured through the use of tide gauges.

Wind frequency and magnitude are crucial factors in driving flow. It would be useful to measure its magnitude at certain locations within the sanctuary area. A small weather station should be established, possibly near the present lighthouse at Steps Point.

Wind data on frequency and magnitude would be correlated with water circulation patterns. A theoretical and statistical survey of the yearly frequency, direction, and magnitude of winds would be done for wave hindcasting procedures and wave power distribution.

B. Products

1. A map showing the major current patterns found in Fagatele Bay.

2. A detailed and quantitative description of the magnitude and direction of currents, tidal fluctuations, and wind frequency and magnitude.

3. A small, permanent weather station to gather meteorological information for the Fagatele Bay area.

C. Study Area: Fagatele Bay

D. Related FBNMS Studies

1. Study 2.2

E. Timing/Phasing: 1 year

TOPIC NO. 2: Oceanography

I. Study 2.2: Water Quality Monitoring in Fagatele Bay

II. Information Needs and Study Objectives

Although current use of Fagatele Bay is limited, designation of the area as a National Marine Sanctuary would result in increased traffic through the bay. These activities, both in the proposed sanctuary and adjacent areas, could significantly alter or change the ecological conditions presently existing in the bay. A measure of the relative ecological conditions of the waters in Fagatele Bay would be essential to sanctuary management in relating past to present practices and formulating management programs designed to control any adverse impacts that may result from future activities. To meet these needs, a water quality monitoring program should be established in Fagatele Bay to determine the presently existing condition of its waters and detect temporal changes.

III. Study Description

A. Methods

Sampling stations should be selected as representative of the aquatic area and for determining any changes in water quality in Fagatele Bay. The number of stations needed would be determined by the principal investigator.

A total of 15 physical and chemical parameters would be monitored on a monthly or bi-monthly basis to characterize the aquatic system of the bay (Table 3).

Through the use of field surveys, water use locations around the bay would be determined and a list of uses prepared. Detailed planning and implementation of the monitoring program would follow the procedures described in the "Water Operations Training Program Water Quality Surveys" (EPA, 1974).

B. Products

1. A detailed and quantitative description of the yearly cycles of physical, chemical, and biological water quality parameters in Fagatele Bay.

2. Maps, graphs, and tables to document the data.

3. Information for the proposed FBNMS Data Management System.

C. Study Area: Fagatele Bay

D. Related FBNMS Studies

1. Study 2.1

E. Timing/Phasing: Continuous, with possible modifications after year 1.

Table 3. Physical and Chemical Parameters and Suggested Frequency of Measurement for Water Quality Monitoring.

Parameter	Suggested Frequency of Measurement
Physical	
- Temperature	monthly
- Turbidity (Secchi disc)	monthly
- Salinity	bi-monthly
Chemical	
- Dissolved oxygen	bi-monthly
- Total nitrogen	monthly
- Nitrate and nitrite nitrogen	monthly
- Ammonia nitrogen	monthly
- hydrocarbons	monthly
Biological	
- Total coliform	bi-monthly
- Fecal coliform	bi-monthly
- Fecal streptoccocus	bi-monthly
- Total chlorophyll	bi-monthly
- Caratenoids	bi-monthly
- Phaeopigments	bi-monthly
- Plankton (by displacement volume)	bi-monthly

All analyses will be performed following appropriate methods given in:

- EPA manual, "Methods for the Chemical Analysis of Water and Wastes"
- "Standard Methods for the Examination of Water and Waste Water," U.S.P.H.A.
- "A Practical Handbook of Seawater Analysis"

TOPIC NO. 3: Data/Information Management

I. Study 3.1: Comprehensive Sanctuary Data Resource Base

II. Information Needs and Study Objectives

Although information regarding the resources of Fagatele Bay is very sparse studies on similar systems have been conducted in other areas of the Pacific. However, this information is scattered or unpublished, being retained by the investigators. The available information should be compiled into a central repository where it would be available to potential users and continuously updated as new information is acquired. The repository could contain information on scientific research projects, public information materials, voucher specimens, reprints from scientific and popular journals as well as unpublished reports, and much more. Also included should be pertinent management and scientific information from other reef areas, general information about the National Marine Sanctuary Program, and information regarding other marine resource management programs.

III. Study Description

A. Methods

Available data on ecosystems similar to Fagatele Bay would be analyzed to determine the types and amounts of data that would be pertinent to the proposed sanctuary. This information should be compiled, annotated, and updated as part of an historical bibliography of published and unpublished information on similar coral reef systems.

A comprehensive summary document on the research history and opportunities in coral reef research applicable to Fagatele Bay would be developed in order to put in one place the state of understanding of the various topics associated with coral reef management. This document would consist of all the known available information arranged according to an outline similar to the following:

I. General Description of the Research Area

II. Current Activities

- A. Recreation
- B. Research
- C. Management

III. Proposed Activities

IV. Climate

- A. Rainfall
- B. Temperature
- C. Relative Humidity
- D. Wind Velocity and Direction
- E. Solar Radiation

V. Hydrology

A. Water Temperature
B. Salinity
C. Dissolved Oxygen
D. ph
E. Turbidity and Transparency
F. Currents and Tides

VI. Chemistry

A. Major Nutrients
B. Minor Constituents
C. Organic Compounds
D. Hydrocarbons

VII. Geology

A. Regional Geology
B. Shelf Topography
C. Bottom Sediment Types
D. Reefs

VIII. Vegetation

A. Phytoplankton
B. Algae
C. Terrestrial and Coastal Plants

IX. Fauna

A. Zooplankton
B. Invertebrates (Higher)
C. Vertebrates

1. Fishes
2. Marine Mammals
3. Birds

X. Disturbances

A. Natural Disturbances

1. Hurricanes
2. Extraordinary Tides
3. Crown-of-Thorns Starfish Invasions
4. Floods

B. Man-Induced

1. Coastal Eutrophication
2. Chemical Pollution
3. Domestic Pollution

C. Response to Natural Stresses

D. Response to Man Induced Stresses

E. Energy Flow

IX. Conclusion

B. Products

1. Annotated bibliography of published and unpublished information pertinent to the proposed FBNMS.

2. Comprehensive document describing the extent of known knowledge coral reef ecosystems similar to Fagatele Bay.

C. Related FBNMS Studies

1. Study 3.2

D. Timing/Phasing: 1 year for initial compilation, continual for updating.

TOPIC NO. 3: Data/Information Management

I. Study 3.2: Data/Information Management System

II. Informational Needs and Study Objectives

The research and resource monitoring programs being proposed will produce a large amount of important information. It is therefore important that a comprehensive information management system be designed to process, store, and make available the information gathered for quick, efficient handling. A system designed for the Sanctuary should provide: 1) input, analysis, storage, and output of data collected in the Sanctuary and selected data from other coral reef areas; 2) reference retrieval; 3) word processing and graphics production for report preparation; and 4) communication with other systems in the National Marine Sanctuary System. The system should ensure timely availability and smooth flow of information to users.

III. Study Description

A. Methods

An information management system should be designed and implemented to incorporate information gathered by proposed, on-going, administrative activities. A special program should be developed to establish a mechanism to make information available to users. The feasibility of a computer system should be examined.

B. Products

1. A descriptive analysis of the type of information management system most appropriate for the proposed FBNMS.

2. A mechanism for efficient information retrieval and transfer.

C. Study Area:

FBNMS, UMR, and other relevant agencies in American Samoa, Guam, Hawaii, and other areas of the Pacific Basin.

D. Related FBNMS Studies
1. Study 3.1

E. Timing/Phasing: 1 year

TOPIC NO. 4: Special Projects and Studies

I. Study 4.1: Environmental Impacts of Human Uses on the FBNMS.

II. Informational Needs and Study Objectives

Although current use of Fagatele Bay is mainly limited to subsistence fishing, designation as a National Marine Sanctuary will surely increase the usage of the area. For management purposes, it would be necessary to study the effects of existing or increased levels of activities on the natural state of the environment.

Certain areas within the bay should be selected for observation and monitoring of the activities. Findings would stem from a comparison of the reef changes over a period of several years. In some cases, manipulative research may be necessary and potentially damaging to the ecosystem. In these cases, it would be recommended that they be conducted outside the sanctuary boundaries.

III. Study Description

A. Methods

In conjunction with Study 1.2, permanent study sites and sampling stations should be established following sanctuary designation. Unlike Study 1.2, this study should examine only those factors related to human usage, such as anchor damage, boating activity, diving, accidental and intentional pollution, and the like.

B. Products

1. Annual reports on the status of the sanctuary resources as they relate to human activity. Changes in resource levels and species composition will be noted and factors potentially responsible for the changes will be discussed.

C. Study Area: Fagatele Bay

D. Related FBNMS Studies

1. Study 1.2

E. Timing/Phasing: Continual

TOPIC NO. 4: Special Projects and Studies

I. Study 4.2: Catch/Effort Survey for Fisheries Resources of Fagatele Bay.

II. Informational Needs and Study Objectives

The current status of the fisheries resources in Fagatele Bay is largely unknown. The last fish survey was conducted by Wass (1978) before the crown-of-thorns starfish invasion. However, subsistence fishing still occurs within the bay. It is essential to management to obtain information on the effect the starfish invasion had on the fish resources as well as the impact of fishing upon the same resources. The former would be addressed by study 1.1. For the latter, this study should obtain information regarding the major taxa of plants and animals found within the boundaries of the Sanctuary. For maximum usefulness, the guidebook should serve as an aid to both the scientist and layperson to the classification and identification of the major floral and faunal taxa, provide a description of key aspects of their life cycles and preferred habitats, and provide additional references to related literature. The field guides should also be well-illustrated, concise, and easily understood by both technical and non-technical persons.

III. Study Description

A. Methods

Following the completion of Study 1.1, the data gathered during this part of the Resource Studies Plan will be used as a basis for the field guide. The major taxa would be identified and illustrations and photos should be made using voucher and live specimens, both in situ and/or preserved.

B. Products

1. A field guidebook to the major floral and faunal taxa of the FBNMS.

C. Study Area: Fagatele Bay

D. Other Related FBNMS Studies

E. Timing/Phasing: 1 year

4. A List of Priority Projects Proposed for the FBNMS Resource Studies Plan

The National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Ocean and Coastal Resource Management, Sanctuary Programs Division will fund the Resource Studies Plan for the proposed FBNMS over time as funds are available. The proposed sanctuary's Administration Office, with NOAA's approval, will encourage and seek other sources of funding to support the priority projects identified below. While fiscal constraints are considered in developing a yearly agenda, the recommended priority reflects the resource studies needs rather than monetary constraints.

The following priority recommendations are resource studies based on scientific and management needs:

First Year Program (FY 84)

Project	Topic	Time Requirement (Est.)
1.1	Marine Ecology	1 year
1.2	Marine Ecology	1 year/Continuous
2.1	Oceanography	1 year/Continuous
3.1	Data/Information Mgmt.	1 year/Continuous

Second Year Program (FY 85)

2.2	Oceanography	1 year
3.2	Data/Information Mgmt.	1 year

Third Year Program (FY 86)

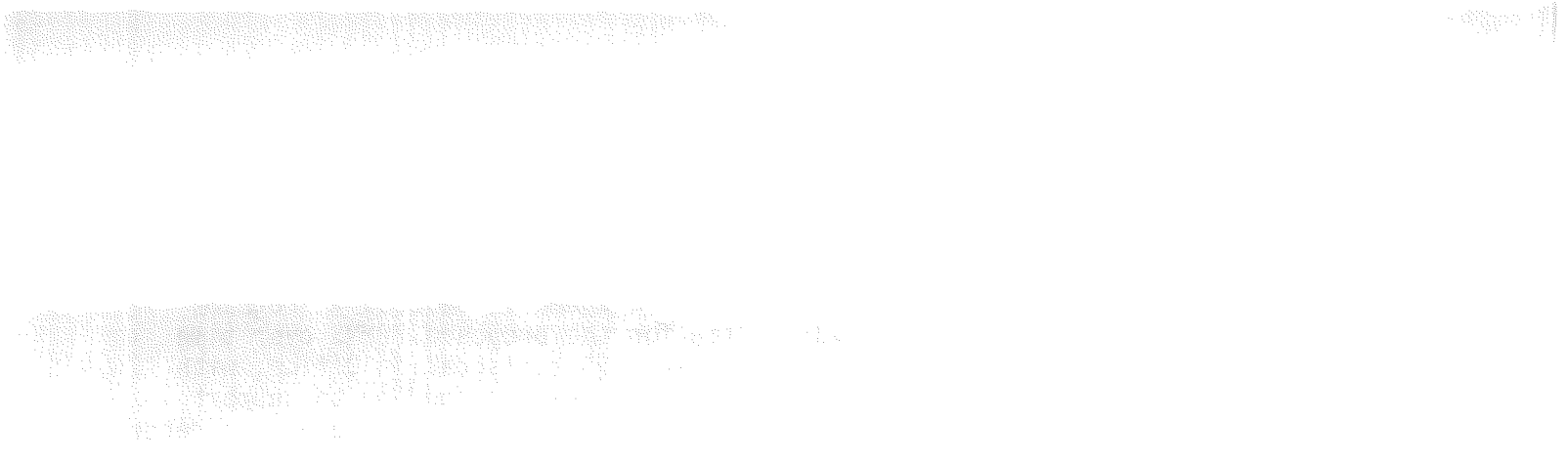
4.1	Human Uses	1 year/Continuous

Fourth Year Program (FY 87)

4.2	Human Uses	6 months

Fifth Year Program (FY 88)

4.3	Human Uses	1 year



PART IV: ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE

A. Introduction

Evaluating the proposal to designate a marine sanctuary in Fagatele Bay, American Samoa involved evaluating a range of alternatives revolving around the following major topics: (1) the need or desirability of using the provisions of Title III of the Marine Protection, Researach and Sanctuaries Act as a means to preserve and restore the pristine ecosystem of Fagatele Bay; (2) the boundaries needed to fully protect the bay's natural resources; (3) identification of the needs and concerns for long-term resource protection; and (4) the most appropriate management arrangement for achieving the intended purposes of the Designation and carrying-out the goals and objectives of the Sanctuary Management Plan. The following discussion describes the alternatives considered during the evaluation process, including NOAA's "preferred alternative" and that involving no action, or the "status quo."

B. Boundary Alternatives

During the evaluation process, a number of boundary alternatives were evaluated for the Sanctuary based upon the following: (1) current scientific information pertaining to distribution and abundance of the bay's natural resources; (2) current and anticipated levels of activity; (3) logistics for management; and (4) the availability of Federal and Territorial resources.

1. Status Quo

This alternative corresponds to the boundaries delineated by the ASG in declaring Fagatele Bay a Marine Park. Under Section 18.0205 of the American Samoa Code (Annotated), it includes "all land, including underwater land, and water areas of Fagatele Bay from the mean high water line seaward to 10 fathoms". This designation was designed to assure proper operation and maintenance of the bay as an outdoor recreation area through "enhancement of economic development, conservationally and environmentally sound land use, and preservation of viable cultures". Under the American Samoa Parks and Recreation Act of 1979, the Department of Parks and Recreation (DPR) is authorized to enforce the general regulations for all areas within the American Samoa Parks System. However, the designation itself does not carry with it any authority for DPR to promulgate new regulations specific to Fagatele Bay.

2. Boundary Option 1 (Figure 5): Inner Fagatele Bay

This alternative represents the smallest area considered for sanctuary status. Considered to be the "core" area for the Sanctuary, the emphasis in this option would be on research and interpretation of the bay proper. This option, consisting of approximately 100 acres, possesses portions of all of the resource management units.

3. Boundary Option 2 (Figure 6): NOAA's Preferred Alternative

This alternative consists of two parts, an inner and outer portion totalling 163 acres, and includes Fagatele Bay in its entirety. Representing a compromise to ensure adequate protection through enhancement of current levels of resource protection for the bay's natural resources, this alternative will satisfy a number of needs. It recognizes the necessity to protect the "core area", or inner portion of the bay, while allowing maximum compatible use within the entire bay.

Initially, all consumptive activities within the "core" will be regulated. In the outer portion, all activities will be allowed.

4. Boundary Option 3 (Figure 7): Fagatele and Fagalua (Larsen) Bays

This represents the largest alternative considered for sanctuary status. A recommendation forwarded to NOAA by the American Samoa Government's Office of Marine Resources (OMR), it consists of approximately 650 acres and includes the entirety of both Fagatele and Fagalua Bays.

B. Alternative Visitor Center/Headquarter Sites

Access to the proposed sanctuary will be provided from the Leone and Fagatele Bay areas. The proposed boat ramp for the Leone Village area will provide for water access for sanctuary activities. In order to analyze alternative sites for a visitor center/headquarters (the Center) and assess the best location, a site selection matrix was constructed. The criteria used in the matrix (Table 4) included physical attributes of the site and socio-economic concerns. Three sites were evaluated by NOAA and DPO using this matrix: The Utulei Convention/ Visitor Information Center, Leone Village, and the American Samoa Community College campus. The Convention/Visitor Information Center was dropped from consideration for the reasons discussed below.

1. Alternative Visitor Center Sites Considered

The Convention/Visitor Center is located in Utulei on the middle, western side of Pago Pago Harbor. It is approximately one quarter mile from the oil docking facilities and is no more than a few minutes walk from the Rainmaker Hotel. Although it serves as the main meeting site for various activities on Tutuila, it was not selected because of its remoteness from the proposed sanctuary (about 1 hour by boat in calm seas; 20 minutes by car), inadequate small boat facilities, and very little room for expansion or construction of facilities needed for a small boat harbor. This, however, does not preclude it from becoming an offsite interpretive facility.

2. Sites Selected for Further Discussion (Preferred Alternative)

The two remaining sites have been selected as possible sites under the preferred alternative. Both are feasible options, but more information is needed on each location before a final selection is made. This decision will be finalized during the first year of operation.

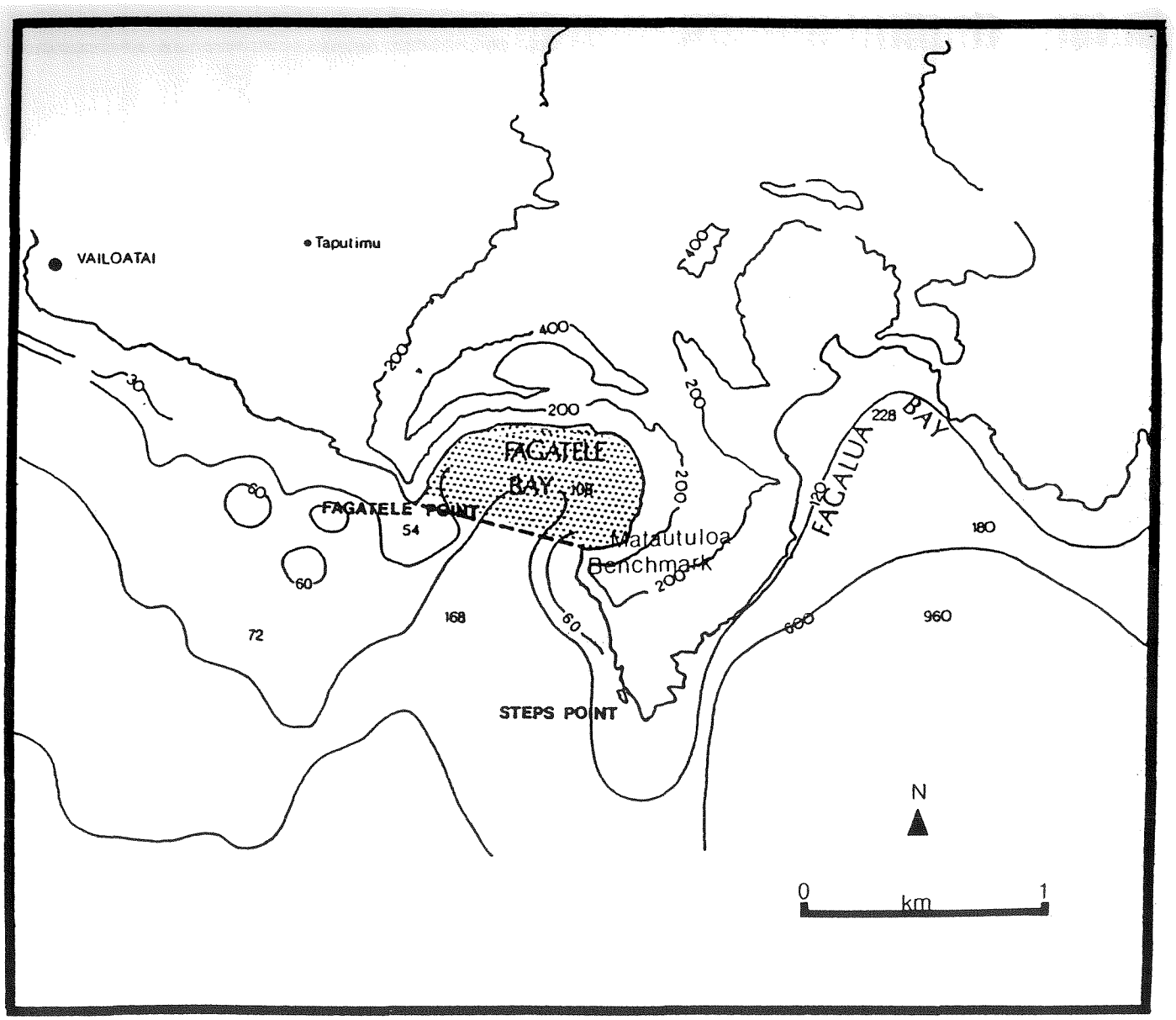


Figure 5. Boundary Option 1. Inner Fagatele Bay

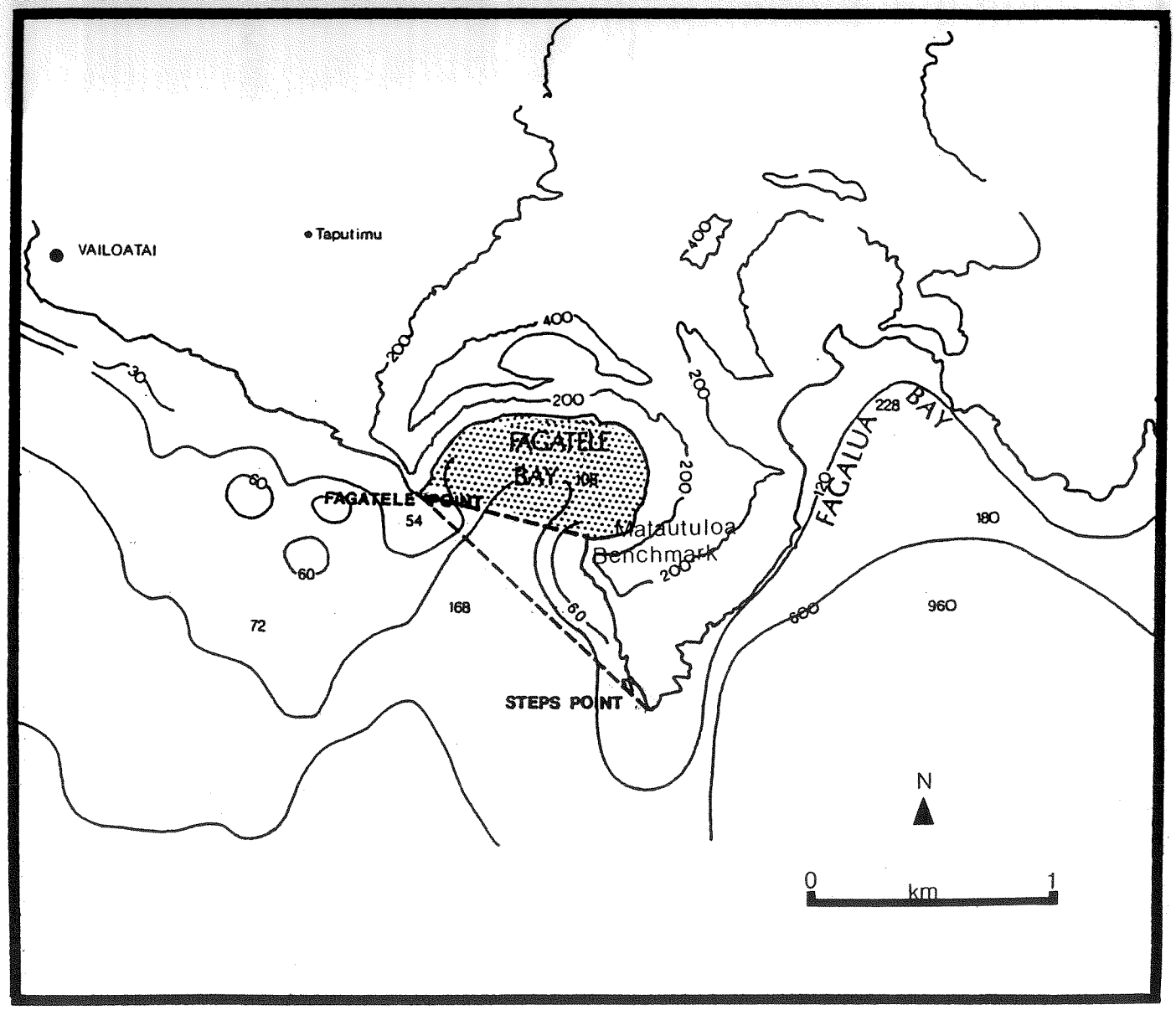


Figure 6. Boundary Option 2 - The Preferred Alternative, showing Inner and Outer Fagatele Bay

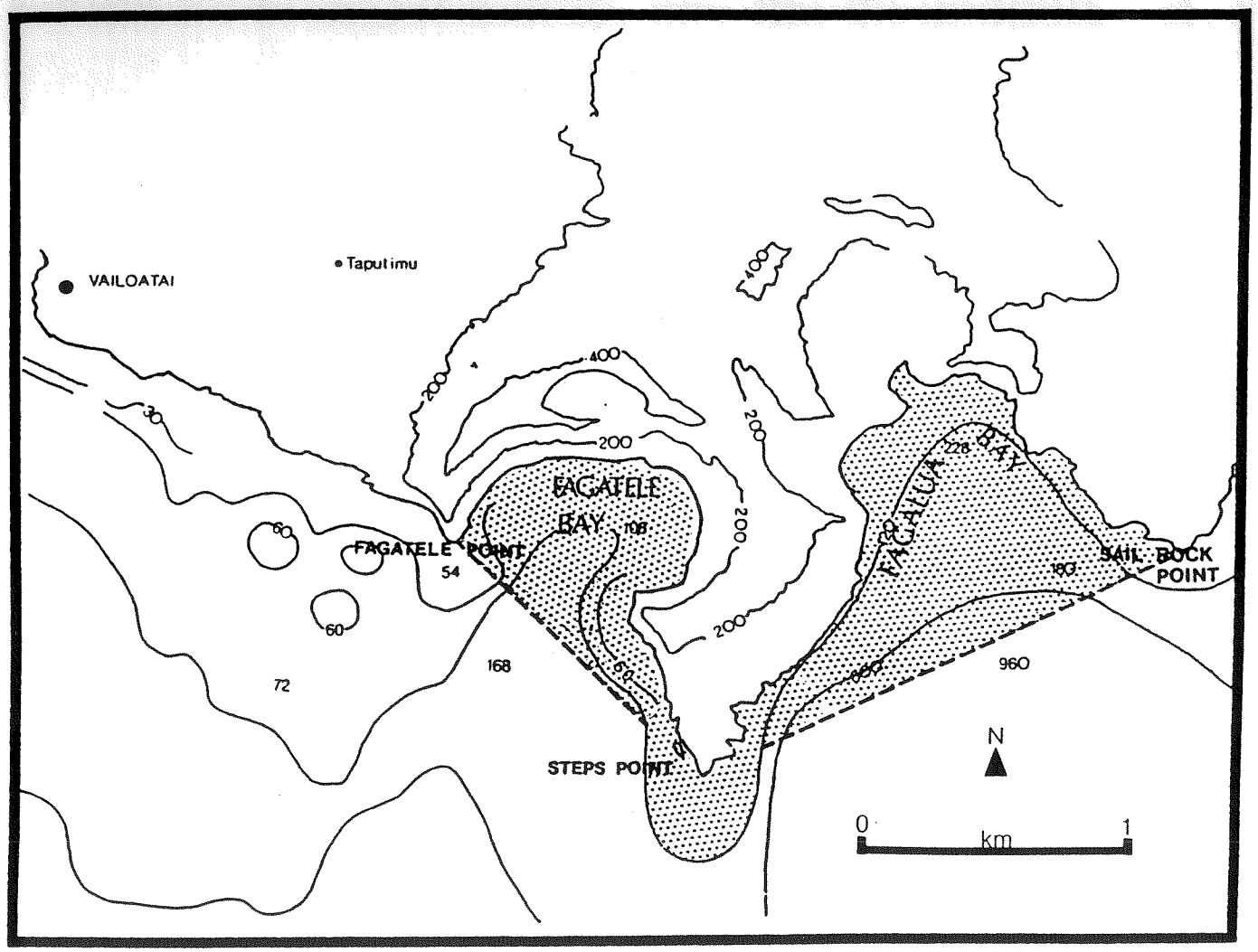


Figure 7. Boundary Option 3

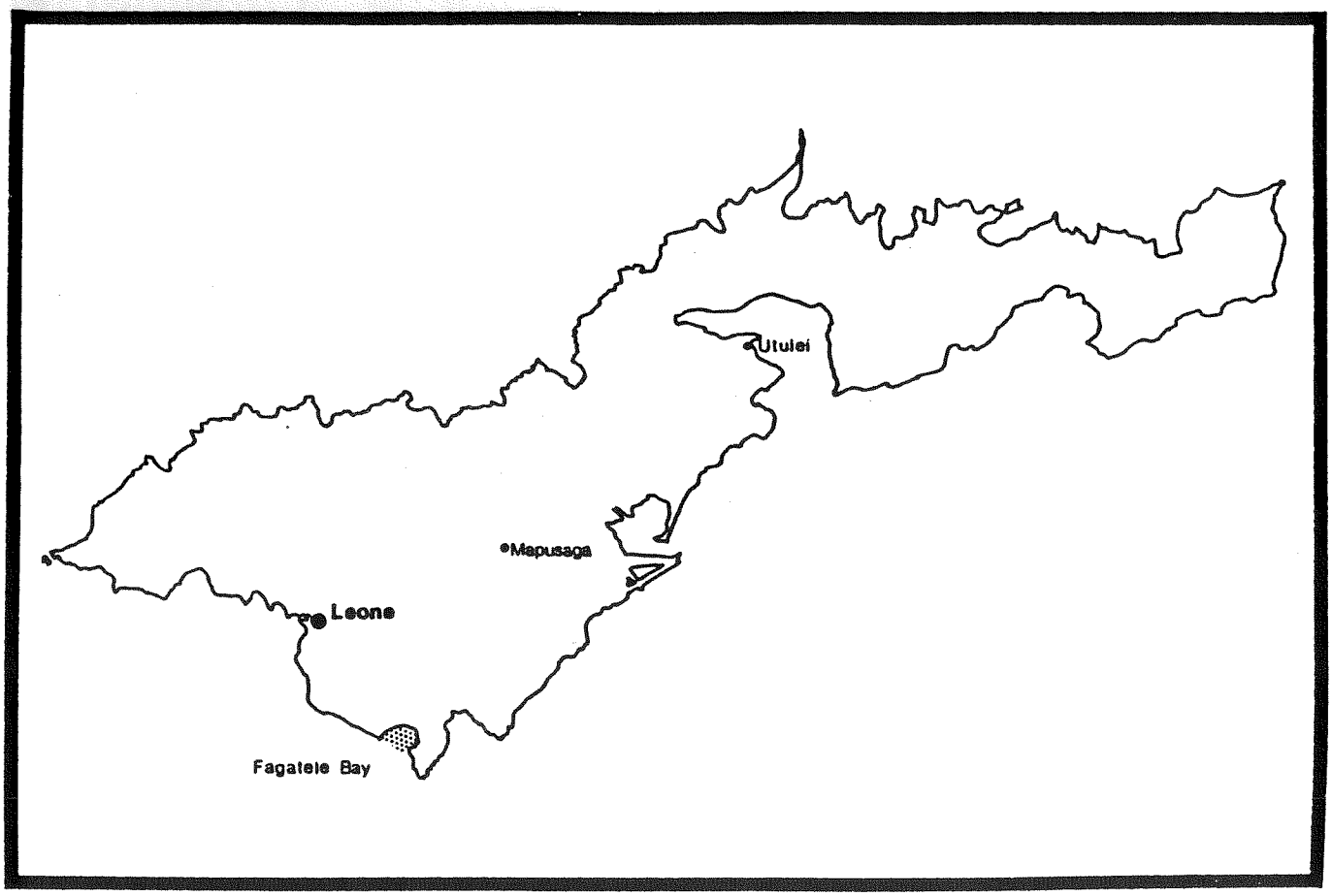


Figure 8. Alternative Visitor Center Sites

Table 4. SITE SELECTION MATRIX

	Locations Considered		
	Leone	ASCC	Utulei
PHYSICAL CRITERIA			
Proximity to Marine Resource	3	3	1
Land Access	3	3	3
Water Access	3	0	1
Marine Orientation	3	0	1
Sanctuary View	2	0	0
Adequate Parking Space	1	3	3
Adequate Building Space	2	3	0
Minimal Resource Disturbance	1	3	3
SOCIOECONOMIC CRITERIA			
Near Preferred Marine Use Areas	3	2	0
Near Preferred Land Use Areas	3	2	0
High Visibility From Land	3	3	3
High Visibility From Water	3	0	0
Compatible With Natn'l Marine Sanctuary Image	2	2	1
Site Improvement Costs	1	3	2
Building Costs	0	3	2
Land Acquisition Costs	2	3	3
TOTAL POINTS *	35	33	23

*Highest Score Meets Criteria Best

a. Alternative 1 - Leone Village

The Village of Leone, situated on the southwest coast of Tutuila at Leone Bay, is approximately 12 miles from Pago Pago Village and 3 miles from Fagatele Bay (Figure 8). It serves as the center for West Tutuila activities and is the regional center for public and private services. Although the exact location of the proposed Center has not been chosen, it will be either a new building constructed on government-owned land or incorporated into existing facilities.

b. Alternative 2 - American Samoa Community College

The American Samoa Community College, approximately 4 miles from Fagatele Bay, is a two-year institution offering a variety of educational experiences to the people of the Territory. The large campus, located in the Malaeimi Valley near Mapusaga (Figure 8), has been included in the Federal Land Grant Program. The Center may be incorporated into one of the present buildings on campus (space permitting) or built on an agreed upon site on campus grounds.

C. Alternative Management Strategies

In evaluating the various arrangements for managing Fagatele Bay's resources, the information thus far presented formed the basis upon which the preferred management strategies were founded. Development of these strategies assumed: (1) the designation of a National Marine Sanctuary under the MPRSA is the most effective means for ensuring the long-term protection of Fagatele Bay and its natural resources; and (2) the inclusion of Fagatele Bay in its entirety represents the best possible compromise in size, significance to the restoration and preservation of the bay's resources, the level of human activities, and in efficient allocation of available resources.

1. Alternative 1 - Status Quo

If no marine sanctuary were designated, the management of Fagatele Bay would rely solely on existing Territorial and Federal authorities. Although the bay has been classified a Marine Park by the DPR, their jurisdiction only covers the areas between the high water line down to 10 fathoms, thus leaving out a significant portion of the bay. Although the DPR is empowered to grant permits and enforce regulations within the American Samoa Parks System, they do not possess the authority to promulgate regulations specific to Fagatele Bay. Thus, the coastal and marine resources will have to be managed only by means of the existing regime of laws, regulations, and plans, none which pertain specifically to Fagatele Bay.

Under the status quo, the applicable Territorial laws, regulations, and programs are:

a) The American Samoa Coastal Management Program, established by Executive Order 3-80, has 16 policies which protect the coastal zone, with 6 that have direct relevance to marine resource management: Reef Protection, Marine Resources, Unique Areas, Shoreline Development, Territorial Administration, and Recreation/Shorefront Access.

b) The establishment of the Department of Parks and Recreation under Title 32 of the American Samoa Code provides for a park system that includes Natural Reserves and Conservation Preserves, and grants regulatory and enforcement authority to the DPR within the park system. Presently, no enforcement program exists.

c) Public Law 16-58 prohibits the use of poison in Territorial waters and provides punishment by fines and/or imprisonment.

d) Executive Order 1-70 prohibits all but U.S. vessels from exploiting the living marine resources in Samoa's Territorial sea, unless the commander of a foreign vessel first receives written approval from the territorial governor.

Applicable Federal statutes include:

a) Clean Water Act which regulates discharges of wastewater and hazardous substances and oil;

b) Marine Protection, Research and Sanctuaries Act which regulates the dumping of toxic wastes into ocean waters;

c) Marine Mammal Protection Act which protects all species of mammals and

d) Endangered Species Act which provides protection for listed species of animals and plants.

Enforcement of these statutes and regulations will have to be provided by Territorial enforcement officers as there is no full-time Federal enforcement presence in American Samoa, consequently resulting in limited resource protection.

Interpretation gains, if any, will be minimal. Facilities such as a Visitor Center/Headquarters and Sanctuary Administration Office will have to rely on existing facilities such as the American Samoa Community College and the Convention Center. Interpretation programs will have to be formulated and carried out by the ASG or an appointed agency or group. Under this alternative, there will be no NOAA funds expended for facility construction.

This alternative will not provide for studies on the resource potential of the bay nor will it provide for research on the crown-of-thorns starfish as it relates to coral reef management. The baseline data needed to formulate management policies for this pristine area will most likely go uncollected.

Maintenance of the status quo does not effectively address the need or capitalize on the opportunities for promoting and coordinating Federal and Territorial programs, research, and user awareness/public education initiatives, nor does it provie for comprehensive, long-term management strategies for Fagatele Bay.

2. Alternative 2 - Preferred Alternative

This alternative, in Part III of this document, goes further in the development of management strategies than maintenance of the status quo. It provides a framework to coordinate the roles and responsibilities of Federal and Territorial agencies through the creation of a comprehensive management plan for managing the Sanctuary. The preferred management strategies are briefly described as follows:

a. Administrative Plan . This element of the plan calls for the immediate establishment of an onsite presence through the hiring of a Sanctuary Manager, who, although directly responsible to the Sanctuary Programs Division (SPD), will also work in consultation with the DPO and the Sanctuary Research Committee (SRC). The SRC's membership will include representatives from Federal and Territorial agencies and relevant organizations. The SRC will serve in an advisory role to the Manager, reviewing research proposals as well as on-going research and proposing appropriate courses of action to the Manager.

b. Enforcement . This section proposes the creation of a set of regulations specific to Fagatele Bay, with enforcement officers from the DPR assigned to ensure compliance with the promulgated regulations. The Federal regulations proposed prohibit taking activities that damage specific resources within certain portions of the bay. It is anticipated that enforcement personnel will also play a major role in education programs.

c. Interpretive Program. This element provides the framework for establishing education programs that will call attention to the importance of protecting and preserving Fagatele Bay, thereby broadening public understanding of the role marine ecosystems play in ensuring the quality of life in American Samoa and other Pacific islands. It calls for the development of a series of exhibits and activities including audio-visual presentations, student-oriented tours, and community interaction.

d. Resource Studies Plan. This part of the Plan addresses the important needs for research in this area. It establishes research priorities and provides a long-term approach to filling priority data needs and information gaps by proposing studies aimed at gaining information on the general marine ecology, oceanography, and distribution and abundance of species in Fagatele Bay as well as the effect of human activities on the bay's ecosystem. Research proposals and findings in the Sanctuary will be subject to peer review through the SRC.

3. Alternative 3 - Low Cost, Low Profile

This alternative will create a low cost, low profile National Marine Sanctuary at Fagatele Bay, integrating sanctuary operations with the existing DPO administration and would offer programs which are low budget and easily implemented. Relying heavily on the status quo, there will be an abbreviated interpretive program, no funding for resource studies, and no additional surveillance and enforcement.

Facilities such as a visitor center and docks will rely on existing buildings and boating facilities. Under this alternative there will be no NOAA funds made available for construction.

Staffing will be greatly reduced compared to alternatives 2 and 4. There will be no Office of Marine Sanctuaries and the only staff will be the sanctuary manager, who will be responsible for daily administration functions as well as acting as a tour guide or "park ranger."

There will be no additional enforcement personnel. The DPR officers to be assigned to West Tutuila will be responsible for enforcement, but there will essentially be no enhancement at this status quo level. The officers will be asked to counsel and educate the public as provided for in the Surveillance and Enforcement Program. The same set of regulations will be promulgated under this alternative as under alternatives 2 and 4.

Under this alternative, a simple, low cost Interpretive Program requiring little or no staff will be developed. The emphasis will be on simple poster exhibits and brochures. A sanctuary map and brochure will be developed and distributed. Information about the sanctuary Interpretive Program will be displayed at the ASCC and will feature a photographic exhibit with written explanations of the sanctuary's resources. No research will be funded by sanctuary administration.

4. Alternative 4 - High Cost, High Profile

This alternative will provide a high profile, very visible effort for the sanctuary. It will require more land for a visitor center, more staff, sanctuary owned and operated tour and research boats, and two satellite centers on Tutuila.

The visitor center will be located in Leone Village on government-owned land. A boat ramp will be constructed on the waterfront of Leone Bay. Additional visitor centers will be developed by DPO and NOAA in Utulei at the Convention Center and at the ASCC. NOAA will jointly fund the construction of a modest visitor center and renovate some of the buildings at the ASCC campus and in Utulei to house exhibits such as aquaria, photo exhibits, and a separate auditorium for audiovisual presentations and lectures.

Staffing requirements under this alternative will be greater than the others. Staff will be increased over the preferred alternative. As in the preferred alternative, there will be a sanctuary manager. In addition, there will be 3 secretaries, an interpreter, and a public participation specialist.

The same NOAA regulations will be promulgated under this alternative as in Alternatives 2 and 3. The DPR officers will be given special training similar to that offered to National Wildlife Refuge managers in the U.S. National Parks beyond the training they now receive as part of the DPR program.

With this added training, the enforcement officers could give informal talks and instruction concerning the wise use and enjoyment of the Sanctuary, not only to visitors, but to the participants of workshops sponsored by the

Sanctuary and to teachers in the American Samoa school system.

The Interpretive Program and Resource Studies Plan will have more funding than the preferred alternative. The sanctuary will purchase its own tour and research vessels to service those parts of the management plan.

5. Alternative 5 - Non-Regulatory

This alternative provides for designation of Fagatele Bay as a National Marine Sanctuary and implementation of a management plan as provided for by the preferred alternative but without promulgation of regulations by NOAA. This alternative will provide a visitor center, increased staffing and enforcement, an Interpretive Program, and a Resource Studies Plan, but will rely on the status quo for regulatory protection of the resources.

The Territorial statutes, regulations, and programs upon which this alternative will rely are covered under Alternative 1 - Status Quo in Section C. Alternative Management Measures of Part IV.

6. Alternative 6 - Establishment of Fagatele Bay as a Special Area

The purpose of designating a Special Area as defined and provided for under the American Samoa Coastal Management Program, is not only to call attention to the area's special resources, but also to provide additional management to ensure responsible development in areas of high environmental sensitivity. As an alternative to designating the area a National Marine Sanctuary, this action will rely upon a special management regime developed and totally funded by the Territory.

PART V: ENVIRONMENTAL CONSEQUENCES - IMPACTS ON RESOURCES

In selecting the appropriate institutional, boundary, and management alternative, NOAA evaluated the environmental impacts associated with each. This allowed the environment to be viewed in terms of both its natural-physical features and the socioeconomic-cultural elements that form man's habitat. This section represents that evaluation and discusses the environmental consequences of the alternatives including the preferred alternative.

Section A is the introduction, Section B discusses the boundary alternatives, Section C focuses on alternative visitor center sites, and Section D discusses alternative regulations, the enforcement and interpretive programs, and the resource studies plan.

A. Introduction

1. Preferred Alternative

This alternative will promote resource protection in three ways: by bolstering the regulatory/enforcement regime currently in place; by providing a public education/public awareness program aimed at understanding the basis for wise use and resource management; and by developing a data/information base from which sound management decisions are made.

Enforcement staff will be increased upon designation with protection efforts focusing on the areas of greatest need. The sanctuary administration will work with the FWS and NMFS to achieve deputization of DPR officers assigned to Fagatele Bay to enforce the regulations of the ESA and MMPA. Penalties for the violation of regulations regarding the taking of corals and the crown-of-thorns starfish will be instituted and fishing gear restrictions will be enforced. These efforts will minimize the impacts of human use on the ecosystem, allowing restoration and recovery of previously disturbed areas.

The Interpretive Program will provide a wide variety of experience through an enriched appreciation and awareness of the fragility and importance of the natural environment. It will also provide audiovisual materials, exhibits, and valuable information to individuals, schools, and other groups. The proposed boat ramp will provide water access to the bay as well as opportunities for vital "hands-on" learning experiences. The program will focus on individual resources, how they interact as an ecological unit, and the relationship of the natural environment to man and the economy.

The Resource Studies Program will provide a coordinated effort to obtain vital baseline data on the resources and uses of Fagatele Bay. Information on water quality and circulation, species density and diversity, fisheries resources, location and numbers of endangered species, and habitat diversity will be provided. This will enable sanctuary management to accurately assess the health of the coral reefs and the feasibility of various recreational uses of Fagatele Bay.

The preferred alternative would provide a coordinated and comprehensive management scheme that would result in the most effective resource maintenance and protection for the costs involved.

2. Status Quo

Under the status quo, Fagatele Bay will not be provided the degree of management or protection warranted by the significance of its marine resources. Hence, issues and problems associated with its various resources will continue. Existing laws and regulations will give a degree of protection for corals and endangered species while regulating wastewater, hazardous substances, and vessel discharges. However, protection will be incomplete as some important resources are not covered by any protective regulation and present enforcement efforts are insufficient to adequately implement existing regulations. Both Federal agencies and the Territory lack the necessary enforcement personnel and have their focus of operations outside the Fagatele Bay area. Consequently, violations will go undetected and avoid prosecution.

No Interpretive Program is offered by this alternative. Public awareness of the importance of the bay's resources and the need for their protection and wise use will depend on current programs which focus their efforts outside the Fagatele Bay area.

Resource studies will not be funded under the status quo. Collection of baseline data needed to fill in gaps in the information regarding Fagatele Bay and its naural processes will not be completed, necessitating management decisions based on inadequate data. With no monitoring or assessment activities, irreversible damage may occur before the problem is addressed.

3. Alternative 3 - Low Cost, Low Profile

The low cost alternative will not provide increased enforcement, although it would provide the NOAA regulations discussed under the preferred alternative. Rather than construct a visitor center, this alternative will depend on the availability of space in present facilities.

Under this alternative, only basic information on the environment will be made available. Copies of the regulations will be provided and several displays and exhibits will be set up at the ASCC and Convention Center. No facilities will mean less public awareness and presence in the Fagatele Bay region. Like the status quo, no resource studies will be funded by NOAA. This alternative will result in minimal public contact, public education, surveillance and enforcement, and little increased resource protection.

4. Alternative 4 - High Cost, High Profile

The high cost alternative will implement the same set of NOAA regulations, but increase the number of enforcement officers and result in an earlier and significantly greater degree of enforcement than any other alternative, including the preferred alternative.

This alternative will provide the same Interpretive Program as the preferred alternative, except that centers will be established at the ASCC and the Convention Center as satellites to the main center in Leone Village.

This action will greatly increase costs, but add little, if any, advantages over the program recommended in the preferred alternative. It will not reach a larger audience or provide a wider range of experiences. Interpretive staff will be substantially increased, providing more involvement with the public than any of the other alternatives, including the preferred alternative. The high cost alternative will implement the same Resource Studies Plan as the preferred alternative, but at a slightly higher funding level. However, the impact will be nearly the same.

B. Environmental Consequences - Boundary Alternatives

All three boundary alternatives will protect the major coral reefs of Fagatele Bay and its other natural resources and possess representatives of all four resource management units.

Option 1, the smallest size considered for sanctuary designation, will have an emphasis on research and interpretation of the bay proper. Fair representation of the Fagatele Bay environment will be acheived as the entire range of fish, invertebrates, and algae would be represented. This area includes the only sand beach in the area and has fair overland access. This option also includes areas of previous research activities. However, the greatest shortcoming of this option is minimal representation of the deep-sea and subtidal habitats as well as some of the more diverse coral communities. Under this option, 60 percent of the bay will remain unprotected.

The preferred alternative has good representation of the Fagatele Bay environment and includes the entire range of habitats and all of its floral and faunal constituents. The emphasis in this alternative will be on enforcement and surveillance, research, and interpretation. The more productive and diverse coral reef communities may be found within this option along with endangered and threatened species and marine mammals. Like Option 1, areas of previous research activities and the most accessible area via an overland route are represented.

Option 3, the largest size considered for sanctuary status, includes Fagatele Bay and its neighbor to the east, Fagalua Bay. The inclusion of Fagalua Bay within the sanctuary boundary was recommended by the Resource Evaluation Team responsible for nominating potential National Marine Sanctuary sites in the Western Pacific Region and considerable support for this option from other agencies and individuals have also been expressed. It has been recommended by the ASG and other territorial agencies that expansion of the sanctuary boundary to include Fagalua Bay be given serious consideration at the end of the initial five years of sanctuary operation. At present, descriptive information pertaining to Fagalua Bay is lacking. However, rather than delaying the designation process while the information required is being gathered, it has been recommended by the ASG to proceed with Alternative 2. Fagalua Bay is more accessible via overland routes than Fagatele Bay, has a larger beach area for recreational and interpretive activities, and has more extensive representation of the deepsea habitat. It also has a different exposure, being less protected from the swells generated by the southeasterly tradewinds, but more sheltered during periods when the wind and/or swell are from the west.

C. Environmental Consequences of the Visitor Center

Although the exact location of a visitor center has not been chosen, it will enhance awareness of the significance of local marine resources and foster understanding of the value of their conservation and wise use.

1. Leone Village Site

Adoption of Leone Village as a site for the proposed visitor center will offer a high degree of public visibility and access to visitors. This option may require the demolition or renovation of an existing structure. The final costs will be determined by whether easements will be needed and whether a structure exists and its condition. There will be minimal disruption to the natural environment in the form of construction and the possible increase in vehicle and pedestrian traffic congestion.

2. American Samoa Community College Site

The location of the proposed visitor center at the ASCC will allow for the best integration of the center with existing community facilities. The only drawback to this site is the lack of visual access to the waters of the proposed sanctuary. Although it is physically near Fagatele Bay, there is no view of the ocean from this site, giving a feeling of distance from the marine resources of the proposed sanctuary.

There will be no demolition required and, since the land is government owned, there will be no acquisition costs. However, there may be need for renovation of an existing structure to house the visitor center or the building of a new one. The impacts of construction or building renovation will be less than the Leone Village site, as it will be further away from any main thoroughfare.

D. Environmental Consequences - Alternative Management Measures

1. Impacts of Regulations

Alternatives 2, 3, and 4 provide for an identical set of new regulations promulgated by NOAA to protect the resources of the proposed sanctuary. Alternative 1 (status quo) and Alternative 5 (non-regulatory) rely on existing Territorial and Federal regulations. Alternative 6 (Special Area designation) will rely upon existing and new territorial management regimes and laws. Under these approaches, some of the significant resources such as coral, endangered species, and water quality will be protected in varying degrees by the existing statutes and regulations.

The Federal Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA) will continue to provide statutory protection for sea turtles, whales, and dolphins within the area of the proposed sanctuary.

Although these resources are protected by statute under the non-regulatory alternative, there are several gaps that would be filled by promulgation of NOAA regulations.

Penalties for violation of regulations will be instituted. Promulgation of the NOAA regulations will provide for a stringent civil penalty of not more than $50,000 for each serious violation. The high Federal penalty will serve as a deterrent to breaking regulations. The NOAA regulations also extends the prohibition on taking to other bottom formations (such as sponges, and other organisms) and marine plants.

Taking of the crown-of-thorns starfish (Acanthaster planci), prohibited in the Preferred Alternative, will provide assurance that natural populations of this species will exist and be available to scientists to conduct in situ research on their population dynamics and various aspects of their lifecycle.

The regulations will also protect cultural resources such as archaeological sites by prohibiting removal or tampering of their contents.

2. Impacts of Enforcement

a. Alternatives 1, 3, and 6

These alternatives will rely on existing low levels of enforcement as opposed to Alternatives 2 and 5, which will add enforcement officers. The status quo and low cost alternatives will not provide sufficient enforcement to adequately protect the resources. The Federal agencies currently have insufficient personnel and physical presence to provide surveillance and enforcement for the Fagatele Bay area, much less the rest of American Samoa. The Coast Guard is charged with enforcing the Clean Water Act and other EPA responsibilities. However, present staff levels and funding will prevent Coast Guard personnel from providing routine patrols, being available only to provide emergency services in the event of confirmed violators, an oil spill, or other such emergencies. With no NMFS of FWS enforcement agents stationed in American Samoa, the DPR officers are the only law enforcement authority patrolling the waters of American Samoa. However, the present level of enforcement personnel is not adequate to enforce Territorial statutes nor are they deputized to enforce the provisions of the MMPA and ESA. Thus, under this set of alternatives, violators of Territorial regulations, the MMPA, ESA, and CWA could go undetected and escape prosecution. Therefore, resource protection under these alternatives is inadequate. Without an increased enforcement level, resource quality could deteriorate, resulting in irreparable loss and damage to the ecosystem.

b. Preferred Alternative

The Preferred Alternative will enhance the surveillance and enforcement efforts by increasing the number of enforcement officers, deploying officers to the Fagatele Bay region from the Leone Village area, and provide training and FWS and NMFS deputization for officers assigned to the region.

These actions will result in increased protection for the resources of nearshore waters. Enforcement emphasis will be placed on areas where the most fragile resources are located and which experience the most use, as the likelihood of resource loss in these areas will be greater. Deputization will also allow enforcement of the ESA and MMPA within the sanctuary, providing greater protection for endangered species, such as the hawksbill turtle and marine mammals.

c. High Cost, High Profile (Alternative 4)

Alternative 4 will provide additional enforcement officers to that of the Preferred Alternative. These officers will also act as interpreters in the Leone area. Placement of officers in Leone will result in fewer undetected violations and resource damage in the sanctuary. The enhanced enforcement would increase the likelihood that the most sensitive areas and endangered species will be adequately protected.

3. Impacts of the Interpretive Program

a. Status Quo

Under the status quo, there will be no Interpretive Program for the area of the proposed sanctuary. There will be a continuance of the issues and problems associated with public awareness and information exchange and dissemination. It is unlikely that any community facility will be established expressly to address these issues and problems.

Relatively little resource information will be provided. There will be no exhibits, brochures, or tours of the area. Visitors and residents alike will continue to experience the area without understanding the importance of this pristine ecosystem and how it relates to other natural systems found in Samoa and the rest of the Pacific Basin, and their value to man. As a result, the public will not be aware, nor will they be particularly sensitive to, the importance of resource conservation, particularly in the Fagatele Bay area.

b. Preferred Alternative

The Preferred Alternative will provide a more extensive Interpretative Program than the status quo or Alternative 3 (low cost, low profile). It will be selective in its approach, focusing on educating the public about resource issues and concerns that affect them by expanding their understanding of the natural environment and how human actions may impact it. Visitor enjoyment and appreciation of the sanctuary environment will be enhanced through interpretation of the complex environment, thereby generating overall concern for the protection of its vital resources. Audiovisual materials, publications, exhibits, activities, and interpreters will provide the information needed to visitors increasing their knowledge and understanding of this pristine ecosystem. Off-site interpretive programs will focus on the sanctuary as a model of a vital, living system, and use it as a base for comparison to other systems people would be familiar with.

Boat tours of the bay will provide a "hands-on" experience for visitors, including school children. This will play a major role in visitor understanding of reef ecology and man's role in the protection and degradation of such highly productive ecosystems. Such an understanding is necessary for the full development of a marine conservation ethic.

The information on endangered species, particularly the hawksbill turtle, and other important species, will be related to habitats and the need for maintaining them, providing a holistic understanding of the relationship of individual species and habitats to the ecosystem. This heightened awareness and understanding should lead to a decrease in the likelihood of resource damage and violations of protective regulations. However, increased visitor traffic may lead to adverse impacts, such as increased degradation of corals. The monitoring program proposed in the Resource Studies Plan should alert managers to any potential problems that may arise.

Information on rules and regulations will inform the public that certain safeguards have been taken to protect the vital resources of Fagatele Bay. Combining this with other educational programs on the sanctuary's resources should result in an increased understanding as to why certain regulations are needed, an increased willingness to obey the regulations, and a decrease in violations. All this will serve to maintain the quality of the bay's resources.

Offsite interpretive programs will provide interpretation for potential audiences who might not travel to Fagatele Bay. Low cost, portable exhibits and slide shows will be employed to educate them about the value of Fagatele Bay's resources and how resource conservation affects the Samoan way of life.

c. Low Cost, Low Profile (Alternative 3)

Under this alternative, very little effort in interpreting the sanctuary's resources will be expended. Its limited funding will result in a marginal public awareness/education effort, consisting mainly of poster exhibits and brochures placed at areas such as the Convention Center and the ASCC.

There will be no boat tours providing a "hands-on" experience, thereby decreasing potential for full development of the conservation ethic. It will be more difficult for the public to obtain a holistic understanding of this unique coral reef ecosystem and how man's actions impact it. It is unlikely that much public interest will be generated or that the public will gain much from such limited presentations. In turn, this alternative will not result in any increased resource protection.

d. High Cost, High Profile (Alternative 4)

This alternative will implement essentially the same interpretive program as the Preferred Alternative, but at a higher funding level with a greater number of interpretive and enforcement staff members and two visitor centers.

Additional interpretive and enforcement personnel will provide for better dissemination of information to visitors and residents. Leone Village will be the main site for the visitor center. There will be an increase in the appreciation and understanding of the natural system and a concomitant increase in resource protection and a decrease in violations. The presence of enforcement officers and interpretive staff at Leone will provide better protection for the bay and its resources. Interpreters will be placed on each boat tour, providing the public with information concerning the uniqueness and fragility of the sanctuary ecosystem, indirectly effecting a higher degree of resource protection through increased education.

e. Special Area Designation (Alternative 6)

This will strictly be a territorial program with no provisions for coordination between the various territorial and Federal programs. The fiscal situation in American Samoa dictates that there will be no Interpretive Program, Interpretive Center, or Resource Studies Program, although there may be limited enforcement of the area. Information gaps will remain unfilled and public education will be minimal. The creation of access to the area and its availability as a pristine field laboratory for students will be less likely.

4. Impacts of the Resource Studies Plan

a. Preferred, High Cost, and Non-Regulatory Alternatives

The Preferred, High Cost, and Non-Regulatory Alternatives provide for multidisciplinary studies on living marine resources, community structure and function, and physical, chemical, geological, and meteorological conditions within the proposed sanctuary. Information gathered from these investigations will be used to further understanding of the importance of marine resources and develop sound marine ecosystem management practices. Management-related research will address practical, use-oriented or "cause and effect" studies. Long-term monitoring and its resultant data base will provide the foundation for interpreting or predicting natural or man-induced events in the sanctuary. Other areas related to sanctuary management which may be explored include: (1) the effects of varying levels of human activity on the health of the resources; (2) innovative techniques of enhancing coral growth and productivity; (3) the adequacy of protective buffer areas; and (4) the carrying capacity of the system.

Increased long-term protection for Fagatele Bay's resources will result from implementation of the Resource Studies Plan. Data gathered from the scientific investigations will provide the managers with information that would aid them in making day-to-day management decisions as well as determining long-term modifications in the interpretive program, administration, and regulations.

One of the first resource studies to be undertaken will be a baseline study aimed at assessing the bay's fundamental resources. This information will form the data base for future monitoring activities. The result of this study will provide baseline data that would aid the formulation of management policy and implementation of the management plan.

The monitoring program will allow managers to assess not only the impacts of human activities, but also of natural phenomena, such as crown-of-thorns starfish infestations. Management implications resulting from this project will have Pacific-wide significance.

Circulation and water quality studies will also result in general resource maintenance and protection throughout the sanctuary. These studies will result in information on coastal currents which could be correlated with pelagic larval distribution, allowing for prediction of larval settlement patterns and identification of habitats vulnerable to pollution and ecological damage from degraded water quality.

Other studies will provide new information on recreational use and feedback on management actions. It is unknown to what extent increased use (resulting from designation) will have on the ecosystem. This assessment will gather the information needed to identify particularly sensitive areas, evaluate the magnitude of the problem, and recommend solutions. Managers may use this information to take the appropriate actions that will result in protection of these areas.

b. Status Quo and Low Cost Alternative

These alternatives will provide no reliable data base specifically geared to address management needs. It will be more difficult for the sanctuary manager to identify resource problems and issues in advance or develop sound solutions based on reliable data. There will be no regular data on water quality and managers would have to rely on anecdotal information regarding natural and man-induced impacts on the bay's resources. The health and viability of important resources will go unassessed. Without the monitoring and assessments, indications of ecological disturbances might become evident only after the problem had reached a stage where resource damage and loss may be irreversible.

PART VI: UNAVOIDABLE ADVERSE IMPACTS AND SOCIO-ECOMOMIC EFFECTS

Implementation of the sanctuary management plan may result in minor disturbances to the environment through construction or improvement of a visitor center, boat ramp, parking lot, or trails. These were discussed under impacts to the resources. Any environmental assessments necessary for proposed construction will be undertaken at the time of construction. Except for the minor site disturbances, there are no significant adverse environmental effects.

PART VII: RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Sanctuary designation will provide long-term assurance that the natural resources and resulting benefits of the area will be available for future use and enjoyment. Without implementation of the Preferred Alternative, continuing increase in recreational use of the waters, illegal taking of endangered species, and destruction of coral reef areas may result in the permanent loss of valuable resources.

The Interpretive, Surveillance and Enforcement, and Administrative Programs will provide information, management and protection that develops a foundation for wise public use of the area and that will result in assuring long-term productivity. Similarly, information collected from the Resource Studies Plan will assist Federal and Territorial managers in making better management decisions. Better management will in turn help resolve use conflict and mitigate adverse impacts of human activities.

PART VIII. LIST OF PREPARERS

Mr. Kelvin Char - U.S. Department of Commerce/NOAA

Mr. Char is the regional projects manager for the Western Pacific Region of the Sanctuary Programs Division. His responsibilities in the preparation of this document included the overall direction of the project's development and organization. A graduate of the University of Hawai'i with an undergraduate degree in zoology and a graduate degree in planning, he has also had experience in developing coastal management programs in the islands of the Western Pacific.

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Mr. Lam Yuen is the program manager for the American Samoa Coastal Management Program. A graduate of the University of Oregon with a bachelor's degree in biology, he previously worked for the South Pacific Commission in Noumea, New Caledonia and was instrumental in aiding the SPD obtain much of the information presented in this document.

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As the director of the DPO, Mr. Pereira is responsible for directing the development of American Samoa's Five Year Economic Developoment Plan and the coordination of a variety of territorial and Federal development-oriented programs. A recipient of a bachelor's degree in economics from the University of Hawai'i, he provided valuable input in the development of the operational and administrative aspects of this document.

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Mr. Thomas is a program specialist with the Sanctuary Programs Division. As SPD's lead person for this project, his responsibilities included information gathering and synthesis, writing, editing, and preparing this document for publication. His academic background includes undergraduate and graduate degrees in zoology from the University of Hawai'i. Mr. Thomas had valuable assistance from Ms.Mary Walker, Clerk/Typist, Sanctuary Programs Division.

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Dr. Wass is a fisheries biologist with the OMR and is responsible for collecting and synthesizing data on American Samoa's fisheries potential. He received his Ph.D. in zoology from the University of Hawai'i and has traveled extensively throughout the islands of the Pacific. His insight and input in the development of the Resource Studies Plan has been invaluable.

PART IX: LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS RECEIVING COPIES

Federal Agencies

Advisory Council on Historic Preservation
Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Health and Human Services
Department of the Interior
Department of Justice
Department of Labor
Department of Transportation - U.S. Coast Guard
Environmental Protection Agency
Federal Energy Regulatory Commission
General Services Administration
Marine Mammal Commission
Nuclear Regulatory Commission

National Interest Groups

AMERICAN
AFL-CIO
American Association of Port Authorities
American Bureau of Shipping
American Farm Bureau Federation
American Fisheries Society
American Gas Association
American Industrial Development Council
American Institute of Architects
American Petroleum Institute
American Shore and Beach Preservation Association
American Society of Civil Engineers
American Society of Landscape Architects, Inc.
American Society of Planning Officials
American Waterways Operators
Amoco Production Company
Atlantic Richfield Company
Atomic Industrial Forum
Boating Industry Association
Bultema Dock and Dredge Company
Center for Law and Social Policy
Center for Natural Areas
Center for Urban Affairs

Center for Urban and Regional Resources
Chamber of Commerce of the United States
Chevron U.S.A., Inc.
Cities Service Company
Coast Alliance
Conservation Foundation
Continental Oil Company
Council of State Planning Agencies
The Cousteau Society
CZM Newsletter
Edison Electric Institute
El Paso Natural Gas Company
Environmental Policy Center
Environmental Defense Fund, Inc.
Environmental Law Institute
Exxon Company, U.S.A.
Friends of the Earth
Great Lakes Basin Commission
Gulf Energy and Minerals, U.S.A.
Gulf Oil Company
Gulf Refining Company
Industrial Union of Marine and Shipbuilding
Workers of America
Institute for the Human Environment
Interstate Natural Gas Association of America
Lake Michigan Federation
Marathon Oil Company
Marine Technology Society
Mobil Oil Corporation
Mobil Exploration and Producing, Inc.
Murphy Oil Company
National Association of Conservation Districts
National Association of Counties
National Association of Home Builders
National Association of Realtors
National Audubon Society
National Coalition for Marine Conservation, Inc.
National Farmers Union
National Federation of Fishermen
National Fisheries Institute
National Forest Products Association
National Ocean Industries Association
National Parks and Conservation Association
National Recreation and Park Association
National Research Council
National Society of Professional Engineers
National Waterways Conference
National Wildlife Federation
Natural Resources Defense Council
Natural Resources Law Institute
Norfolk Dredging Company

Outboard Marine Corporation
Resources for the Future
Rose, Schmidt and Dixon
Shell Oil Company
Sierra Club
Skelly Oil Company
Soil Conservation Society of America
Sport Fishing Institute
Standard Oil Company of Ohio
State University Law School
State University of New York
Sun Company, Inc.
Tenneco Oil Company
Texaco, Inc.
Texas A & M University
The Nature Conservancy
The Wildlife Society
Union Oil Company of California
University of Pittsburgh
Urban Research and Development Association, Inc.
Western Oil and Gas Association
Western Pacific Regional Fishery Management Council
Wildlife Management Institute
Woods Hole Oceanographic Institute

Congressional

Senator Daniel Inouye, Hawaii
Senator Spark Matsunaga, Hawaii
Representative Daniel Akaka, Hawaii
Representative Cecil Heftel, Hawaii
Representative Fofo I.F. Sunia, American Samoa
Representative Antonio Won Pat, Guam
Forilan Tenorio, Delegate to the United States from the Commonwealth of the Northern Mariana Islands

Territorial Government

Attorney General
Department of Local Government
Department of Parks and Recreation
Department of Public Works
Department of Education
Department of Health
Department of Agriculture
Department of Port Administration
Department of Planning Office
Department of Public Safety
Department of Adminstration Services
Environmental Quality Commission
Government Ecologist

Governor of American Samoa
Marine Railway Authority
Program Planning and Budget Office
Office of Communications
Office of Manpower Resources
Office of Marine Resources

Research and Education Groups

American Samoa Community College
Center for Environmental Education
Defenders of Wildlife
The Institute of the Human Environment
University of Guam
University of Hawaii - Department of Botany and Zoology
Whale Center

Individuals

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Rick Davis
Darryl Felder
Tom French
Joseph Goy
Robert Graham
Esterite Himphill
Erich Hoyt
E. Alison Kay
Larry Kirkland
Keniseli Lafaele
Tuaolo Lemoe
Phil Langford
Larry Madrigal
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Mel Makaiwi
Elizabeth Malae
Samu Matagi
James McGuire
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Tau Sualevi
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PART X. REFERENCES

REFERENCES

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PART XI. APPENDICES

A. Draft Designation Document
B. American Samoa Coastal Management Program
C. Cultural Institutions of American Samoa
D. Geology of Tutuila
E. Biological Characteristics
F. Draft Guidelines for Preparing and Submitting Proposals for Research in National Marine Sanctuaries
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APPENDIX A - DESIGNATION DOCUMENT

APPENDIX A

Designation Document for the Fagatele Bay National Marine Sanctuary

Under the authority of the Marine Protection, Research and Sanctuaries Act of 1972, PL-92-532, (the Act) certain waters off American Samoa are hereby designated a National Marine Sanctuary for the purposes of preserving and protecting this unique and fragile ecosystem.

Article 1. Effect of Designation

The designation of the Fagatele Bay National Marine Sanctuary (the Sanctuary) described in Article 2, establishes the basis for cooperative management of the area by the Territory of American Samoa (Territory) and the National Oceanic and Atmospheric Administration (NOAA).

Within the area designated as the Sanctuary, the Act authorizes promulgation of such regulations as are reasonable and necessary to protect the values of the Sanctuary. Article 4 of the Designation lists those activities which may require regulation, but the listing of any activity does not by itself prohibit or restrict it. Restrictions or prohibitions may be accomplished only through regulation, and additional activities may be regulated only by amending Article 4.

Article 2. Description of the Area

The Sanctuary consists of 163 acres (.25 square miles) of bay area off the southwest coast of Tutuila Island, American Samoa. The precise boundaries are defined by regulation.

Article 3. Special Characteristics of the Area

The Sanctuary contains a unique and vast array of tropical marine organisms, including corals and a diverse tropical reef ecosystem with endangered and threatened species, such as the hawksbill and green sea turtles, and marine mammals like the Pacific bottlenose dolphin. The area provides excetional scientific value as an ecological, recreational, and aesthetic resource and unique educational and recreational experiences.

Article 4. Scope of Regulation

Section 1. Activities Subject to Regulation. In order to protect the distinctive values of the Sanctuary, the following activities may be regulated within the Sanctuary to the extent necessary to ensure the protection and preservation of the coral and other marine values of the area:

a. Taking of otherwise damaging natural resources.

b. Discharging or depositing any substance.

c. Disturbing the benthic community.

d. Removing or othewise harming cultural or historical resources.

Section 2. Consistency with International Law. The regulations governing the activities listed in Section 1 of this Article will apply to foreign flag vessels and persons not citizens of the United States only to the extent consistent with recognized principles of international law, including treaties and international agreements to which the United States is signatory.

Section 3. Emergency Regulations. Where essential to prevent immediate, serious, and irreversible damage to the ecosystem of the area, activities other than those listed in Section 1 may be regulated within the limits

of the Act on an emergency basis for an interim period not to exceed 120 days, during which an appropriate amendment of this Article will be proposed in accordance with the procedures specified in Article 6.

Article 5. Relation to Other Regulatory Programs

Section 1. Other Programs. (a) NOAA may adopt all regulatory programs pertaining to fishing, including any regulations promulgated by the American Samoa Government and all permits, licenses, and other authorizations issued pursuant thereto under the following conditions:

(1) No alteration or modification of any Sanctuary regulation shall become effective without the written concurrence of both the Territory and NOAA; and

(2) The Territory shall be responsible for enforcing all the Sanctuary regulations to ensure protection for the values of the Sanctuary. NOAA will engage in enforcement activities only if requested by the Territory if there has been a significant failure to provide adequate enforcement as determined under this Section.

(b) Where the Territory shall propose any alteration or modification of the regulations described in Article 4, such alteration or modification shall be submitted to NOAA for agreement and simultaneous proposal in the Federal Register. Such alteration or modification shall be finally adopted unless, based on the comments received on the Federal Register notice and after consultation with the Territory, NOAA determines that the regulations with the proposed amendments do not provide reasonable and necessary protection for the values of the Sanctuary.

(c) Should NOAA preliminarily determine that there has been significant failure to provide adequate enforcement, it shall notify the Territory of this deficiency and suggest appropriate remedial action. If, after consultation, NOAA and the Territory are unable to agree that a deficiency

exists or on an appropriate remedial action, NOAA may issue a final determination in writing specifying the deficiency and the appropriate action together with the reasons therefore. No less than 60 days prior to issuing a final determination that calls for NOAA to take enforcement action, NOAA shall submit the proposed determination to the Governor of American Samoa. If the Governor finds that NOAA enforcement is unecessary to protect the values of the Sanctuary, the Governor shall inform NOAA of his objections within thirty (30) days after receipt of the proposed determinations and NOAA shall give such finding presumptive weight in making its final determination.

(d) All applicable regulatory programs will remain in effect, and all permits, licenses, and other authorizations issued pursuant thereto will be valid within the Sanctuary unless inconsistent with any regulation implementing Article 4. The Sanctuary regulations will set forth any certification procedures.

Section 2. Defense Activities. The regulation of those activities listed in Article 4 shall not prohibit any activity conducted by the Department of Defense that is essential for national defense or because of emergency. Such activities shall be conducted consistently with such regulations to the maximum extent practicable. All other activities of the Department of Defense are subject to Article 4.

Article 6. Alterations to this Designation

This designation may be altered only in accordance with the same procedures by which it has been made, including public hearings, consultation with interested Federal and Territorial agencies and the Western Pacific Regional Fishery Management Council, and approval by the Governor of American Samoa and the President of the United States.

Article 7. Funding

In the event that a reduction in the funds available to administer the Sanctuary necessitates a reduction in the level of enforcement provided by the Territory, the resulting reduced level of enforcement shall not, by itself, constitute a basis for finding deficiency under Article 5, Section 1.

(End of Draft Document)

APPENDIX B - AMERICAN SAMOA COASTAL MANAGEMENT PROGRAM

EXECUTIVE ORDER NO. 3-1980

AN EXECUTIVE ORDER ESTABLISHING THE COASTAL MANAGEMENT PROGRAM FOR THE TERRITORY, DESIGNATING THE LEAD AGENCY FOR THE PROGRAM, REQUIRING THE COOPERATION OF ALL AFFECTED AGENCIES AND OFFICES OF THE TERRITORIAL GOVERNMENT, AND PROMULGATING THE OFFICIAL COASTAL MANAGEMENT POLICIES OF THE TERRITORY

WHEREAS, the shoreline and submerged lands adjacent to such shoreline are among the most valuable and fragile of the natural resources of the Territory of American Samoa; and

WHEREAS, there is throughout the territory great concern that the utilization, protection, restoration, and preservation of these shoreline areas; and

WHEREAS, the Federal Coastal Zone Management Act (PL 92-583), as amended, requires as a pre-condition to allocating federal monies to states and territories that a territorial agency be designated to receive and administer grants made by the federal government pursuant to Section 306 of the Act, as provided in 15 CFR 923.47; and

WHEREAS, effective implementation of the Coastal Management Program once undertaken requires the cooperation and coordination of all departments and agencies of the Territory, and its officers and employees; and

WHEREAS, the Office of Development Planning has prepared and submitted to the Federal Office of Coastal Zone Management its application for participation within the Program pursuant to the provisions of

NOW, THEREFORE, I, Peter Tali Coleman, Governor of the Territory of American Samoa, by virtue of the authority vested in me pursuant to Article IV, Section 6 of the Revised Constitution of American Samoa and 3 ASC Chapters 1 and 3, do hereby order and authorize the establishment of the American Samoa Coastal Management Program and further order that those objectives, policies, procedures and definitions set forth in Appendices "A", "B" and "C" attached hereto and incorporated by reference herein, be embodied in the American Samoa Coastal Management Program, to be implemented in a manner consistent with those objectives and policies by all departments, agencies, office and instrumentalities of the American Samoa Government within the scope of their respective authorities

1. The Office of Development Planning of the American Samoa Government, created by 29 ASC 903, is hereby selected as the "Designated Territorial Agency", as required by Sub-section 306(c)(5) of the Act, for the implementation of the Coastal Management Program and shall be the lead agency for all program implementation, as defined in 15 CFR 923.47, and it shall receive, administer, and account for all grants to the Territory under the Coastal Management Program.

2. The inner Pago Pago Harbor and Pala Lagoon are hereby declared to be Special Management Areas pursuant to Sub-section 305(b)(3) and 306(c)(9) of the Act and 15 CFR 932.21 and 923.22, respectively. Future Special Management Areas may be designated by the Governor following a nomination process, as described in the American Samoa Coastal Management Program, conducted pursuant to the Administrative Procedures Act, 3 ASC Chapter 17.

3. The Office of Development Planning is hereby vested with exclusive authority to designate uses subject to management and to review, comment upon, approve, or disapprove in a timely manner all applications for permits for uses, developments, or activities which in any way whatsoever impact the American Samoa Coastal Zone as established pursuant to this Order. Permit review procedures in Appendix "B" shall be followed in reviewing permits. For purposes hereof, the term "impact the American Samoa Coastal Zone" is defined as having direct and significant impacts on coastal waters as defined in Sub-section 304(1) of the Act. In exercising this authority the Office of Development Planning shall provide for effective public participation, including, as necessary, public hearings.

4. All departments, offices, agencies and instrumentalities of the American Samoa Government, and all officers and employees thereof, shall cooperate to the fullest extent possible in assisting the Office of Development Planning to carry out the responsibilities and duties of this Order and as are imposed by the Act and shall act consistently with territorial coastal zone management policies.

5. The Office of Development Planning is hereby authorized to propose to the Governor for this promulgation, pursuant to the provisions of the Administrative Procedure Act, such rules and regulations as it may deem necessary and proper for the effective implementation and administration of this Order and the policies hereunder established.

6. The Building Department within the Department of Public Works, established by 29 ASC 1001(1), is hereby designated as the agency responsible for the issuance of dredging, filling, and excavation permits affecting all waters of the Territory of American Samoa. The

Environmental Quality Commission, established by 13 ASC 4, shall provide all certifications pursuant to federal requirements under Section 401 of the Clean Water Act (P.L. 92-500).

All dredging, filling or excavation permit applications affecting waters of the Territory shall be reviewed by agencies with jurisdiction over such waters and waterbottoms and approvals obtained before a permit can be granted.

7. The entire Island of Tutuila, the Manu'a Island group, Aunu'u Island, Rose Island and Swains Island, Territory of American Samoa, and all coastal waters and submerged lands for a distance of three (3) nautical miles seaward in all directions therefrom are declared within the Coastal Zone Management Area and subject to the coastal zone management policies of the Territory of American Samoa and to this Order.

8. The Governor is hereby designated as the person to accept service of process on behalf of the American Samoa Government in all applications for judicial review under the Administrative Procedures Act concerning Coastal Management actions, except matters arising under the Zoning Act (29 ASC Chapter 13). In all such proceedings the Governor shall be represented by the Attorney General of American Samoa.

9. This executive order becomes effective 20 days after filing in accordance with the Administrative Procedure Act or upon receipt of federal government approval of the American Samoa Coastal Management Program, whichever is later.

DATED: At Utulei, Territory of American Samoa, this 29th day of May, 1980.

Peter Tali Coleman

PETER TALI COLEMAN
Governor of American Samoa

ASCMP OBJECTIVES AND POLICIES

GOVERNMENT PROCESSES

1. Territorial Administration

Objective

Provide more effective and sensitive administration of laws, regulations and programs.

Policy

A coordinated, expeditious, and comprehensive permit and project review and approval processes shall be instituted.

The technical capability of agency personnel shall be increased.

The technical basis for making natural resource decisions shall be improved.

Sensitivity to Fa'a Samoa in the exercise of government administration shall be increased.

2. Village Development

Objective

Provide more effective and better coordinated territorial aid to villages.

Policy

Assistance to foster village development and improvement shall be coordinated through the village development plans in ways sensitive to village needs and preferences. Village development plans shall incorporate all ASCMP objectives and policies.

DEVELOPMENT

3. Shoreline Development

Objective

Assure that lands adjacent to the sea are developed in a way least damaging to coastal resources and that reduces the risk of damage resulting from coastal hazards.

Policy

In the area measured 200 feet horizontally inland from the mean

high tide mark, uses, developments and activities shall be rigorously reviewed to determine whether they:

1) are susceptible to damage from shoreline erosion or other identified coastal hazards; or

2) diminish visual and/or physical access to the shoreline; or

3) may result in degradation of coastal resources.

Those uses, developments or activities which may result in any of the above impacts shall normally be denied. Exceptions may be allowed if the proposed use, development or activity:

1) serves a needed public purpose, including recreation; or

2) is water-dependent or water-related; and

3) is compatible with adjacent land uses or traditional Samoa uses; and

4) has no feasible environmentally preferable alternative sites.

In areas immediately adjacent to the landward and seaward side of the mean high tide line proposed uses, developments and activities shall also be evaluated using the U.S. Army Corps of Engineers permit application evaluation factors to the extent applicable.

4. Coastal Hazards

Objective

Reduce hazards to life and property from flooding, slides, and shoreline erosion.

Policy

Proposed development in areas prone to stream and ocean flooding, slides and shoreline erosion shall only be permitted if:

1) There is a public need; and

2) There are no feasible environmentally preferable alternative locations; and

3) The development is located and designed to minimize risks to public safety.

The following standards shall apply to location and design of development in areas prone to flooding, slides and erosion;

1) Uses that will not require protection through dikes, dams, and levees or other structures shall be preferred over uses that require such protection.

2) Uses that pose the least risk to loss of life and damage to property shall be preferred over uses that pose such risks.

3) Development permitted in areas prone to flooding shall be designed to allow passage of water to the extent feasible.

Structures to protect existing development against flooding and erosion shall only be permitted if:

1) There is significant risk to public health and safety.

2) There are no feasible environmentally preferable alternatives;

3) Habitat that may be effected are identified and their values evaluated.

4) Adverse effects on nearby areas are minimized.

5) Alterations of the natural shoreline are minimized.

6) Adverse effects on habitats, streams and drainage are minimized.

5. Fisheries Development

Objective

Promote fisheries development in a manner consistent with sound fisheries management.

Policy

Shoreland areas suitable and necessary for the support of fishery development shall be reserved for such use.

Fisheries development shall be guided by a fisheries management program which conserves stocks, protects marine habitats, and maintains sustained yields.

6. Slope Erosion

Objectives

Reduce soil erosion.

Policy

Road building and construction activities that severely alter land contours, occur in steep areas, or may otherwise promote soil erosion shall be minimized and controlled to reduce or eliminate soil erosion.

Clearing, grading, or construction on slopes greater than 40% shall be avoided and be permitted only if no feasible environmentally preferable alternatives to the proposed activity exist.

All clearing, grading, or construction on slopes shall use best available techniques to avoid or minimize soil erosion. These shall include, but not necessarily be limited to:

1) Minimize onsite disturbance through careful design of road drainages utilizing knowledge of soils, vegetation and terrain and other available techniques.

2) Retain soil through use of retaining walls and other applicable techniques to minimize slope cutting; and

3) Control offsite movement of soil through replanting disturbed land immediately after construction with soil stabilizing plants and other available techniques.

7. Major Facility Siting

Objective

Assure the proper siting of major facilities.

Policy

Major facilities shall be sited and designed to minimize adverse environmental and social impacts and promote orderly and efficient economic development. Major facilities not dependent on a waterfront location shall be located elsewhere unless no feasible alternative sites exist; water-dependent major facilities will be accomodated through planning. Conservation of resources shall be a primary goal of the Territory.

The Territory shall recognize identified regional benefits and national interests in the siting of major facilities and shall adequately consider them in major facility siting decisions.

8. Agricultural Development

Objective

Promote agricultural development in a manner consistent with sound conservation practices.

Policy

Commercial and subsistence agriculture shall be encouraged and improved on lands suitable for cultivation. Agricultural activity shall be accompanied by sound agricultural practices designed to protect land and water resources and maintain crop yields, which include:

1) cultivation on suitable slopes;

2) use of adequate ground cover to prevent soil erosion;

3) proper use of pesticides, herbicides, and fertilizers; and

4) techniques to maintain soil fertility, e.g., fallow periods.

RESOURCES

9. Reef Protection

Objective

Protect and restore coral reefs.

Policy

Coral reefs and other submerged lands shall not be dredged, filled, or otherwise altered or channelled unless it can be clearly demonstrated that there is public need, there are no feasible environmentally preferable alternatives, and unless measures are taken to minimize adverse impacts. Coral reefs shall be protected from sedimentation, overfishing, runoff, and the impacts resulting directly and indirectly from other activities to the extent feasible. Degraded reefs shall be restored wherever feasible.

10. Recreation/Shorefront Access

Objective

Improve and increase recreation opportunities and shorefront access for both residents and visitors.

Policy

The acquisition, siting, development and maintenance of varied types of recreation facilities that are compatible with their surrounding landscape and land uses, and which serve the recreation and shorefront access needs of villages and urban areas shall be promoted. Acquisition and/or use agreements and minimal development of passive recreation sites such as marine and wildlife conservation areas, scenic overlooks, trails, parks, and historic sites shall also be promoted.

Public access to and along the ocean shall be improved and increased. Beach areas suitable for recreation use shall be reserved for such use and physical access to these areas shall be provided where feasible. Visual access to the ocean from the road parallel to and near the shoreline shall be maintained where feasible.

11. Water Quality

Objective

Maintain and, where necessary, restore high water quality.

Policy

Territorial and Federal water quality standards shall be the

standards of American Samoa in the coastal zone. Consistent with these standards, degraded water quality shall be restored to acceptabl levels and potential threats to water quality shall be prevented from degrading water quality where feasible.

12. Marine Resources

Objective

Protect marine resources for present and future generations.

Policy

Living marine resources and their habitats shall be protected from overharvesting or degradation.

No taking of marine mammals, or endangered or threatened species, including the Green Sea and Hawksbill Turtles, shall be allowed.

13. Drinking Water Quality

Objective

Provide and maintain safe drinking water.

Policy

Drinking water sources, both above and below ground, shall be protected from contamination due to sedimentation, salt water intrusion, or other sources of pollution.

Drinking water systems shall be improved to protect public health and welfare.

14. Unique Areas

Objective

Protect unique areas and their values from insensitive development.

Policy

Unique areas, including wetlands, mangrove swamps, aquifer recharge areas, critical habitat areas, floodplains, streams, watersheds and nearshore waters, shall be protected against significant disruption of their physical, chemical and biological characteristics and values. Only uses dependent on such areas shall be permitted.

Development in areas adjacent to unique areas shall be designed and sited to prevent impacts that would significantly degrade such area.

15. Archeological/Cultural/Historic Resources

Objective

Protect the archeological, cultural, and historic resources of

American Samoa.

Policy

Significant Samoan archeological, cultural, and historic sites, artifacts, and life-style shall be protected and preserved.

16. Air Quality

Objective

Maintain high air quality.

Policy

Territorial and Federal air quality standards shall be the standards of American Samoa in the coastal zone. Variance from those standards will be considered where such variance is justified, consistent with these standards, and will not result in significant air quality degradation.

SPECIAL AREAS

1. Pago Pago Harbor

Objective

Develop the Pago Pago Harbor area in a way that emphasizes its irreplaceable value as a working port and safe harbor, and protects its natural resources, including water quality.

Policy

The following use priorities shall be established for Pago Pago Harbor as delineated by a line drawn across the bay from the Rainmaker Hotel to the jetty at Leloaloa and the main road paralleling the shoreline.

1) Water dependent uses and activities shall have highest priority;

2) Water-related uses and activities shall have second priority;

3) Uses and activities which are neither water dependent nor water related, but which are compatible with water dependent and water related uses and activities shall receive third priority. All other uses and activities shall have lowest priority. Such uses shall be encouraged to locate or relocate in other designated commercial, industrial or residential areas.

2. Pala Lagoon

Objective

Enhance and restore the water quality, fish and wildlife, and recreation values of Pala Lagoon.

Policy

The following use priorities shall be established for Pala Lagoon, and its adjacent wetlands and beaches:

1) Non-polluting, non-destructive uses and activities, such as fishing, swimming, shelling, mariculture, boating (including launching facilities and access) and necessary restoration measures shall receive highest priority.

2) Those uses and activities which would interfere with the natural characteristics and values of the Lagoon and are not necessary for restoration or recreation shall receive lowest priority.

3) The villages adjacent to the lagoon shall receive high priority for hookup to government sewer system.

APPENDIX C - CULTURAL INSTITUTIONS OF AMERICAN SAMOA

CULTURAL INSTITUTIONS OF AMERICAN SAMOA

A. THE MATAI SYSTEM

1. Introduction. Traditional Samoan society is organized upon a blending and combination of several principles. These include the principle of hereditary rank, the functions of relationship groups, and the rights and privileges of the organized village community. The social organization can be discussed as it is conceived in theory, but in reality it is subject to change and reinterpretation because of the personalities, geography, specific history or outside forces involved.

These cultural institutions are still the strongest single influence in American Samoa. They must, however, continually adapt to the external influences introduced by returning Samoans, television programs, movies, increased number of palagi (Caucasian or outsider), contract workers, and the large variety of consumer goods and products available to Samoans. The ceremonial functions to many of the cultural institutions have been modified to accommodate the normal working hours of employees or other social occasions. Samoan culture has a certain degree of flexibility that allows ceremonial and traditional customs to be modified to suit the current situation. There is a strong feeling among many Samoans that outside influences are causing the younger generation to become apathetic towards the matai system. The present impact of the younger generation on the matai system is not known, but it may have a great impact in the near future.

2. Traditional Structure.

a. Aiga (Family Unit) and Matai (Chief). The basic unit of Samoan society is the aiga, a word variously translated into English as "extended family," "family group," "patriarchy," or "clan." An aiga consists of a group of people related by blood, marriage, or adoption, varying in number from a few to 200, which acknowledge a common allegiance to a particular matai. The matai possesses authority over the members of his aiga and regulates their activities, whether in agriculture, fishing, or the reception of guests. Family resources are similarily under his direction. Traditionally, the matai consults the aiga before exercising his authority. Consultation and discussion is a highly developed practice at every level of Samoan society.

These family units create a close knit group with an intense local pride and a close community of interest. It is common for a Samoan, when asked to give a family name for identification, to give the name of his matai who may not be his biological or natural father.

b. The Fa'alupega. The village is a combination of hundreds of people in these various family units. Socially, each village is defined by its fa'alupega, which contains a highly formal greeting of its principal matais. The correct place and dignity are accorded to each; and the relationship of local matai titles to the broader lineage structure of Samoa is made explicit. The possession of such a fa'alupega is in effect, the required demonstration of a particular village's autonomy. It provides a conventional record of the village's history, in terms of kinship and social status, and defines the constitution of its fono (village council). The appropriate fa'alupega are recited on all formal occasions, such as the meeting of the fono or the reception of guests from another village. It is the pride and study of the orators to know them for the whole of Samoa. (O le Tusi Fa'alupego o Samoa, new edition, Malua, Western Samoa, 1958).

c. Village Fono (Council of Chiefs). The most important group in the village is the fono or council of chiefs, which is composed of the matai of the village, and is responsible for the general government of the village community. At a meeting of the fono, the members' seating positions are determined in accordance with the importance of the matai title which each holds. Each title is assigned a rank and a fixed place in an ideal circular plan, the fixed points of which correspond to the posts in a Samoan round house. Men holding the leading titles sit in front of particular posts, the other occupy the spaces between. This order also determines the right to speak.

When a matai of high title expresses an opinion, those of lesser standing cannot with propriety dissent. However, since a large proportion of villages possess several titles of higher standing than the rest, this convention does not commonly lead to the creation of autocracy. Moreover, the Samoan conception of leader as a spokesman for, and representative of the group, has created the habit of informal consultation. Even where this procedure is not used effectively, the Samoan convention of debate permits attitudes to be made clear without the open expression of disagreement. The relative rigidity of the social structure and its formal expression in the structure of the fono is thus much mitigated in practice.

During the meeting, matters of general interest or concern are discussed; regulations regarding the conduct of village affairs made; and decisions reached as to the punishment of offenders of village customs and regulations. The fono allows Samoan society to maintain law and order and social integration at the village level. The system is a sophisticated one. It provides channels for the attainment of personal satisfaction by the participants as well as the procedures for the maintenance of social and political stability. Structural rigidity and operational flexibility are effectively combined.

d. Alii (Chief) and Tulafale (Orator or Talking Chief). The traditional tribal structure of the matai system is divided by function

into alii and tulafale. In the affairs of their own families, the matai has the same responsibilities whether they are chiefs or orators; but in the fono and in public affairs the functions of the two groups are complimentary. The chief is the titular leader, the ultimate repository of authority. The orator is the executive agent, who performs for the chief a variety of duties which are contrary to propriety for the chief to perform for himself. The orator is the repository of geneological knowledge, history, and legend; he makes formal speeches on behalf of the chief with whom his particular title associates him or on behalf of the village; he organizes the ceremonial distribution of food; and he acts as master of ceremonies when a chief's title is being bestowed.

The relative influence of chiefs, and orators differs from place to place, depending upon geneological structure, upon time and circumstances, and upon personality. But the differences of function between the two groups is a constant factor. It should be understood that based upon this geneological order of classifications, there exists a host of sub-chiefs and sub-orators, that may number several thousand matais. This confusion of sub-chiefs and sub-orators has given rise to western translations such as high chief, high talking chief, chief and talking chief; but it is impossible to say that one chief is "higher" than another without a knowledge of the exact circumstances for which the determination is being made. The higher ranked alii or paramount high chiefs are classified by reason of the geneological order under the traditional Tusi O Fa'alupega (Book of Traditional and Formal Titles and Greetings). It is difficult to set forth a definitive description of a typical village hierarchy because each village varies immensely from the others. It is customary for new governmental programs i.e., water resources development, to recognize the traditional geneological titles of the villages or districts which participate in any water resources development project or program.

3. Election of a Matai. The right of electing a matai is in most cases vested in the family as a whole. This group includes both members by descent and persons connected with the family by marriage or adoption who are living as members of the family. In practice however, family members living in another village and not participating in the affairs of the family are not usually expected to take part in the discussions. In reaching their decision, the members of the family bear certain customary considerations in mind. The eldest surviving brother of the previous holder of the title is entitled to special consideration. Also to be taken seriously is a declaration by the previous holder before his death as to who should be his successor. But, fundamentally, the members are free to make their own choice. They are concerned with ensuring the amicable and effective control of the family's affairs and with the maintenance of its standing in the community. Special attention is paid to a candidate's past record of loyalty to the family and service to the previous matai. (See Title 1, Section 754 of the American Samoa code for matai qualifications.)

4. The Role of the Matai. The matai requires respect for his position, and in turn, accords respect to his juniors. He maintains order and discipline and adjudicates all intra-family disputes. He is trustee of the family lands, but he is not the owner. Although land cannot be sold without his consent and the approval of the Governor of American Samoa, he cannot dispose of family land without the consent of the family. Since his position is elective and not hereditary, he may be deposed if his administration displeases his family members. (See Title 1, Section 801 of the American Samoa code.)

5. Other Village Groups. The untitled men in a village belong to the aumaga. The aumaga gives service to the matais and they work on community projects, i.e., clearing land, planting crops and group fishing. The women who are members of local families by birth or adoption belong to the aualuma, and the wives of matai to the potopotoga o faletua ma tausi. The wives of untitled men form a less clearly defined group fafine laiti'iti, which assist, and sometimes meet with the faletua ma tausi group. Each group serves a village function which benefits the community. Duties range from weeding taro patches, to weaving mats and ie toga (fine mats), to inspecting village plantations.

The tama fafine group recognizes that special relationship between brothers and sisters. Brothers have an obligation to consider the interests of their sisters and their sisters' children. The sisters are held to have the power of cursing their brothers and their descendants if these obligations are neglected. This relationship and members of an aiga who are related to it through a female are recognized to exercise great influence, through the power of veto, on family decisions regarding the choice of a matai or the alienation or assignment of land.

6. The Role of Religious Groups. The religious institutions in American Samoa play an important but varied influence in the community. The major religions in American Samoa are Catholic, London Missionaries, Mormon and Methodist. A priest or minister is accorded a privileged position in the village community and is equal in status to a high chief. They may make village rules that affect the conduct of the villagers on Sunday, i.e., no one may swim in the sea on Sunday, and no one may cause a disturbance while the church is in service. The Church is also a landowner by reason of gifts and purchases of real property. The amount of influence of the church is highly dependent on the personality of the priest or minister.

B. THE LAND TENURE SYSTEM

American Samoa presently has three characters of land holding: (1) communal land, (2) individually owned land, and (3) freehold land. Prior to the creation of freehold land grants in 1900, all lands in American Samoa were designated as communal lands. The majority of land is still under communal control. The character of some land has changed

from that of communal control to one of individual control, a new character of land created by the courts.

1. Communal or Native Held Lands. Communal lands are characterized as lands that are held under Samoan customs and subject to the Pule (authority) of the matai. Pule - a general Samoan word meaning control - does not imply ownership. It denotes the responsibility for allocating land, working it, and safeguarding it for future generations. The matai at the head of an aiga has been elected to at least one title and sometimes to several. Each title bestows pule over family lands.

Assignments of land by a matai for a house or a plantation for a family member is for that person's lifetime and cannot be revoked except for good cause; i.e., refusal to render services to the matai. The permission to use family lands given or assigned to family members continues as long as family members rendered a service to the matai and use it in accordance to Samoan customs. A matai may use produce, profits and rents from communal land in which he has an interest by virtue of his title in any manner he wishes, and members of a family may not claim an interest in property purchased with such profits.

The land holdings of each matai usually consist of several noncontinuous and odd-shaped plots and are well-known throughout the village. Where a patch has recently been cleared for a garden or plantation, its limits are readily recognized, but in older plantations or work plots this proves more difficult. Often the boundaries of each fragment are dependent on natural features such as a bend in a stream bed, a coconut stump, an indention in the ground, a large boulder or a tree; but these established limits are as definite to the Samoan pule holder as if they had been surveyed and fixed accurately on a map. In this respect, they are far less vague and present fewer problems than the boundaries of village land.

The Samoan sense of belonging to a community is most evident in the ownership of land. Land is the aiga's most precious possession, but paradoxically little care is given it, and well developed agricultural forms are not practiced. An interesting aspect of land character is the village malae which is equivalent to a village green or town plaza. The malae is located in the center of the village and is surrounded by the matai guest houses or fales which are organized based upon rank of the matai. The malae is used for village social activities and for sports events, and is maintained by all the families in the village. Each matai is given pule over a section of the malae according to rank but usually in front of his guest fale.

All alienation of communal land must be reviewed by the land Commission and approved by the Governor. All alienation of communal land is restricted to Samoans of at least one-half Samoan blood. All leases for communal

lands are limited to 30 years and must be posted for 30 days, approved by the Land Commission, and approved by the Governor of American Samoa prior to becoming effective. (Title 27 of the American Samoa Code.)

2. Individually Owned Land. When an individual has cleared virgin bush or occupied land without objection by others and there is no evidence that land is communally owned, the land can be claimed as individually owned. The character of individually owned land is an estate which subjects it to the restrictions on alienation of lands to Samoans of at least one-half Samoan blood. It can be described as an estate which is lesser in character to freehold or fee simple estates, which are alienable to any person or entity. It is a greater estate than communal land for the reason that it can be alienated to a Samoan with at least one-half Samoan blood, but does not have to be reviewed by the Land Commission and approved by the Governor of American Samoa.

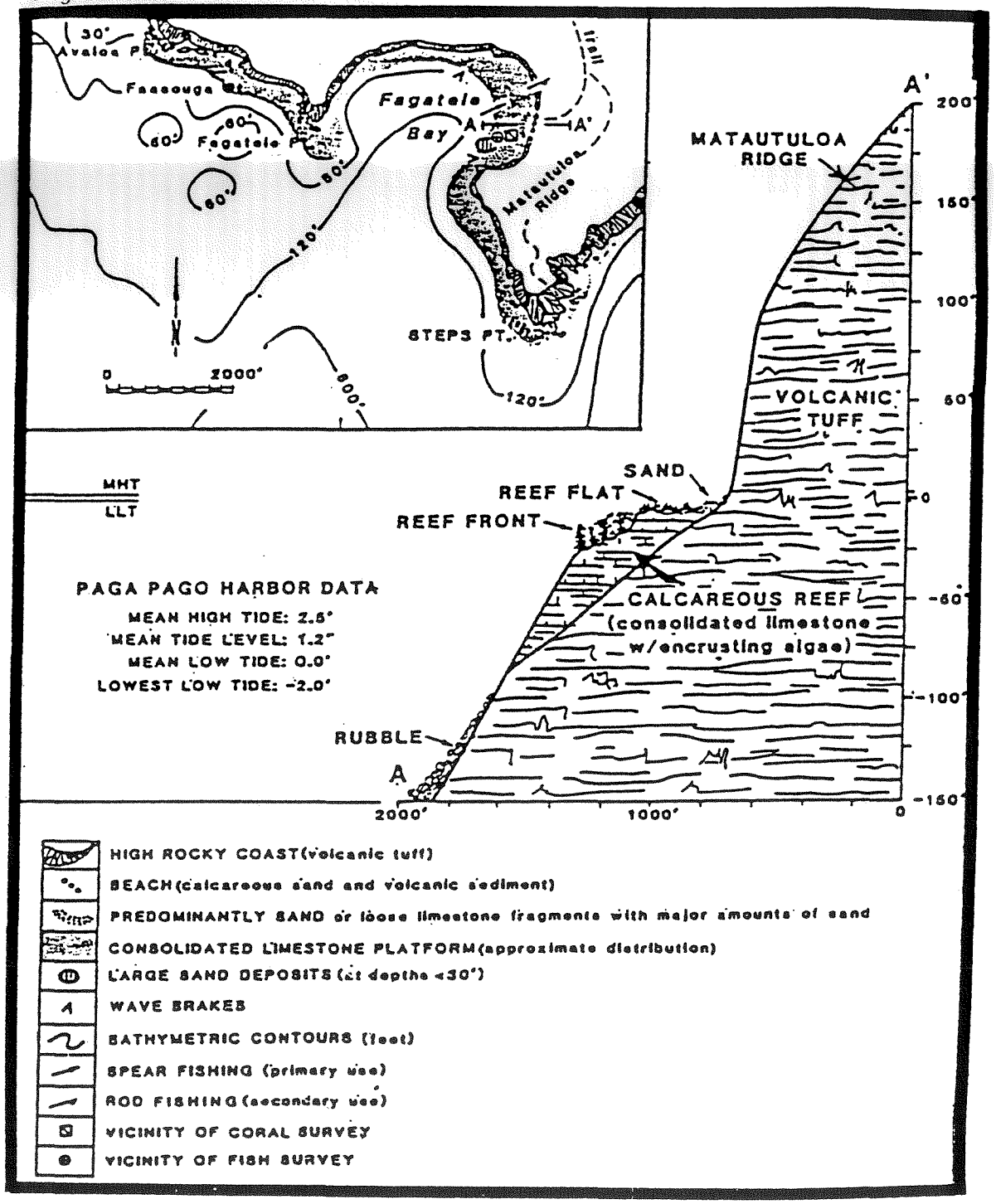
3. Freehold Land. Freehold land or fee simple land is a character of land that was created by the court grants of the Supreme Court of Western Samoa prior to 1900 under the German administration of Western Samoa. Freehold lands represent a very small portion of the total land area of American Samoa. The freehold lands are primarily held in probate estate of the original granter who often has several hundred heirs.

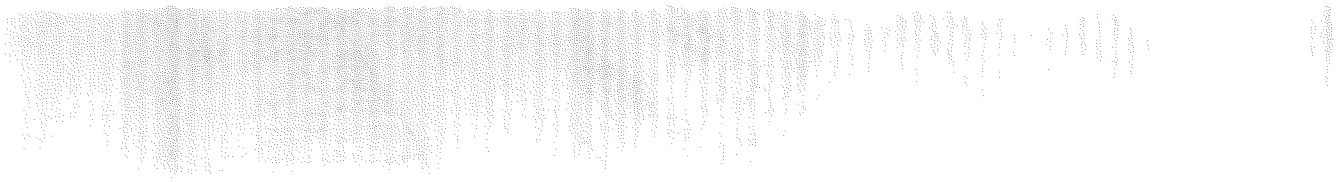
4. Government, Church, and School Held Lands. The nonalienation regulations do not prohibit the conveyance and transfer of native lands for governmental purposes to the United States Government or to the government of American Samoa and, upon approval of the Governor, to a recognized religious society or for school purposes.

5. Incorporation of Villages. The Revised Code of American Samoa does not have any provision for the incorporation of a village into a municipal entity and creating a municipal government for the purpose of governing the entity, issuance of bonds or declaration of public lands for; i.e., parks, schools, etc. It would appear that a municipal corporation which organizes the inhabitants of a prescribed area must be established under the authority of the legislature.

APPENDIX D - GEOLOGY OF TUTUILA

Figure D-1. Cross-section and Geology around Fagatele Bay





APPENDIX E - BIOLOGICAL CHARACTERISTICS

Table E-1. Commonly Sited Birds around Fagatele Bay

COMMON NAME	SAMOAN NAME	SCIENTIFIC NAME	Areas of Use 1*	2*	3*	4*	5*
Brown booby	Fua'o	Sula leucogaster	N-F				
Red footed booby		Sula sula	N-F				
Grey-backed tern		Sterna lunata	N-F				
Black noddy		Anous tenuirostris	N-F				
Blue-grey noddy	Laia	Procelsterna cerulea	N-F				
Great frigate bird		Fregata minor	N-F				
Brown noddy	Gogo	Anous stolidus	N-F	N			
White-tern	Manu sina	Gygis alba	N-F	N			
White-tailed tropic-birds	Tava'e	Phaethon lepturus	N-F	N			
White rumped swiftlet**		Collocalia spodiophygia			N-F		
Red vented bulbul**		Pycnonotus cafer			N-F		
Samoan starling**		Aplonis Atrituscus			N-F		
White collared kingfisher**		Halcyon chloris			N-F		
Cardinal honeyeater**		Myzomela dibapha (?)				N-F	
Wattled honeyeater**		Foulehaio carunculata				N-F	
Reef heron**		Egretta sacra					F
Wandering tattler**		Tringa incana					F
Plover**		Pluvialis sp.					F
Turnstone**		Arenaria interpres					F

* 1-Sea Cliffs/Bay
2-Coastal Forests
3-Interior Slopes and Valleys
4-Coastal Plain
5-Beach and Nearshore reefs

** Specifically noted along Leone Bay about 2 miles northwest of Fagatele Bay.

N=Nesting
F=Feeding

Source: AF & AECOS 1980, USAED 1980.

FISH SPECIES RECORDED ON REEF FRONT AND REEF FLAT, FAGATELE BAY, 1978

FAGATELE BAY REEF FRONT

Survey Date - September 25, 1978 (just prior to Acanthaster infestation)

The 100-meter transect line was laid on the 40-foot depth contour on the east side of the bay.

The following species were identified and counted on the transect or observed during a subsequent 20 minute search (designated by "+").

COMMON NAME	SCIENTIFIC NAME	
Trumpetfish	Aulostomus chinensis	+
Lae	Scomberoides lysan	+
Groupers	Anthias pascalus	+
	Anyperidon leucogrammicus	1
	Cephalopholis argus	+
	C. urodelus	+
	Gracilia albimarginata	+
Snappers	Aphareus furcatus	+
	Caesio xanthonatus	+
	Lutjanus bohar	+
	Macolor niger	+
	Pterocaesio kohleri	9
	Gnathodentex aureolineatus	+
	Monotaxis grandoculis	+
Rudderfish	Kyphosus cinerascens	+
Goatfishes	Mulloidichthys flavolineatus	2
	Parupeneus bifasciatus	+
	Parupeneus chryserydros	1
	P. trifasciatus	+
Hawkfishes	Paracirrhites arcatus	5
	P. forsteri	2

APPENDIX E (continued)

COMMON NAME	SCIENTIFIC NAME	
Angelfishes	Centropyge bispinosus	2
	C. flavissimus	+
	C. loriculis	+
	Pomacanthus imperator	+
	Pygoplites diacanthus	1
Butterflyfishes	Chaetodon ephippium	+
	C. ulietensis	+
	C. ornatissimus	1
	C. pelewensis	1
	C. reticulatus	1
	C. trifasciatus	+
	Chaetodon trifascialus	5
	Forcipiger flavissimus	1
	F. longirostris	1
	Hermitaurichthys polylepis	+
	Heniochus monoceros	+
	H. chrysostomus	+
	H. varius	+
Moorish Idol	Zanclus cornutus	1
Surgeonfishes	Acanthurus bleekeri	+
	A. glaucopareius	3
	A. lineatus	+
	A. nigrofuscus	2
	A. Olivaceus	+
	Ctenochaetus striatus	10
	C. strigosus	6
	Naso literatus	2
	Zebrasoma scopas	2
Rabbitfish	Siganus punctatus	+
	S. argenteus	+
Damselfishes	Abudefduf vaigiensis	+
	Chromis acares	72
	C. atripectoralis	8
	C. iomelas	19

APPENDIX E (continued)

COMMON NAME	SCIENTIFIC NAME	
Damselfishes	C. xanthura	13
	C. sp. "A"	4
	Dascyllus reticulatus	3
	D. trimaculatus	1
	Plectroglyphidodon dickii	115
	P. johnstonianus	18
	P. lacrymatus	4
	Pomacentrus brachialis	12
	P. vaiuli	5
Wrasses	Anampses caeruleopunctatus	+
	A. meleagrides	+
	Bodianus axillaris	+
	Cheilinus diagrammus	+
	C. oxycephalus	1
	C. rhodochrous	+
	C. trilobatus	+
	Coris aygula	+
	Epibulus insidator	1
	Gomphosus varius	8
	Halichoreres hortulanus	+
	H. biocellatus	+
	Hemigymnus fasciatus	+
	Labrichthys unilineatus	3
	Labroides bicolor	+
	L. dimidiatus	2
	L. rubrolabiatus	+
	Labropsis sp. "A"	2
	Macropharyngodon meleagris	+
	Pseudocheilinus evanidus	+
	Pseudodax moluccanus	+
	Anampses twistii	+
	Stethojulis bandanensis	+
	Thalassoma hardwickei	+
	T. lutescens	3
Parrotfishes	Cetoscarus bicolor	+

APPENDIX E (continued)

COMMON NAME	SCIENTIFIC NAME	
Parrotfishes	Scarus rubroviolaceus	+
	S. japanensis	+
	S. tricolor	+
	S. spinus	+
	S. psitticus	+
	S. gibbus	+
	S. niger	2
	S. oviceps	+
	S. frenatus	+
	S. sordidus	4
Gobies	Ptereleotris evides	+
Blennies	Cirripectes stigmaticus	1
	Exallias brEvis	2
Triggerfish	Balistapus undulatus	+
	Melichthys vidua	2
	Sufflamen bursa	+
Filefish	Amanses scopas	4
	Cantherines dumerili	+
	C. pardalis	+
	Oxymonacanthus longirostris	+
Trunkfish	Ostracion meleagris	1
Pufferfish	Canthigaster solandri	1
Filefish	Alutera scripta	+
Snapper	Caesio caerulaureus	+

TOTALS 114 species 370 individuals

48 species observed on transect

66 species observed within 20 m of the transect during subsequent 20 minute search

FAGATELE BAY REEF FLAT

Survey Date - February 15, 1978

The 100 m transect extended from the seaward edge of the reef flat to within about 30 m of the beach near the middle of the bay.

Average depth was less than one meter.

The following species were identified and counted on the transect or observed during a subsequent 20 minute search (designated by "+").

COMMON NAME	SCIENTIFIC NAME	
Grouper	Epinephelus merra	+
Emperor	Lethrinus harak	+
Goatfish	Parupeneus bifasciatus	+
	P. chryserydros	1
	P. trifasciatus	+
Butterflyfish	Chaetodon citrinellus	+
	C. lunula	+
	C. ornatissimus	+
	C. reticulatus	+
	C. vagabundus	1
	C. trifascialus	+
	Heniochus chrysostomus	+
Moorish Idol	Zanclus cornutus	+
Surgeonfish	Acanthurus glaucopareius	+
	A. guttatus	+
	A. lineatus	5
	A. nigrofuscus	41
	A. triostegus	4
	Ctenochaetus striatus	45
	Naso literatus	+
	Zebrasoma scopas	3
	Z. veliferum	+

APPENDIX E (continued)

COMMON NAME	SCIENTIFIC NAME	
Rabbitfish	Siganus spinus	+
Damselfish	Abudefduf sexfasciatus	+
	Amphiprion melanopus	+
	Stegastes albifasciatus	70
	Stegastes fasciolatus	14
	S. nigricans	3
	Glyphidodontops cyaneus	56
	Glyphidodontops glaucus	12
	G. leucopomus	30
	Plectroglyphidodon lacrymatus	+
Wrasses	Anampses caeruleopunctatus	+
	Cheilinus oxycephalus	+
	C. trilobatus	+
	Coris aygula	+
	Epibulus insidator	+
	Gomphosus varius	4
	Halichoeres margaritaceus	+
	H. marginatus	4
	H. trimaculatus	+
	Hemigymnus melapterus	+
	Labrichthys unilineatus	3
	Labroides bicolor	+
	L. dimidiatus	+
	Thalassoma fuscum	+
	T. hardwickei	29
	T. quinquevittatum	7
Parrotfish	Scarus chlorodon	+
	S. psitticus	+
	S. jonesi	+
	S. ovicaps	+
	S. frenatus	+
	S. sordidus	+
	Scarus spp. (juveniles)	4

APPENDIX E (continued)

COMMON NAME	SCIENTIFIC NAME	
Blenny	Unidentified	+
Triggerfish	Rhineacanthus aculeatus	1
	R. rectangulus	+
Filefish	Oxymonacanthus longirostris	+
Trunkfish	Ostracion meleagris	+
Pufferfish	Canthigaster solandri	+

TOTALS 61 species 338 individuals

20 species observed on transect

41 species observed within 20 m of the transect during subsequent 20 minute search

CHECKLIST OF SAMOAN CORAL GENERA AND SPECIES

Genus *Stylocoeniella*
Species *armata*

Genus *Psammacora*
contigua
folium
nietstraszi
superficialis
var. *tutuilensis*

*Genus *Stylophora*
mordax

*Genus *Seriatopora*
hystrix

*Genus *Pocillopora*
**ankeli*
brevicornis
cf. *bulbosa*
damicornis
danae
**eydouxi*
cf. *setchelli*
**verrucosa*
woodjonsi

*Genus *Acropora*
abrotanoides
africana
aculeus
arbuscula
aspera
bruggemanni
ceralis
clathrata
**corymbosa*
crateriformis
cuspidata
**cytherea*
delicatula
digitifera
diversa
exigua
formosa
fruticosa
**granulosa*
horrida
**humilis*
**hyacinthus*
* *A. nana*
nasuta
nobilis
pagoensis
* *palifera*
palmeri
paniculata
* *pinquis*
pulchra
rambleri
robusta
rotumana
schmitti
spicefera
splendida
squarrosa
surculosa
teres
valida
variabilis

*Genus *Astreopora*
cucullata
listeri
myriophthalma

Genus *Montipora*
berryi
bilaminata
caliculata
composita
ehrenbergi
elschneri
foveolata
marshallensis
pulcherrima
scutata
socialis
spumosa
trabeculata
tuberculosa
venosa
verrilli

Genus *Pavona*
clavus
decussata
divaricata
duerdeni
frondifera

intermedia
latistella
longicyathus
massawensis
millepora

Genus *Gardineroseris*
Species *ponderosa*

Genus *Leptoseris*
gardineri
scabra

Genus *Pachyseris*
carinata
levicollis
speciosa

*Genus *Coscinaraea*
columna

Genus *Fungia*
concinna
echinata
fungites
granulosa
patelliformis
paumotensis
repanda
scutaria

Genus *Herpolitha*
crassa
limax

Genus *Polyphyllia*
novae-hiberniae

Genus *Halomitra*
pileus

Genus *Goniopora*
parvistella
cf. *somaliensis*

Genus *Porites*
andrewsi
arenosa
latistella
lichen
lobata
lutea
var. *haddoni*
matthaii
murrayensis
gigantea
maldivensis
varians

Genus *Alveopora*
allingi
verriliana
sp. 1

*Genus *Favia*
favus
laxa
pallida
**rotumana*
speciosa
stelligera

*Genus *Favites*
abdita
chinensis
halicora
russelli

*Genus *Goniastrea* sp.
edwardsi
favulus
palauensis
pectinata
retiformis

*Genus *Platygyra* sp.
lamellina
rustica

*Genus *Leptoria*
phrygia

Genus *Oulophyllia*
crispa

*Genus *Hydnophora*
exesa
**microconos*

Genus *Montastrea*
curta

Genus *Plesiastrea*
versipora

Genus *Diploastrea*
heliopora

pukoensis
queenslandi septima

Subgenus *Synaraea*
horizontalata
undulata

*Genus *Echinopora*
Species *lamellosa*

Genus *Galaxea*
clavus
fascicularis

Genus *Acrhelia*
horrescens

Genus *Acanthastrea*
echinata

*Genus *Lobophyllia*
costata

*Genus *Symphyllia*
nobilis

*Genus *Merulina*
ampliata

Genus *Echinophyllia*
aspera

Genus *Leptastrea*
purpurea

Genus *Cyphastrea*
microphthalma

Genus *Oxypora*
lacera

Genus *Eyphyllia*
glabrescens

* Genus *Plerogyra*
**simplex*

Genus *Tubastrea*
coccinea

Genus *Turbinaria*
frondens
peltata

Genus *Heliopora*
coerulea

*Genus *Millepora* sp.
platyphylla
tenera

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* Recorded in Fagatele Bay prior to starfish devastation in December 1978; Paul Bartram 1982, personal communication.

Source: List compiled by Dr. A. Lamberts and printed in AF & AECOS 1980.

APPENDIX F

DRAFT GUIDELINES FOR PREPARING AND SUBMITTING PROPOSALS FOR RESEARCH IN NATIONAL MARINE SANCTUARIES

APPENDIX F

DRAFT GUIDELINES FOR PREPARING AND SUBMITTING PROPOSALS FOR RESEARCH IN NATIONAL MARINE SANCTUARIES

I. Sanctuary-Sponsored Research

The Sanctuary Programs Division (SPD) of the Office of Ocean and Coastal Resource Management in the National Oceanic and Atmospheric Administration (NOAA) provides support for research which addresses management issues in national marine sanctuaries. Research priorities are identified in sanctuary management plans.

II. Types of Proposals

The SPD provides financial support for research through grants, contracts, and cooperative agreements. Cost-sharing and coordination of projects with other government agencies, universities and private institutions is encouraged.

The SPD considers proposals from universities and colleges; nonacademic research institutions (e.g., research laboratories, independent museums, professional societies); private organizations; local, state or other Federal government agencies; and unaffiliated qualified individuals.

Proposals for research in national marine sanctuaries fall under one of several categories as defined below:

A. Competitive Proposals. Any procurement for which bids, quotations, or proposals are solicited or requested from several qualified sources for competitive evaluation. Requests for proposals (RFP) and scope of work are published in the Commerce Business Daily.

B. Noncompetitive Proposals. Any procurement for which bids, quotations or proposals are solicited or requested from only one source or for which only one bid, proposal or quotation is received. Noncompetitive proposals are considered when: (1) no other source has the capabilility and/or experience; (2) efforts to find other firms are unsuccessful; (3) only the one proposed contractor can meet the required delivery schedule; or (4) it would be less than economic if the requirement was procured by another source.

C. Unsolicited Proposals. Any formal written offer to perform a proposed task or effort that is initiated and submitted by a qualified prospective contractor without a solicitation by SPD. SPD encourages the submission of ideas, concepts or suggestions that may help to improve or enhance its mission or sanctuary management capabilities through unique or innovative methods or approaches.

III. General Policies

Proposals for research in national marine sanctuaries are evaluated in accordance with stated evaluation criteria (see Guidelines for Evaluating Proposals). All proposals are reviewed by SPD officials and experts knowledgable on the subject matter.

SPD does not normally support open-ended projects, projects with vague goals, projects with untested and unproven methods, or projects that will have adverse impacts on the sanctuary environment. New methods should be field tested and evaluated in small projects before use in major projects supported by SPD in order to ensure a high probability of successful project completion.

SPD will consider providing support for research conducted outside of the sanctuary if the proposed effort is of importance to sanctuary management. When proposals include activities prohibited by sanctuary regulations, it may be determined that all or part of the research should be conducted outside the sanctuary boundary. Sanctuary regulations and Guidelines for applying for Sanctuary Research/Education Permits should be consulted to determine the appropriateness of the research approach considered before a proposal is submitted to SPD. Under special circumstances, activities otherwise prohibited by sanctuary regulations may be permitted under NOAA permit or otherwise conditioned to reduce the threat of harm to the environment.

When research supported by other sources is to be conducted in the sanctuary, SPD and on-site sanctuary personnel should be notified in advance by the principal investigator to help assure that responsible program personnel are aware of all research activities in a particular sanctuary.

Provisions for emergency response to crisis situations that may affect the sanctuary are being considered. During the past, several potential emergency situations have occurred, including oil spills, massive fish kills, apparent epidemics of disease, and boat groundings, and no contingency plan was in place to respond to the crisis or assess its impact in an organized and timely fashion.

IV. Proposal Content

A. Cover Sheet. The cover sheet should identify the following, where applicable:

1. Announcement or solicitation number and closing date (if any) or identify as unsolicited

2. Name of national marine sanctuary where proposed project is to be conducted

3. Title of proposed project

4. Name and address of organization to which the award would be made

5. Type of organization

6. Name, address and phone number of principal investigator and additional key project representatives

7. Requested amount

8. Proposed start date

9. Proposed Project duration

10. Other funding sources (actual or potential)

11. Previous award numbers for renewal or continued support

The title of the proposed research project should be brief, informative and intelligible to the general public.

Specification of a proposed starting date does not guarantee award by that date. Work on the project should not begin before the effective date designated on the official notification of the award.

A proposal must be signed by the organizational official authorized to contractually obligate the submitting organization. The principal investigator is also signatory.

B. Table of Contents.

C. Lists of Figures and Tables.

D. Project Summary. A 250-word project summary should include a statement of research objectives, scientific methods to be used and the significance of the project to a particular sanctuary or to the national marine sanctuary system. The summary should be suitable for use in the public press.

E. Project Description. The main body of the proposal should be concise, but detailed. It should include:

1. Description of Current State of Knowledge. Discuss the problem in light of significant previous work in the area.

2. Project Objectives. State the objectives of the study.

3. Project Significance. Discuss how the proposed effort will enhance or contribute to improving the state of knowledge. Discuss any relevant management issues and how the proposed effort will contribute to sanctuary management decisionmaking, future sanctuary research, and/or other works in progress.

4. Methods. Describe the tasks required to accomplish the project's objectives. Provide adequate description of field and laboratory methods and procedures. Provide a map to study location(s). Indicate habitat areas of particular concern. Indicate where laboratory analyses will be conducted, if applicable. Describe the rationale for selecting the proposed methods and study locations over any alternatives. Identify any environmental consequences. List and describe facilities and equipment to be used. Collaborative arrangements and cost-sharing should be documented in the proposal.

5. Analysis of Results. Discuss how the results will be analyzed. Reference relevant statistical analyses.

6. Deliverables. Discuss anticipated final products -- see IV. Report Preparation. Provide sample graphics or illustrations and layout design. If color photographs or graphics are to be used, provide justification for use and estimate total number. Indicate how results will be treated -- published in reference journal, published in the public press, incorporated into academic curriculum, submitted to SPD's Technical Report Series, etc. (Note the SPD prints and publishes a limited number of outstanding reports in its Technical Report Series).

F. Personnel. Describe the research team and the specific task assignments of team members. Indicate the percentage of time, based on the offeror's regular work week, that personnel are expected to devote to the proposed work. Provide resumes listing qualifications and details relating professional and technical personnel. In an appendix, list each investigator's publications during the past 5 years. Describe and explain any portion of work expected to be subcontracted and identify probable sources.

Submit evidence of ability to perform. Such evidence shall be in reference to similar efforts performed.

G. References. Cite only those used in the text of the proposal.

H. Budget. The applicant may request funds under any of the categories listed below as long as the item is considered necessary to perform the research. The applicant should provide justification for major items requested.

1. Salaries and Wages. Salaries and wages of the principal investigator and other members of the project team constitute direct costs in proportion to the effort devoted to the project. The number of fulltime person months or days and the rate of pay (hourly, monthly or annual) should be indicated. Salaries requested must be consistent with the institution's regular practices. The submitting organization may request that salary data remain proprietary information.

2. Fringe Benefits. Fringe benefits (i.e., social security, insurance, retirement) may be treated as direct costs so long as this is consistent with the institution's regular practices.

3. Equipment. Itemize equipment to be purchased, leased or rented by model number and manufacturer, where known. Describe purpose of use. SPD defines equipment as an item of property that has an acquisition

cost of $300 or more and an expected service life of 2 years or more. Equipment becomes the property of SPD at the termination of the contract. Where possible and economically advantageous, equipment should be rented or leased for the duration of the project.

4. Travel. Describe the type and extent of travel and relation to the proposed research. Travel expense should not exceed 40 percent of total direct costs. Funds may be requested for field work and subsistence and for consultant's travel.

5. Other Direct Costs. The budget should itemize other anticipated costs under the following categories:

a. Materials and Supplies. The budget should indicate in general terms the types of expendable materials and supplies required with their estimated costs.

b. Research Vessel or Aircraft Rental. Include unit cost and duration of use.

c. Laboratory Space Rental. Funds may be requested for use of laboratory space at research establishments away from the grantee institution while conducting studies specifically related to the proposed effort.

d. Reference Books and Periodicals. Funds may be requested for reference books and periodicals only if they are specifically required for the research project.

e. Publication and Reproduction Costs. This includes costs of preparing written text and illustrations and publishing results.

f. Consultant Services. Consultant services should be justified and information furnished on consultant's expertise, primary organizational affiliation, daily compensation rate and number of days of expected service. (Travel should be listed under travel in the budget).

g. Computer Services. The cost of computer services, including data analyses and storage, word processing for report preparation and computer-based retrieval of scientific and technical information, may be requested and must be justified.

h. Subcontracts. Subcontracts must be be disclosed in the proposal for approval by SPD.

6. Indirect Costs. Appropriate or established indirect cost rate; e.g., fees.

I. Other Sources of Financial Support. List all current or pending research to which the principal investigator or other key personnel have committed their time during the period of the proposed work, regardless of the source of support. Indicate the level of effort or percentage of time devoted to these projects.

If the proposal submitted to SPD is being submitted to other possible sponsors, list them and describe the extent of support sought. Disclosure of this information will not jeoparadize chances for SPD funding.

J. Application for Sanctuary Permit. Removal or manipulation of sanctuary resources or activities prohibited by sanctuary regulations requires a sanctuary permit. Proposals should discuss the environmental consequence of conducting an otherwise prohibited activity and indicate whether the activity could be conducted outside the sanctuary and accomplish the project's objectives. If collecting is required, indicate the type and quantity and where specimens will be deposited. Indicate what organisms might be collected incidentally to those specifically sought and identify specialists who might be interested in incidental groups.

K. Requests for Sanctuary Support Services. SPD has limited on-site sanctuary personnel, facilities and equipment which may be used on loan or lease to support research under special circumstances. Requests should include the following information: (1) type of support requested; (2) justification; (3) dates and duration of use; and (4) alternative plans if support is not available.

L. Coordination with Other Research In Progress or Proposed. SPD encourages coordination, collaboration and cost-sharing with other investigators to enhance scientific capabilities and avoid unnecessary duplication of effort. Proposals should include a description of these efforts.

V. Submission of Proposals

Dates for submission of solicited proposals are announced in the Commerce Business Daily. Unsolicited research proposals may be submitted at any time but in order to be funded in a particular fiscal year, proposals should be received no later than December 15 of that year (ie., by December 15, 1983 for FY 84 funds). Applicants should allow at least ninety (90) calendar days for review.

Five (5) copies of the proposal should be submitted to:

Dr. Nancy Foster
Chief
Sanctuary Programs Division
Office of Ocean and Coastal Resources Management
National Oceanic and Atmospheric Administration
3300 Whitehaven Street, N.W.
Washington, D.C. 20235
(202)634-4236

APPENDIX G

GUIDELINES FOR PROCESSING AND EVALUATING RESEARCH PROPOSALS

APPENDIX G

GUIDELINES FOR PROCESSING AND EVALUATING RESEARCH PROPOSALS

I. Receipt and Acknowledgement of Proposals

Receipt of research proposals is acknowledged in writing by the Sanctuary Program Division. Proposals are checked for completeness and adherence to the stated guidelines. Complete proposals are recorded and assigned tracking numbers, while incomplete proposals are returned to sender for clarification. These guidelines, presented herein, as well as those required under the NOAA and DOC procurement procedures, are followed in the proposal review process.

II. Selecting Review Boards for Evaluating Proposals

SPD has assembled a registry of recognized scientists and resource managers who have indicated a willingness or who have been recommended by their peers to serve on proposal review boards in their particular fields. After a proposal has been screened by SPD, a review board of 3 to 10 persons is selected. The board can include inhouse staff, on-site sanctuary personnel, and persons on the registry. Review board members must have a demonstrated understanding of the particular sanctuary and the problem represented by the proposal and a lack of bias to enable performance in a meaningful evaluation.

III. Criteria for Evaluating Proposals

The criteria presented below are applied to all proposals in a balanced and judicious manner in order to select the most meritorious proposals for support by SPD.

A. Relevance or Importance of the Research to Sanctuary Management -- this criterion is used to assess the relevance or importance of the research to site-specific, regional, or national marine sanctuary management issues. Considered under this criterion is the likelihood that the research will enhance sanctuary management decisionmaking and the proposal's demonstrated grasp of the problem (i.e., does the proposal demonstrate a clear understanding of the problem, the total research requirement, the mission of the national marine sanctuary program, the goals and objectives of the site-specific sanctuary, and other integral factors which are germane to achieving the objectives of the proposal?). In addition, factors such as the project's uniqueness, innovation, or meritorious approach are considered here.

B. Scientific or Educational Merits of the Research -- this criterion is used to assess the likelihood that the research will contribute to improving scientific understanding of the sanctuary environment or contribute to promoting public awareness, understanding and wise use of the sanctuary environment.

C. Qualifications, Capabilities, and Experience of the Principal Investigator and Key Personnel -- this criterion is used to evaluate such factors as experience related to the procedures, methodologies

and techniques to be employed; education and experience in the general technical field; and publishing record;

D. Technical Approach -- the following factors are to be considered: the degree to which the offeror states clear objectives, assumptions and possible solutions; the soundness of approach--the degree to which the proposed methods, techniques and procedures are suited to the program objectives and the affected environment; the degree to which the proposal demonstrates an understanding of those methods, techniques, and procedures; the adequacy in satisfying project requirements and tasks; the probability of success; the degree to which the proposed program scheduling is realistic and comprehensive; the degree to which the proposal demonstrates an understanding of past and on-going research programs; the degree to which the proposal will utilize other resources; the degree to which the proposed technical program plans to integrate, interpret, and synthesize specialized and interdisciplinary data; and availability of necessary support (i.e., facilities, equipment, and degree of support available to the proposed effort at no additional cost to the government; program management support; accountability).

E. Other Factors Evaluated -In addition to the criteria listed above, proposals are evaluated to determine:

(1) environmental consequences of conducting or not conducting the research (2) whether or not the research should be conducted in the national marine sanctuary or outside of its boundary; (3) if the research is germane to the interests of the National Marine Sanctuary Program; (4) whether or not the material contained in the proposal is already available to the Government from other sources; and (5) if any other local, private, state, or Federal program would have an interest in the proposed project.

During the evaluation period, proposals and any other relevant materials should be closely safeguarded. Proposals can only be duplicated by SPD. If additional copies are required for evaluation, they must be obtained from SPD.

IV. Proposal Acceptance and Declination

Review board members will provide final recommendations to NOAA/SPD within 30 working days after receipt of proposals for review. All copies of proposals will be returned to SPD.

SPD is responsible for making the final award decision. Declined proposals are returned. Applicants may request and receive the reasons for the action.

Proposals that are selected for support are forwarded to the NOAA Grants Office for negotiation with the organization to which the award is to be made. SPD recommends any special award conditions at that time. The award is signed by the NOAA Grants Officer and sent to the organization and principal investigator for acceptance. The award period begins on the day of acceptance by the organization unless otherwise stated in the award. A signed copy of the award is returned to NOAA.

GUIDELINES FOR PREPARING AND SUBMITTING APPLICATIONS FOR NATIONAL MARINE SANCTUARY PERMITS

I. Introduction

National marine sanctuaries are recognized as resource areas of national significance. Their distinctive characters clearly establish them as environmental benchmarks for scientific research and public education. The number of requests to conduct research and education projects in national marine sanctuaries increases every year. Guidelines managing research and eduction are thereby necessary to ensure that these activities are compatible with sanctuary goals and objectives and all other sanctuary activities.

The guidelines presented herein describe the sanctuary permitting process. Applicants seeking financial support for research should consult the Sanctuary Programs Division's (SPD) Guidelines for Preparing and Submitting Proposals for Research in National Marine Sanctuaries.

Permits may be issued by the Assistant Administrator for National Ocean Services or his/her designee under special circumstances for activities otherwise prohibited by sanctuary regulations when related to: (1) research to enhance scientific understanding of the sanctuary environment or to improve management decisionmaking; (2) education to further public awareness, understanding, and wise use of the sanctuary environment; or (3) salvage and recovery operations.

II. Application Contents

A. Cover Sheet. The cover sheet should identify: (1) name of the national marine sanctuary in which the proposed activity would take place; (2) title of project; (3) name, address, telephone number, and affiliation of applicant: (4) name, affiliation, and relationship of colleagues to be covered by the permit; (5) project duration; (6) funding source; (7) key words; and (8) signature of applicant.

B. Project Summary. A 250-word project summary should include a brief statement of research objectives, scientific methods to be used, and significance of the proposed work to a particular sanctuary or to the national marine sanctuary system. The summary should be suitable for use in the public press.

C. Technical Information. This includes brief, but clear, concise and complete statements of the following:

1. Background. Provide background information, including state of knowledge and significant previous work in the area of interest.

2. Objectives. State the objectives of the study.

3. Project Significance. Discuss how the proposed effort would enhance or contribute to improving the state of knowledge. Explain why the proposed effort should be performed in the sanctuary and the potential benefits of the proposed effort to the sanctuary.

4. Methods. Describe the tasks required to accomplish the project's objectives. Provide adequate description of field and laboratory methods and procedures. Describe the rationale for selecting the proposed methods over any alternative methods. If collecting is required, indicate the type, quantity and frequency, how the specimens will be handled, and if reference collections are made, where specimens will be deposited upon completion of the project. Indicate what organisms might be collected incidental to those specifically sought and, if known, identify specialists who might be interested in incidental groups.

Consult with on-site sanctuary personnel beforing selecting study sites. Provide a map to field study location(s) and indicate habitat areas of particular concern. Indicate where the laboratory analyses will be conducted, if applicable.

5. Environmental Consequences. Discuss the environmental consequences of conducting an otherwise prohibited activity. Cite references.

6. Personnel. Identify the research team and specific task assignments of team members. Provide qualifications and evidence of ability to perform tasks. Only those persons listed on the permit are allowed to participate in permitted activities.

7. Treatment of Results. Describe the nature and extent of anticipated results. Indicate how the results will be treated (e.g., published in a reference journal, incorporated into academic curriculum, used in management decisionmaking, published in the public press).

8. References. Cite only those used in the text of the proposal.

D. Supporting Information

1. Financial Support. Provide contract number, performance period, and name of sponsoring agency.

2. Coordination with Research in Progress or Proposed. SPD encourages coordination and cost-sharing with other investigators to enhance scientific capabilities and avoid unnecessary duplication of effort. Applicants should include a description of these efforts, where applicable.

IV. Requests for Sanctuary Support Services

SPD has limited on-site sanctuary personnel, facilities and equipment that may be used on loan or lease to support research under special circumstances. This includes use of Carysfort Lighthouse in Key Largo National Marine Sanctuary. Requests for support should accompany the permit application and include the following information: (1) type of support requested; (2) justification; (3) dates and length of use; and (4) alternative plans if support is not available.

V. Requests for Amendments to Active Permits

Requests for extension of a permit period, change in study design or other form of amendment to active permits should conform to these guidelines. All pertinent information needed to make an objective evaluation of the

amendment should be included in the request. The applicant may reference the original application in the request for an amendment.

VI. Submission of Requests for Permits

Requests for permits should be submitted in five (5) duplicate copies at least three (3) months in advance of the requested effective date, preferably by the beginning of the calendar year, to allow sufficient time for evaluation and processing. In proven emergency situations, exceptions to this requirement may be considered.

Requests for permits should be addressed as follows:

Assistant Administrator for National Ocean Service
ATT: Dr. Nancy Foster, Chief
Sanctuary Programs Division
Office of Ocean and Coastal Resource Management
3300 Whitehaven Street, N.W.
Washington, D.C. 20235

(202)634-4236

VII. Evaluation of Permit Requests

Permit applications are checked for completeness and adherence to these guidelines. Complete applications are assigned tracking numbers. Incomplete applications are returned to applicant for clarification. Complete applications reviewed by SPD program officials, on-site sanctuary personnel and, where necessary, outside experts. Applications are judged on the basis of (1) relevance or importance to sanctuary; (2) scientific or educational merits; (3) appropriateness and environmental consequences of technical approach; and (4) whether the proposed effort should be conducted outside of the sanctuary.

VIII. Conditions of Permits

Based on the findings of the evaluation, SPD recommends an appropriate action to the Assistant Administrator. If denied, applicants are notified of the reason for denial. If approved, the Assistant Administrator or his/her designee signs and issues the permit. An original and two copies are sent to the applicant for signature. Applicants must send signed copies to SPD and on-site sanctuary personnel prior to conducting permitted activities in the sanctuary. Permits must be carried aboard research vessels and made available upon request for inspection by sanctuary personnel or law enforcement officials. A NOAA/SPD research flag will be issued to the permit holder by on-site sanctuary personnel. The flag must be displayed by the permit holder while conducting the permitted activity and returned to on-site personnel upon completion of the permitted activity. This requirement not only assures that sanctuary personnel are aware of permitted activities, but also alerts other sanctuary users that research is in progress.

Only persons named on the permit may participate in permitted activities. Permits and NOAA/SPD flags are non-transferrable. Permit holders must abide by all provisions set forth in the permit as well as applicable sanctuary

regulations. The applicant's proposal for a sanctuary permit is incorporated into the conditions of the permit by reference.

Permitted activites must be conducted with adequate safeguards for the environment. Insofar as possible, the environment shall be returned to the condition which existed before the activity occurred.

Any information obtained pursuant to the permitted activity shall be made available to the public. Submission of one or more reports to SPD on the permitted activity may be required.

IX. Monitoring of Performance

Permitted activities will be monitored to ensure compliance with the conditions of the permit. SPD and on-site sanctuary personnel may periodically assess work in progress by visiting the study location and observing any activity permitted by the permit or by reviewing any required reports. The discovery of any potential irregularities in performance under the permit shall be promptly reported and appropriate action taken. Permitted activities will be evaluated and the findings will be used to evaluate future applications.

The Assistant Administrator may amend, suspend, or revoke a permit granted pursuant to these guidelines and sanctuary regulations, in whole or in part, temporarily or indefinitely, if in his/her view the permit holder(s) acted in violation of the terms of the permit or of applicable sanctuary regulations, or for any good cause shown. Any such action shall be communicated in writing to the permit holder, and shall set forth the reason for the action taken. The permit holder in relation to whom the action is taken may appeal the action as provided for in sanctuary regulations.

X. Further Information

For further information on the National Marine Sanctuary Program, write or call the Sanctuary Programs Division or on-site sanctuary contacts listed below:

Sanctuary Programs Division
Office of Ocean and Coastal Resource Management
3300 Whitehaven Street, N.W.
Washington, D.C. 20235
(202) 634-4236

American Samoa Development Planning Office
Pago Pago, American Samoa 96799
633-5155
(If calling from overseas, dial 011-684 before number listed)

PART XII: COMMENTS AND RESPONSES TO THE DEIS

Responses to Comments Received on the Proposed
Fagatele Bay National Marine Sanctuary
Draft Environmental Impact Statement
and Sanctuary Management Plan

This section summarizes the written and verbal comments received on the Draft Environmental Impact Statement and Sanctuary Management Plan (DEIS/MP) and provides OCRM's response to these comments. Generally, responses are made in one or more of the following ways:

(1) Expansion, clarification, or revision of the EIS/MP;

(2) Generic responses to comments raised by several reviewers, and/or

(3) Specific responses to individual comments made by each reviewer.

The following are some of the most common issues raised by reviewers:

Generic Comment A

NOAA's Preferred Alternative, which includes Fagatele Bay in its entirety, should be changed to allow commercial fishing in the outer portion of the bay. Over the years, this area has been used as a refuge from rough seas and a fishing ground while waiting for the heavy seas to pass.

Generic Response A

NOAA acknowledges the importance of fishing to the Samoan way of life and the multi-use aspects of the sanctuary. The outer portion of Fagatele Bay is much deeper than the inner areas and possesses many of the larger fish species. Comparing this area with the shallower portions, the reefs are deeper and, to a certain extent, less developed. Although the entire bay possesses certain valuable biological resources, the potential for benthic destruction in the outer bay area is not as great as the more accessible, shallower reef communities of the inner bay.

After careful evaluation of this potential sanctuary, NOAA has concluded that a tiered structure that would allow commercial fishing in the outer portions of the bay could benefit both the sanctuary and users of the sanctuary. All fishing activities within the shallower inner bay will be prohibited, but allowed in the outer bay. In this way, the productive, inner reef communities wll be preserved without risk of damage during its recovery process while allowing compatible activities in the outer bay.

Generic Comment B

The status quo, with various Federal and Territorial authorities, already provides enough protection for the resources described in the DEIS. A marine sanctuary would only add an unnecessary and expensive layer of Federal bureaucracy.

Generic Response B

The various Federal and Territorial agencies which exercise authority in the area of the proposed sanctuary provide a certain degree of protection to the resources of the area. Marine sanctuary designation will provide a management framework that does not presently exist.

The National Marine Sanctuary Program, unlike other regulatory programs which have jurisdiction in the area of the proposed sanctuary, offers a mechanism to focus on this particular geographically defined marine area and to provide comprehensive planning and management to protect the resources of the site over the long-term. Other statutes either focus on management of much smaller areas, single resources, or have resource protection only as an ancillary goal. NOAA belives that long-term protection of any area must involve more than just regulatory controls and marine sanctuary planning and management include provisions for research and monitoring of the condition of the resources to assure effective decisionmaking and maximum safe use and enjoyment. Other statutes do not provide in most cases the same geographically focused, comprehensive research and monitoring effort. In addition, the interpretive element of the program heightens public awareness of the value of the resources, the need for their conservation and wise use and thereby reduces the potential for harm; again, this aspect of the national marine sanctuary program is unavailable under the present system.

Although certain uses of the area do not now seriously threaten resource quality here, they could have significant effects if and when activity levels increase. The National Marine Sanctuary Program provides a management framework that will allow for timely responses to any future issues that might arise.

Generic Comment C

Designation of a marine sanctuary may interfere with the Samoan way of life. NOAA should consider the Samoan lifestyle when evaluating the proposed sanctuary.

Generic Response C

NOAA has continually maintained that "Fa'a Samoa", the Samoan way, will be of utmost consideration during the evaluation process. It is recognized that strong cultural ties are reflected in daily life in American Samoa. NOAA will do its utmost in assuring that the Samoan way of life, as it pertains to the sanctuary, is maintained and incorporated into sanctuary management.

During the evaluation process, NOAA has sought and received input from the American Samoan government as well as village chiefs and other local groups. NOAA feels that this input has been and will continue to be invaluable in assuring effective management of the sanctuary.

Generic Comment D

Designation of a marine sanctuary will mean increased access, thereby leading to further degradation of the bay's pristine ecosystem.

Generic Response D

Although marine sanctuary designation may increase access to the area, many safeguards will be employed to protect the bay's ecosystem. Besides regulations protecting the bay, other methods such as the use of anchor buoys will be instituted. However, one of the most overlooked methods of ecosystem protection, to be emphasized in the Sanctuary, is education. The Interpretive Program will focus on providing information to Samoans and all sanctuary visitors about the improtance of marine ecosystems, not just Fagatele Bay, to everyday life in American Samoa. A comprehensive education program combined with regulatory enforcement is the best combination to assure protection of Fagatele Bay's rich ecosystem.

Generic Comment E

Overland access to Fagatele Bay should be extensively explored to allow access by those unable to get to the sanctuary via waterborne routes.

Generic Response E

NOAA recognizes the importance of access to the proposed sanctuary. However, the steep cliffs around the bay currently make overland access dangerous and costly at the present time. Accordingly, NOAA believes that ocean access to the bay should first be emphasized to ensure efficient yet safe access to Fagatele Bay. However, NOAA recognizes the possible attraction of an overland access. If this is identified by the manager in consultation with the local community as a priority need during the first year of operation, the careful and skillful planning that is needed for this type of project could be undertaken during the first few years of sanctuary operation to ensure safe and proper development. For the present time, however, NOAA has concluded that ocean access development is of utmost consideration.

Department of Health and Human Services, Dr. Frank S. Lisella - 12/9/83

Comment: The Public Health Service has no comments to offer since they believe the proposed alternatives adequately addressed possible health effects.

Response: No response necessary.

U.S. Environmental Protection Agency, Region IX, Charles W. Murray, Jr. - 12/14/83

Comment: EPA has no objection to the proposed designation.

Response: No response necessary.

Whale Center, Mark Daugherty - 12/15/83

Comment: The Whale Center supports the sanctuary proposal. They also suggest that whale sitings be monitored as part of sanctuary personnel duties.

Response: Comment accepted and the document revised to reflect this suggestion.

Defenders of Wildlife, Sherrard C. Foster - 12/19/83

Comment: None of the boundary alternative descriptions are specific with regard to the extent of sanctuary jurisdiction relative to tide levels onshore.

Response: The boundaries given are inclusive at mean high high tide.

Comment: The discussion of boundary Alternative #3 at page 97 is vague concerning the adjoining Bays (Fagatele Bay) resources.

Response: NOAA recognizes the need for further physical, chemical, and biological resource information for Fagatele Bay. However, the discussion presented in the DEIS represents all of the available information. Other than a list of fish species, there are no publications or other readily available information regarding the resources of Fagatele Bay.

Comment: Although reproduction of enlarged, detailed maps of the proposal area may not be feasible, Defenders nonetheless notes its disappointment with the quality of the graphics presented in the DEIS.

Response: Presently, there are no detailed maps available that are specific to the area of the proposed sanctuary. However, NOAA feels that the maps presented in the DEIS are adequately presented so as to give the reader a clear picture of the proposed sanctuary area. Should the site be designated, a detailed chart of the area will be a management priority.

Comment: As both the nomination document and issue paper note, Fagatele Bay was infested by the crown-of-thorns starfish (Acanthaster planci) in late 1978. The result of this infestation is that only 10% of the Bay's coral species are presently living. To even the casual observer, this situation would appear to hold serious adverse consequences for the productivity of the Bay's biological resources. Defenders notes with surprise that not only does the DEIS not discuss these loss figures, but the initial discussion of the benthic community (pp. 13, 17) is almost misleading in describing the coral community as "highly productive" and [very diverse, with a wide variety of habitats supporting populations of larger fish..."] The only mention of the infestation is found at page 31, which does not indicate the extent of the damage or the currrent status of remaining coral species in the Bay. In the absence of such details, it is difficult to assess the resource value of the nomination itself.

Response: Before 1978, coral cover in Fagatele Bay was estimated to be nearly 100%. After the 1978 crown-of-thorns starfish infestation, coral cover, not coral species, was reduced to approximately 10%. NOAA agrees that this would appear to seriously damage the future productivity of the Bay's biological resources, However, even though coral are highly productive animals, biological productivity is also affected by algae, phytoplankton, surface runoffs, currents, and a myriad of other factors.

One of the distinctive features of coral communities is their ability to recover; and recent surveys conducted by NOAA (11/82, 1/84) and the American Samoa Office of Marine Resources indicate that both coral cover and number of coral species is increasing. Also found were increasing numbers of larger fish species and during the 1984 survey, a new family of fish was recorded for Fagatele Bay. All these occurences indicate that the Bay is recovering and biological productivity is increasing.

The discussions of the benthic community on pages 13 and 17 describe coral communities in general as being "highly productive" and "very diverse, with a wide variety of habitats supporting populations of larger fish..." and is not referring specifically to Fagatele Bay. What these statements do indicate, however, is the past and potential of the Bay. Although quantitative descriptions are lacking, qualitative descriptions of the Bay's state before 1978 indicate that it was one of the most biologically productive areas found in American Samoa. Given a chance to fully recover, the Bay should become as highly productive as it ever was.

Comment: Both the nomination document (p. 16) and the issue paper (p. 15) indicate the presence in the Bay area of several cetacean species which are not indicated as present in the DEIS.

These are:

Blue whale (Balaenoptera musculus)
Finback whale (Balaenoptera physalus)
Right whale (Balaena glacialis)
Sei whale (Balaenoptera borealis)

Are these species present or not? Although there is agreement among the three documents concerning the presence of humpback whales (Megatera novangeliae) and (more occasionally) sperm whales (Physeter catodon), there is no indication in the DEIS of the number or frequency of these endangered animals.

Response: After review of the Issue Paper, it was suggested by the National Marine Fisheries Service that the blue, finback, right, and sei whales be eliminated from the list of cetacean species present in the waters adjacent to Fagatele Bay. Humpback whales are annually spotted in the Bay and in the seaward waters. Sperm whales occasionally venture into the waters seaward of Fagatele Bay. However, the number and frequency of both species has not been studied.

Comment: The DEIS mentions briefly the importance of the Bay as a foraging area to the threatened green sea turtle (Chelsonia mydas) and the endangered hawksbill sea turtle (Eretmochelys imbricata) (p. 31). In addition, there are apparently occasional visits to the Bay by the threatened olive ridley (Lepidochelys olivacea) and loggerhead (Caretta caretta) sea turtles, as well as the endangered leatherback (Dermochelys coriacea). There is no discussion in the DEIS, however, of any nesting activity by green and hawksbill sea turtles. Although not thought to be "major" nesting sites for either of these species, there is some indication of nesting in the Tutuila Island area. The FEIS discussion of sea turtle presence should include this information, if specifically applicable to the proposal site. Additionally, if nesting beaches adjoining the site are documented, Defenders strongly urges that particular attention be paid to the protection of these areas, through existing regulations and the sanctuary's final management plan.

Response: Fagatele Bay does not present itself as a potential nesting site for most of the sea turtles because of the lack of sizeable beaches and the fact that the Bay's only beach does not possess the type of sand suitable for nesting. Some turtles do nest infrequently on other beaches around Tutuila, but none in the vicinity of Fagatele Bay.

Comment: As the DEIS makes clear, Fagatele Bay has been shielded thusfar from the adverse impacts of human activities solely by its inacessibility. The Bay is thus an ideal site for "systems" research and related educational opportunities. Defenders is particularly pleased to note the emphasis placed on the need to help residents (as well as visitors) understand the necessity for a healthy benthic community in order to sustain production of subsistence fishery resources.

With Sanctuary designation and management, however, the Bay will also provide for increased access by the public. There are several vague references in the DEIS to possible increases in non-consumptive activities in the future. Other than brief mention of the Bay's primary use as a traditional subsistence fishing area, there is no specified discussion in the DEIS of other current or anticipated human activities. If information is available on current and projected human activities, it should be clearly presented in the FEIS.

Response: As stated in the DEIS, the primary current activity in the bay is subsistence fishing. Other than some low level commercial fishing activity, there are presently no other significant ongoing activities. It is anticipated that after designation, the increased activities will be primarily those associated with interpretive programs. The use levels however, cannot be predicted until after designation. Visitor use trends will be carefully monitored during the first year of operation.

Comment: Concerning management of the proposed Sanctuary, the DEIS does not present a clear discussion regarding the site's future following the initial five-year period for implementation of the Management Plan. It is additionally unclear what happens to the Management Plan in the event of the disappearance of "available funds", (p.90). The financial reality of long-term management should be presented as precisely as possible to the reviewing public.

Response: Comment accepted and the document revised accordingly. The Federal Government has full financial responsibility for the life of the project. This plan covers the first five years of operation. After that period, the plan will be reviewed and revised accordingly.

Comment: Pages 7-8. Some further explanation of "the removal of sand for personal use" is desirable. What is the level of this activity?

Response: In other parts of Samoa and the Pacific, sand is removed for filling activities intended to increase the amount of available flat land. In Fagatele Bay, the level of this activity is presently insignificant.

Comment: Page 8. What types of "recent and future trends on human development pressures" exist in the proposal area?

Response: This refers to filling activities that increase the amount of available flat land for housing and other construction activities.

Comment: Page 11. In Table 1 ("Area and Maximum Altitude of the Islands of American Samoa"), what is the meaning of the abbreviation "n.d.", describing Rose Island?

Response: It means "not determined".

Comment: Page 13. The Samoan terms "a'a" and "Pahoehoe" lava flows should be defined.

Response: Both terms are accepted scientific terms derived from the Hawaiian language to describe two main lava types. A'a refers to rough textured lava resulting from slow-moving lava flows. Pahoehoe refers to lava possessing a ropey texture, usually associated with fast-moving lava flows.

Comment: Page 16. The brief description of avifauna is somewhat confusing, when compared with the listing of species in Appendix E, Table 1. The text indicates the presence of 60 avian species (listed by the U.S. Fish and Wildlife Service), all of which are either "seabird" or "waterfowl." Appendix E, however, specifically notes the presence of several species which are not seabirds or waterfowl (e.g., bulbuls, starlings, honeyeaters). It would be helpful to indicate in the DEIS discussion that the area's avifauna include land, as well as water-related species.

Response: The text of the DEIS contains a general discussion of the Samoan birdlife, while Appendix E refers to the species found around Fagatele Bay itself.

Comment: Page 16. The waters around Tutuila Island are described as "nutrient poor." Does this condition indicate that sea turtles do not, in fact, depend on these waters for foraging (as is stated on page 31)?

Response: As with most oceanic islands, the waters surrounding them are nutrient poor when compared to continental islands. This does not mean, however, that life cannot exist in those waters. The waters are more than capable of sustaining a variety of species, but not the density as in the more productive continental off-shore areas.

Comment: Page 17. Sperm whales should be identified as an "endangered" species.

Response: Comment accepted and the text revised.

Comment: Page 17. The information on benthic community species other than coral is extremely sketchy. Although Appendix E does list coral and fish species, there is no information given on "anemones, lobsters, limpets, clams, octopi, sea cucumbers, and sea urchins." Are there any data on the abundance of these species? Are any of them fished for subsistence?

Response: There is no data referring to the other invertebrates you mention. In Fagatele Bay, some lobster, giant clams, and octopi are fished on a subsistence basis. But, the numbers are unknown.

Comment: Page 19. What is the meaning of "age-cohort" structure?

Response: This is an ecological/demographical term referring to age class structure of a given population.

Comment: Page 20. What is meant by "income transfers," in describing the sources of income to the village economy?

Response: This refers to the ongoing process of switching from subsistence liing to a cash-based economy.

Comment: Page 30. There is no explanation of the effect (if any) of the designation of Fagatele Bay as a "marine park" by American Samoa's Department of Parks and Recreation.

Response: As stated in the section on the Legal/Institutional Background (Part II-D), territorial designation of a "marine park" merely allows the Department of Parks and Recreation to charge usage fees and to enforce any regulations consequently written for the area.

Comment: Pages 36-37. Concerning the implementation of the proposed Sanctuary's goals and objectives: will one or two boats be acquired for the purposes of 1) monitoring and enforcing proper uses, and 2) conducting a public awareness program?

Response: Two boats will be acquired for these purposes.

Comment: Pages 38-39. Portions of the listed responsibilities of the Sanctuary Programs Division (SPD) with regard to the proposed Sanctuary are unclear. Of the responsibilities listed, numbers 3, 4, and 8 appear to be national in scope, rather than singularly related to the Fagatele Bay proposal.

Response: Corrections have been incorporated into the FEIS.

Comment: Page 41. What does the abbreviation "OMR" denote?

Response: OMR stands for the American Samoa Office of Marine Resources.

Comment: Page 49. The draft regulations for the proposed Sanctuary skip from §941.8 to §941.10, deleting §941.9 "Other Authorities." Is this omission intentional?

Response: Section 941.9 was inadvertently left out in the printing of the DEIS.

Comment: Pages 83,97. The description of boundary alternative #3 is so limited that making a reasoned judgment as to the proposed Sanctuary's parameters is very difficult. A fuller explanation of Fagulua Bay's "extensive representation of the deepsea habitat" would be very useful indeed.

Response: NOAA recognizes the need for further information. However, quantitative information regarding this area is non-existent. Most of the qualitative information was derived from maps and anecdotal information.

Comment: Page 90. Defenders was unable to locate any discussion of the projected costs of implementing the proposed Sanctuary's management plan, and to whom those financial responsibilities fall. The only mention of the cost of management is found here, where "800,000 in Federal funds over the next five years, subject to

available funds" is cited. Although this is a helpful and definite indication of projected expenditures, it would be useful to state initially where the financial responsibilities for the Sanctuary lie. Defenders suggests an introductory discussion incorporating this basic information be added to Part I, "Executive Summary."

Response: Full financial responsibility for sanctuary management rests with the Federal Government; this is now stated in the text.

Comments: Pages 91-93. There are no costs cited in connection with management alternatives 3, 5, or 6. Should this information be included as part of the public decisionmaking process?

Response: Costs for these alternatives would be merely speculative and should not be included as part of the public decisionmaking process unless firm, reliable estimates could be made.

Comment: Page 93. There is no information given on the status (if any) of "Special Area" designation for Fagatele Bay, under the American Samoa Coastal Management Program. Has this concept been discussed with the American Samoan government?

Response: The American Samoa Government has no plans to declare Fagatele Bay as a "Special Area."

Comment: Page 102. There appears to be one or more words missing from the following: "Other areas related to sanctuary management which may be explored include: (1) ...; (2) innovative of enhancing coral growth and productivity; ...." (Emphasis added.)

Response: The correction has been incorporated into the text of the FEIS.

Center for Environmental Education, Michael Weber - 1/12/84

Comment: Boundaries: While we agree that your agency's preferred alternative would meet the criteria of the National Marine Sanctuary Program's regulations, we believe considerable benefits will be gained if boundary alternative 3 is adopted instead. Briefly, inclusion of Fagalua Bay will provide a unique opportunity to study two ecosystems subject to very different physical influences in a very small area. In addition, inclusion of Fagalua Bay would provide a focus for interpretive activities which could increase visitors' appreciation not only for a typical ecosystem within the region, but for the the differences that can be found within the region.

The discussion of this alternative in the DEIS does not lead us to believe that significant additional costs would be incurred if this alternative were to be adopted.

Finally, we suggest that the boundary of alternative 3 be expanded to include waters out to the 20 fathom isobath around Steps Point. This expansion will focus research attention upon this boundary area. We believe that the study of this "edge" might well yield significant information about the role of such areas not only in the dynamics of Fagatele and Fagalua Bays but also in other marine areas.

Response: Fagalua Bay was not included in the Preferred Alternative because the American Samoa Government wished to include only Fagatele Bay. Information on Fagalua Bay is also much less available than that on Fagatele Bay. Given these two facts, it would be premature to include Fagalua Bay at this time.

Moving the boundary out to 20 fathoms would present logistical problems for enforcement. Land-based markers are much easier for users and enforcement agents alike to distinguish. In addition, the waters around Fagatele Point, especially on its eastern side, are too rough for using buoys as boundary markers.

Comment: Invertebrates (DEIS p. 19): The discussion of invertebrates other than coral would mislead the reader into thinking that these other invertebrates are of little significance to this ecosystem. While we understand that little study of the invertebrates of the site has been conducted, we urge that a discussion based on invertebrate communities in other similar areas be included in the FEIS and that appropriate management measures be suggested.

Response: NOAA agrees that the DEIS contains little information regarding invertebrates other than coral. However, information regarding invertebrate communities within the bay is lacking. Both DEIS and regarding FEIS present discussions as complete as current data will allow. Study 1.1 of the Resource Studies Plan is aimed at obtaining a more complete biological inventory of the area.

Comment: Marine Park(DEIS p. 29): More information should be included regarding the practical significance of the designation of Fagatele Bay as a Marine Park under the Coastal Zone Management Program of the Territorial government. Specifically, we request a description of any current or proposed regulations implementing this designation and the ability of the Territorial government to enforce such regulations.

Response: As stated in Part II (Legal Institutional Background) designation of the area as a marine park carries with it no regulatory authority. It merely calls attention to the special significance of the area and allows the DPR to charge usage fees and enforce any regulations that may later be promulgated by the ASG specific to the area.

Comment: Mangroves (DEIS P. 31): The FEIS should contain more information regarding the distribution and role of the mangroves which apparently line part of Fagatele Bay.

Response: More information regarding the mangrove populations in the bay will be gathered in Study 1.1 of the Resource Studies Plan.

Comment: Land Access to the Site (DEIS p. 38): Since the construction of any trails or roads in the cliff area surrounding the site could have impacts upon the resources of the site, we request a discussion of the process by which the feasibility of overland access will be evaluated and the opportunities which the public will have for participating in this process. We urge full participation.

Response: Please see Generic Response E.

Comment: Scientific Research Committee (DEIS p. 42): We suggest that the results of research at the site be integrated with the interpretive elements of the management plan. For this reason, we urge that a person competent in interpretive approaches and familiar with the site be a representative on the Scientific Research Committee.

Response: NOAA agrees and the FEIS reflects this comment.

Comment: Prohibited Activities (DEIS p. 48): We urge that subparagraph (i) include invertebrates other than coral. We believe that any taking of such invertebrates should be subject to review for impact on the site's resources.

Response: A change reflecting the comment has been incorporated into the proposed regulations.

Comment: Permit Procedures (DEIS p. 50): It would appear from the language in the DEIS that permits will be required for activities prohibited under 941.8 and for an unspecified set of activities. Permits should not be required for this latter set of activities. We recommend adoption of the language used in the regulations implementing currently designated, specifically the language regarding permits in the regulations implementing the Looe Key National Marine Sanctuary.

Response: A change reflecting the comment has been incorporated into the proposed regulations.

Comment: Linkage with other Marine Reserve Systems (DEIS p. 60): We suggest that the Sanctuary Program Division is the appropriate focus for linking the program of the proposed sanctuary with other similar programs around the world. Furthermore, emphasis should be placed upon linkage among designated National Marine Sanctuaries, so that mistakes will not be repeated and successes will be shared.

Response: Comment accepted.

Comment: Exposed Reef Flat (DEIS p. 67): The last line of this section contains a typographical error. We sugggest that this last line read "when the flat is submerged to depths of 30 cm."

Response: The correction has been made in the FEIS.

Comment: Water Quality Monitoring (DEIS p. 74): In order to optimize the effectiveness of this project, we suggest that there be an explicit link with the water quality monitoring project at the Key Largo National Marine Sanctuary. In addition, we suggest that the project call for creating the ability to mobilize research efforts quickly in the event of a sudden event. The recent sudden decimation of the Diadema population in the Florida Keys and of coral reefs in the Eastern Tropical Pacific clearly indicates a need for such an ability.

Response: The sanctuary manager and staff members will be appropriately trained to respond quickly should such emergencies arise.

Comment: Draft Designation Document (DEIS p. A-1ff): Article 1 of the draft designation document mentions a list of prohibited activities in Article 4; however, Article 4 does not include such a list. Also, Article 5 presents a different regulatory scheme than that found in the draft proposed regulations (DEIS p. 45ff). We urge that the draft regulations presented in the DEIS, modified in response to our suggestions above, be the implementing regulations for the proposed sanctuary.

Response: A change reflecting the document has been incorporated into the proposed regulations.

Comment: Permit Procedure Guidelines (DEIS p. H-3): The criteria presented in section VII of the guidelines differ from those presented in the proposed draft regulations (DEIS p. 50). These differences should be reconciled.

Response: The evaluation criteria is being revised.

Responses to Comments Received at Public Hearing

A public hearing was held on January 18, 1984 at the Convention Center in American Samoa. Listed below are a summary of testimony received and NOAA's response.

Office of Marine Resources (OMR) American Samoa Government (ASG), Dr. Richard C. Wass - 1/18/84

Comment: OMR feels that Boundary Option 3 (the inclusion of Fagalua Bay) was presented in too negative a fashion in the DEIS and should be reworded so that future consideration may be given to consider the possible addition of Fagatele Bay National Marine Sanctuary. It is also recommended that a tiered approach to fishing prohibitions be used, banning all taking activities within the area defined by Boundary Option 1 and allowing all fishing activities in the outer area defined by Boundary Option 2.

Response: Comment accepted. Changes are reflected in the FEIS.

American Samoa Tourism Office, Lewis Wolman - 1/18/84

Comment: The American Samoa Tourism Office supports the nomination of Fagatele Bay as a National Marine Sanctuary.

Response: Comment accepted.

American Samoa Commercial Fishing Association, Mel Makaiwi - 1/18/84

Comment: Expressed full support for the sanctuary concept, but felt that the tiered approach outlined by Dr. Wass was a more acceptable alternative.

Response: Comment accepted.

Department of Education, Sam Puletasi - 1/18/84

Comment: As a former commercial fisherman, he was concerned that the Preferred Boundary Option was too restrictive and may interfere with the traditional Samoan way of life. However, he would approach the tiered concept proposed by Dr. Wass.

Response: Comment accepted.

American Samoa Commercial Fishing Association, James McGuire - 1/18/84

Comment: He expressed skepticism over the enforcement of regulations, feeling that it is impractical. He also felt that the bay is more protected now than it would be with sanctuary designation and its increased use.

Response: The American Samoa Government, will be bound, through cooperative agreements, to ensure enforcement of the regulations of this Federal sanctuary. Violations of regulations carry with it Federal penalities. Although neither NOAA nor the ASG can assure that all violators will be caught, all regulations will be enforced to the maximum practical extent. However, an equally important aspect to enforcement is education. Enforcement agents as well as interpreters will serve as educators to inform the public of the importance of regulations to the protection of this unique ecosystem. It is only through a combination of well-thought out regulations and a comprehensive interpretive program that protection can be assured.

National YWCA of American and Western Samoa, Elizabeth Malae - 1/18/84

Comment: The National YWCA of American and Western Samoa strongly supports sanctuary designation.

Response: Comment accepted.

Pro Fish, Larry Kirkland - 1/18/84

Comment: He agreed with previous testimony regarding enforcement problems. He also felt that designation was a foregone conclusion and that if one is going to be designated, he preferred Boundary Option 1.

Response: Comment accepted.

Pro Fish and Atamai Marine, Tom French - 1/18/84

Comment: He also agreed that enforcement would be a problem and increased access could potentially harm the bay. However, he supports the sanctuary concept.

Response: Comment accepted.

American Samoa Department of Education, Rick Davis - 1/18/84

Comment: He supports sanctuary designation and urged consideration of Fagalua Bay as a future inclusion into the sanctuary. He also urged development of overland access to the bay.

Response: Comment accepted; please see Generic Response E.

Van Camp Tuna Packers; Dept. of Commerce, Gordon Yamasaki - 1/18/84

Comment: He fully supports the sanctuary and feels that enforcement would play a major role in sanctuary operations. He also feels that enforcement is an important educational tool as well as assurance that the bay's resources are adequately protected.

Response: Comment accepted.

OMR, ASG, Henry Sesepasara - 1/18/84

Comment: He supported Dr. Wass' comments and feels that enforcement would be more efficient through the use of buoys to mark the sanctuary's boundaries.

Response: Comment accepted.

American Samoa Department of Parks and Recreation, Ta'u Sualevi - 1/18/84

Comment: He fully supports the sanctuary proposal and feels that it would be useful for education and research, emphasizing the educational role of enforcment.

Response: Comment accepted.

Leone High School, Larry Madrigal - 1/18/84

Comment: He fully supports the sanctuary proposal and feels that specific, well-defined enforcement proposals be considered in writing the FEIS.

Response: Comment accepted.