WESTERN
PACIFIC
REGIONAL
FISHERY
MANAGEMENT
COUNCIL

Environmental Assessment
Funding Boat Ramp Projects in American Samoa

American Samoa Marine Conservation Plan
Sustainable Fisheries Fund

November 7, 2011

Environmental Assessment
Funding of Boat Ramp Projects in American Samoa

Responsible Agencies

Michael D. Tosatto
Regional Administrator
Pacific Islands Regional Office
National Marine Fisheries Service
1601 Kapiolani Blvd., Suite 1110
Honolulu, HI 96814
(808) 944-2200

Kitty M. Simonds
Executive Director
Western Pacific Regional
Fishery Management Council
1164 Bishop St. Suite 1400
Honolulu, HI 96813
(808) 522-8220

For further information, contact the responsible parties listed above.

Abstract:

This Environmental Assessment (EA) analyzes a range of alternatives and resulting potential impacts for the Western Pacific Regional Fishery Management Council's (Council) and National Marine Fisheries Service's funding of two new boat ramps on Tutuila, American Samoa as listed in the American Samoa Marine Conservation Plan (ASMCP). The establishment of strategically-placed boats ramps on Tutuila would help fishermen access fishing grounds quicker and reduce costs associated with traveling to and from existing boat ramps. In addition, the new boat ramps would provide additional access points for potential search and rescue and disaster relief efforts. In 2010, the Council identified the boat ramp projects as a priority for completion using funds in the Western Pacific Sustainable Fisheries Fund.

Table of Contents

Cover Page 2
Abstract: 2
Table of Contents 3
Chapter 1: Introduction 4
1.1 Responsible Agencies 4
1.2 Purpose and Need 4
1.3 Proposed Action 4
1.4 Background Information 4
1.5 Agencies Consulted, Approvals and Authorizations 5
1.6 List of Preparers 6
Chapter 2: Description of Alternatives 7
2.1 Alternative 1- No Action 7
2.2 Alternative 2- Develop two new boat ramps on Tutuila (Lion's Park and Faga'alu) (preferred) 7
Chapter 3: Affected Environment 8
3.1 Lion's Park – Nu'uli 8
3.2 Faga'alu 10
3.3 American Samoa 11
3.4 Protected Species in American Samoa 23
Chapter 4: Environmental Impacts 26
4.1 Impacts to Physical Environment and Essential Fish Habitat 26
4.2 Impacts to Target and Non-Target Fish Species 27
4.3 Impacts to Protected Species 27
4.4 Impacts to Public Health and Safety 28
4.5 Impacts to Fishing Community 28
4.6 Impacts to Biodiversity and Ecosystem Function 28
4.7 Cumulative Impacts 29
4.7.1 Climate Change 29
4.8 Other Resource Categories and Issues 30
Chapter 5- References 32
Appendix I- Boat Ramp Construction Design Plan 34
Appendix II- Army Corps of Engineers Nationwide Permit 36

Chapter 1: Introduction

1.1 Responsible Agencies

Michael D. Tosatto
Regional Administrator
Pacific Islands Regional Office
National Marine Fisheries Service
1601 Kapiolani Blvd., Suite 1110
Honolulu, HI 96814
(808) 944-2200

Kitty M. Simonds
Executive Director
Western Pacific Regional
Fishery Management Council
1164 Bishop St. Suite 1400
Honolulu, HI 96813
(808) 522-8220

1.2 Purpose and Need

Tutuila currently has only two operational public boat ramps, one in Pago Pago Harbor (southeastern access point), and one in Vatia (northern access point). Currently, Tutuila lacks access points to the southwestern fishing grounds which restricts fisheries development. In addition, the lack of access points to the southeastern shore hampers potential search and rescue efforts. The purpose of these projects will: 1) support fisheries development by facilitating quicker access to fishing grounds and reduce costs associated with traveling to and from existing boat ramps; 2) provide additional access points for search and rescue activities for ocean users in need of assistance; and 3) provide additional access points for disaster relief and emergency response efforts in the event that the main coastal road on Tutuila is inaccessible.

1.3 Proposed Action

The proposed action is the funding of the ASMCP projects of two new boats ramps on Tutuila, one in Lion's Park in Nu'uli, and the other in Faga'alu.

1.4 Background Information

This project was identified in the American Samoa Marine Conservation Plan (MCP) and will be funded under the Sustainable Fisheries Fund pursuant to the Magnuson-Steven Fishery Conservation and Management Act Section 204(e)(7) and NOAA Cooperative Grant NA10NMF441067.

The Council has been working in close coordination with the American Samoa government's Department of Marine and Wildlife Resources (DMWR), Department of Public Works, and Department of Parks and Recreation (DPR) on the design and location of the new boat ramps. Initially, the two locations that were identified were Lion's Park in Nuuili and Leone. However, the Leone location is no longer suitable due to damage from the 2009 tsunami. Fagaalu was identified as the second location. Both the Lion's Park and Fagaalu locations are on government owned land administered by the DPR. Boat ramp construction plans have been provided by DPW (Appendix I).

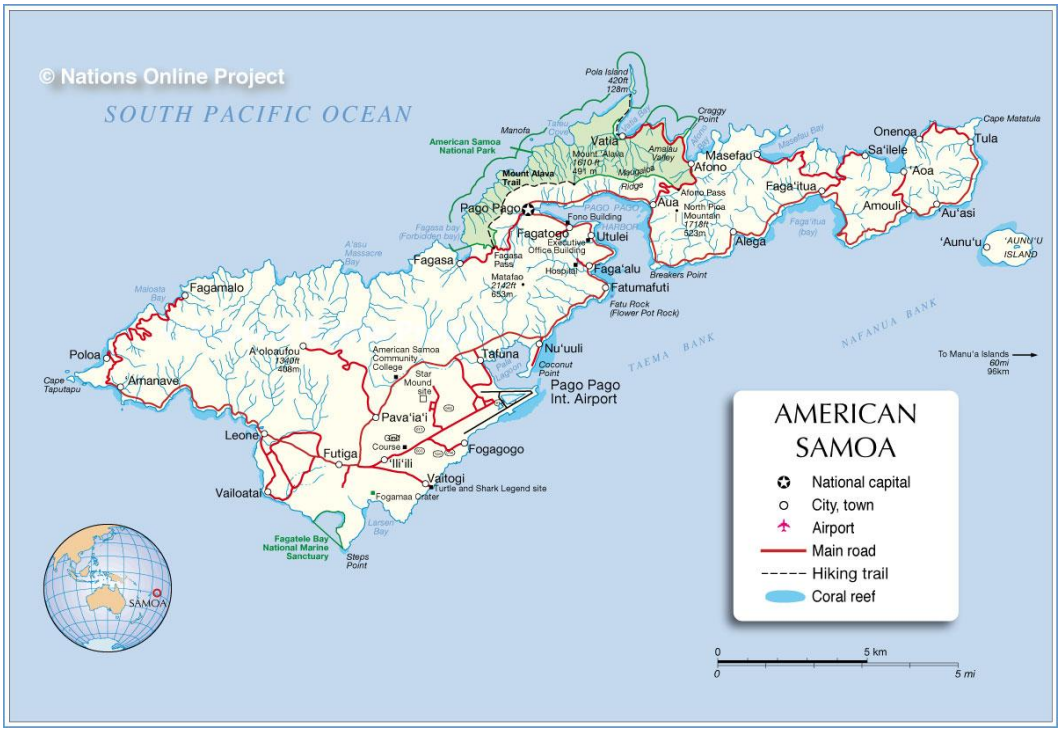


Figure 1: Map of Tutuila, American Samoa

1.5 Agencies Consulted, Approvals and Authorizations

Land use approvals for the boat ramp have been provided by DPR. American Samoa's Project Notification Review System Board[1], which is the primary authorization process in the American Samoa government, has also approved the projects. The American Samoa Department of Commerce, Coastal Management Program has issued a Federal Consistency Certification for the construction of the boat ramps. The American Samoa Environmental Protection Agency has issued a Section 401 Water Quality Certification for the boat ramps. The US Army Corps of Engineers has also provided a Nationwide Permit (36) for the boat ramps (Appendix II), which involves interagency consultation with NOAA (e.g. Essential Fish Habitat, protected species), EPA, FWS, and other federal and local agencies.

[1] Membership includes the following agencies: American Samoa Coastal Management Program; American Samoa Environmental Protection Agency; American Samoa Historic Preservation Office; d. American Samoa Power Authority; American Samoa Department of Health; American Samoa Department of Marine and Wildlife Resources; American Samoa Department of Parks and Recreation; and American Samoa Department of Public Works

1.6 List of Preparers

This EA was prepared by staff of the Western Pacific Regional Fishery Management Council, and listed in alphabetical order.

Eric Kingma, M.P.A. NEPA Coordinator. 8 yrs experience in this position.

Marlowe Sabater, M.Sc. Coral Reef Ecosystem Scientist. 1 yr in this position. Previous position was Chief Biologist, American Samoa Department of Marine and Wildlife Resources (2007-2010).

Chapter 2: Description of Alternatives

2.1 Alternative 1- No Action

Under this alternative, the Council would not fund any new boat ramps in American Samoa. Under no action, Tutuila fishery participants would be limited to only two boat ramps, which provide access to northern and southeastern fishing grounds. Without more centralized boat ramps, access to the southwestern and western fishing grounds are impeded.

2.2 Alternative 2- Develop two new boat ramps on Tutuila (Lion's Park and Faga'alu) (preferred)

Under this alternative, the Council would fund the ASMCP project of a new boat ramp in Lion's Park and a new boat ramp in Faga'alu (see Section 3.1 for detailed description of these areas). Both locations are on land owned by the American Samoa government and administered by the Department of Parks and Recreation. The boat ramps will consist of a 48x14 foot precast concrete slab placed on a bed of lava rock (2 to 6 inches in diameter). The total amount of fill to be discharged seaward of the high tide mark will not exceed 50 cubic yards. For each ramp, there will be minimal excavation (approximately 42 cubic feet which is equivalent to the approximate volume of four bath tubs) to accommodate the toe of each precast ramp, with upland disposal of the excavated material in the landfill. The projects will not involve pile-driving or any dredging.The boat ramps are to be built as permanent structures in their respective areas. See Appendix I for boat ramp design. The Lion's Park site is in the central portion of the island and will provide the closest access point to the southwestern fishing grounds.

Alternatives considered but eliminated from further detailed analysis

In consultation with DMWR, the Council was planning on initially funding a boat ramp in Leone village, which would allow access to western end of Tutuila by fishing vessels. However, the September 2009 tsunami shifted sand and rubble into the area identified for the boat ramp, making construction without significant dredging impossible.

Chapter 3: Affected Environment

3.1 Lion's Park – Nu'uli[2]

Overview

The location of the Lion's Park boat ramp would be at approximately 14°19'25.06"S 170°42'35.94"W in the village of Nuuuli, and inside the Pala Lagoon, which is bounded by the mangrove north of the proposed location and the runway of the Pago Pago International Airport down to the south. The channel that connects the lagoon to the open ocean is located east of the ramp site.

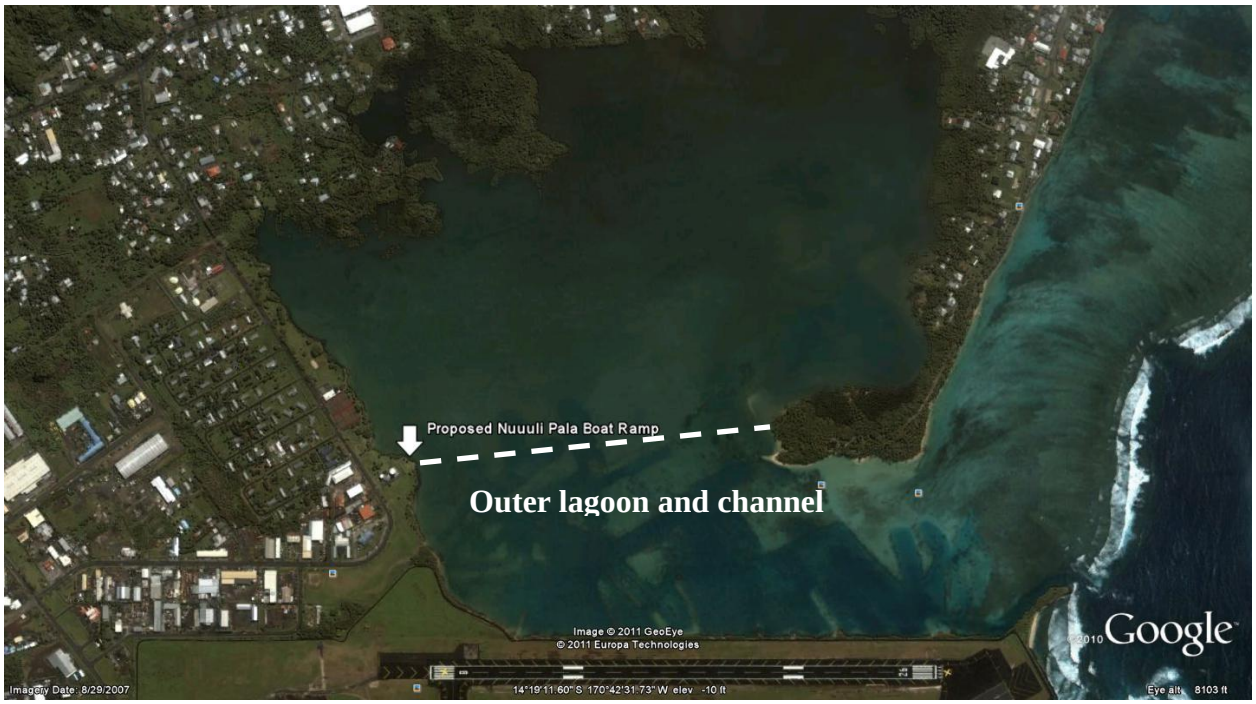


Figure 2: Satellite image taken from Google Earth showing the proposed location of the Lion's Park boat ramp

Physical description of habitat

Pala lagoon is the only large, well-protected lagoon on Tutuila. It is roughly circular, approximately one-mile across and has a surface area of about one square mile. Approximately two thirds of the inner lagoon is very shallow, with depths varying from 1 to 5 feet depending on the tide. A large area (1/6 of the lagoon) adjacent to the airport has been subject to extensive dredging to obtain fill material. The dredged portion has been a very irregular depth shoreward

[2] This section was written by Marlow Sabater, WPRMC Coral Reef Ecologist, who was the Chief Biologist for the American Samoa Department of Marine and Wildlife Resources (2007-2010)

of the sill which restricts the entrance channel. Average depth of the dredged basin is roughly 10 feet.

Freshwater enters the lagoon from seven streams and several freshwater springs. The concentration of watershed drainage into the lagoon is due to the original form of Matafao peak.

The bottom substrate of the inner Pala Lagoon grades from mud to silty-sand. The water quality is usually turbid. Offshore of Tafuna Beach Park there is a shallow bottom of silty-sand deepening from around 6 inches nearshore to 12-24 inches about 100 feet from shore.

The outer lagoon near the entrance channel and the international airport is a shallow sand flat. Deeper areas adjacent to the south shore represent dredging activities carried out between 1959 and 1961 when a new airport runway was constructed on the reef flat. Depths in this region vary from 3 feet to 23 feet.

The physical configuration of the Pala Lagoon is largely responsible for the restrictive circulation pattern in the shallow basin. Tidal exchange is inhibited and circulation patterns limit dilution of contaminants entering the northern and western portions. On the basis of high microbial density, the western and northwestern regions of Pala Lagoon show evidence of fecal contamination with high coliform levels maintained through subsurface seepage from numerous cesspools along the western edge of the lagoon.

Biota and faunal description

The northern and eastern shores of the lagoon are bordered by well developed mangrove forest which is by far the largest of such forest in American Samoa. Predominant vegetation is a well developed stand of large oriental mangrove. The western shore of the lagoon where the proposed boat ramp is to be constructed has no mangrove forest and only has a few puzzlenut trees.

The biota of the inner lagoon lacks diversity but the lagoon is considered as an important nursery and spawning ground for fishes and invertebrates. Larval fish concentrations indicate that the lagoon serves as a nursery ground for certain fish species. Some of the larvae present are from the resident lagoon population as well as from those in the outer reef area. The number of fish species and individuals declines markedly from the channel to the inner lagoon. Fishes are not much abundant over the muddy bottom of the central lagoon. Cardinal fish, gobies, and jacks are present. The dominant fish in the lagoon are mullets. There were occasional sightings of green sea turtle in the lagoon.

Corals are absent from the inner lagoon where the proposed site is located. The major portion of the area is sand and mudflats covered by a dense growth of red algae. Invertebrates present are: sea cucumbers, bivalve mollusks, small oysters inhabiting the few hard substrates, clams and mangrove crabs.

3.2 Faga'alu[3]

Overview

The location of the Faga'alu boat ramp is located approximately at 14°17'31.93"S 170°40'53.65"W in the village of Faga'alu. It's location is approximately 210 feet from the Faga'alu channel. The site is at the northern edge of the Faga'alu Park. This park is an extensive fill area presumably developed from material dredged from the reef located along the south shore of the bay. Most of the park shoreline consists of limestone rubble, basalt boulders and sand with one section of rock seawall.

Physical description of habitat

Faga'alu Bay is a deep cove which receives freshwater flow from one of the larger streams on Tutuila. A large channel bisects the bay, approaching shore off the mouth of Faga'alu stream. Mud flats southeast of the stream mouth have been reclaimed for a park.

Figure 3: Satellite image taken from Google Earth showing the proposed location of the Faga'alu boat ramp.

The reef fringing Faga'alu Bay varies in width from 150 feet at the bay head to 1400 feet along the flanks. The inner reef flat off the southeastern perimeter of the bay averages 1.3 feet deep at low tide. The bottom is composed primarily of volcanic and limestone boulders with a few as large as 2 feet across. A small amount of sand occurs in pockets on the inner reef flat. At a

[3] This section was written by Marlow Sabater, WPRMC Coral Reef Ecologist, who was the Chief Biologist for the American Samoa Department of Marine and Wildlife Resources (2007-2010).

distance of 80 to 250 feet offshore, the bottom shoals to about 1 foot. Limestone rubble predominates, with occasional limestone and volcanic boulder present.

Sand covers on the inner reef flat are greatest towards the head of the bay. Basalt boulders up to 5 feet across are conspicuous near an extensive fill area along the southern perimeter of the bay. Reef flat off this area has been considered altered by dredging. Deep sand bottom pits dredged for fill material are evident east of the park. The proposed boat ramp area is characterized by a sand beach that merges with mud flats submerged at high tide. The mud flats extend 165 feet seaward to a large channel which crosses the center of the bay.

Biota and faunal description

The upper silt covered surfaces of rock outcrops along the channel margin are largely devoid of corals and other invertebrates but supports a sparse growth of algae. Very few fishes inhabit the shallow mud flats within the vicinity of the proposed site. Dominant fishes at rocky outcrops along the channel margin are damsel fish and snapper.

Small colonies of corals total about 1% bottom cover of the inner reef flat off the southeastern end of Faga'alu village. Encrusting coralline algae are apparent throughout the inner reef area. Fishes are not common. Coral cover mostly as small colonies, increases 30% between 80 to 250 feet offshore. Considerable dead coral is also evident. Rocks are encrusted with coralline algae. Beyond 250 feet from shore, staghorn corals occur along with clumps of soft corals.

Fishes are progressively more abundant and the fauna more diverse moving seaward across the reef flat. Common species include: damselfish, surgeonfish, wrasses, goatfish, butterflyfish, pufferfish, groupers, parrotfish and triggerfish. The system is dominated mostly by surgeonfish and parrotfish.

3.3 American Samoa

American Samoa is part of the Samoan Islands chain, located west of the Cook Islands, north of Tonga and south of Tokelau. It is an unincorporated territory of the United States located in the South Pacific Ocean southeast of the sovereign state of Samoa (formerly known as Western Samoa). Approximately 2,610 miles south of Hawaii, American Samoa is the southernmost of occupied U.S. territories. At latitude 169-170 degrees W, longitude 14 degrees S, American Samoa is comprised of seven islands, five of which are inhabited: Tutuila, Aunu`u, Ofu, Olosega and Ta`u. The island of Tutuila is the territory's center of government and business.

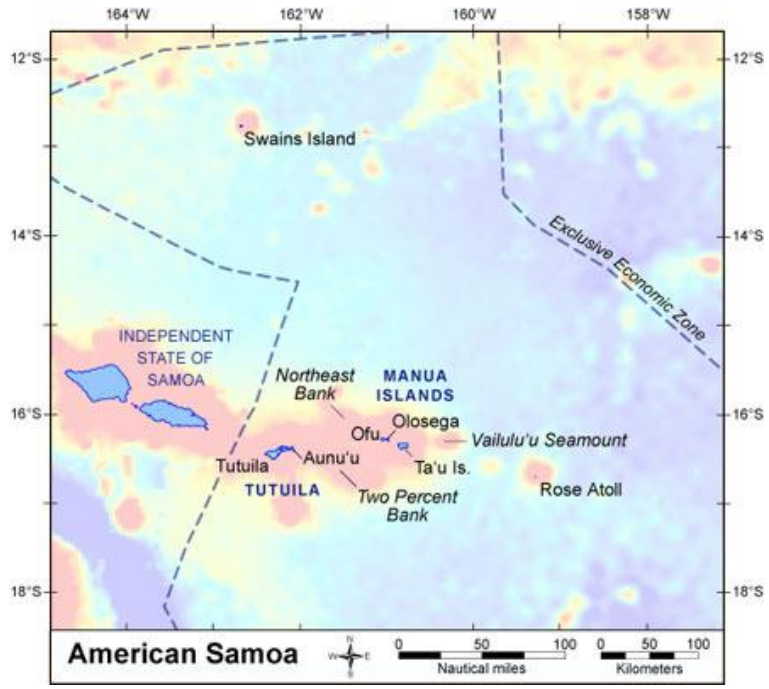


Figure 2: Map of American Samoa
Source: AS Archipelago FEP (WPFMC 2009)

The territorial capital is Pago Pago, located on Tutuila. In 2008, the population was estimated at 66,447, 95 percent of whom reside on Tutuila island. In 2000, 45 percent of the total population of American Samoa was younger than 18. From 1970 to 2008, the population of American Samoa increased by almost 40,000, with the majority of this increase occurring in the western district of Tutuila.

Virtually all of the remaining population lives on the islands of Manu`a. A few people reside on Swains Island. In 2000, 29 percent of the civilian population 16 years of age and over was employed. Of the 9,349 occupied housing units in American Samoa in 2000, 40 percent contained 7 or more persons.

The tropical climate is moderated by oceanic trade winds and frequent rains. Temperatures are remarkably constant throughout the year. Daily lows average about 68 degree F (20 degrees C) and afternoon highs reach about 90 degrees F (32 degrees C). The relative humidity is almost always high. Except for the atolls of Swains and Rose, the islands are rocky, formed from the remains of extinct volcanoes. Central mountain ranges dominate the landscapes of Tutuila and the islands of Manu`a.

Only about one-fifth of the total land area of American Samoa is arable and half of the arable land is under permanent cultivation. Agricultural production is primarily used for domestic consumption. Many food products are imported. Considering that only approximately 30 percent of the land area is suitable for human habitation (< 30 percent slope) and most of that is along the coastline, there is great concern about the effects that increasing population density may have on American Samoa.

American Samoa has been a U.S. territory since 1899, in part because of U.S. interests in the excellent harbor at Pago Pago. New Zealand occupied Western Samoa in 1914, and in 1962 Western Samoa gained independence. In 1997, Western Samoa changed its name to Samoa. The demarcation between Samoa and American Samoa is largely political. Cultural and commercial exchange continues with families living and commuting between eastern and western Samoa. American Samoa is more than 89 percent native Samoan. This population is descended from the aboriginal people who, prior to discovery by Europeans, occupied and exercised sovereignty in Samoa.

Approximately 95 percent of the land mass in American Samoa is held under the traditional land tenure system and under the direct authority of the Samoan chiefs known as *matai*. Under this system, traditional land cannot be purchased or sold and the current reigning chief from within the family unit has final say over the disposition of a family's holdings. This system ensures the passage of assets to future generations and serves as the catalyst in the preservation of the Samoan culture.

American Samoa's history, culture, geography, and relationship with the U.S. are vastly different from those of the typical community in the continental U.S. and are closely related to the heritage, traditions, and culture of neighboring independent Samoa. The seven islands that make up American Samoa were ceded in 1900 and 1904 to the U.S. and governed by the U.S. Navy until 1951, when administration was passed to the U.S. Department of the Interior, which continues to provide technical assistance, represent territorial views to the federal government, and oversee federal expenditures and operations. American Samoa elected its first governor in 1978, and is represented by a non-voting member of Congress.

The Samoan Constitution, the Convention of 1899, and subsequent amendments and authority recognize the primacy of Samoan custom over all sources of traditional law. Article 1, Section 3 of the Bill of Rights of the Constitution of American Samoa states:

> "It shall be the policy of the government of American Samoa to protect persons of Samoan Ancestry against alienation of their lands and the destruction of the Samoan way of life and language, contrary to their best interests. Such legislation as may be necessary may be enacted to protect the lands, customs, culture and traditional Samoan family organization of persons of Samoan ancestry, and to encourage business enterprises by such persons. No change in the law respecting the alienation or transfer of land or any interest therein, shall be effective unless the same be approved by two successive legislatures by a two-thirds vote of the entire membership of each house and by the Governor."

Tutuila, American Samoa's largest island, is the center of government and business, and is home to 90 percent of the territory's estimated population of 63,000 residents. People born in the Territory are classified as U.S. nationals and categorized as Native Americans by the U.S. government (Territorial Planning Commission (TPC) and Department of Commerce (DOC) 2000). The only U.S. territory south of the equator, American Samoa is considered "unincorporated" because the U.S. Constitution does not apply in full, even though it is under U.S. sovereignty (TPC and DOC 2000). American Samoa's vision for the future is not

fundamentally different from that of any other people in the U.S., but American Samoa has additional objectives that are related to its covenant with the U.S., its own constitution, and its distinctive culture (TPC and DOC 2000). A central premise of ceding "eastern Samoa" to the U.S. was to preserve the rights and property of the islands' inhabitants. American Samoa's constitution makes it government policy to protect persons of American Samoan ancestry from the alienation of their lands and the destruction of the Samoan way of life and language. It provides for such protective legislation and encourages business enterprise among persons of American Samoan ancestry (TPC and DOC 2000).

From the time of the Deeds of Cession to the present, despite increasing Western influences on American Samoa, native American Samoans have expressed a very strong preference for and commitment to the preservation of their traditional *matai* (chief), *`aiga* (extended family), and communal land system, which provides for social continuity, structure, and order. The traditional system is ancient and complex, containing nuances that are not well understood by outsiders (TPC and DOC 2000).

However, within the ethnographic literature on Samoan culture, there are examples where the use of cash in contemporary life is common to purchase commodities as exchange items or to use cash directly in customary exchanges and expected/obligatory contributions to various culturally important ceremonies that help perpetuate *Fa'a-Samoa*, the valued and adaptable "Samoan way of Life". Samoans make rational economic decisions to invest in their *`aiga* and their *matai* and their reputations through contributions to culturally important ceremonies and events (O'Meara, 2002). Cash is often used to invest in fine mats for weddings and funerals (Schoeffel, 1999), and access to cash is important for a *matai* to be successful. Even non-resident *matai* titleholders are expected to remit cash for ceremonial and cultural obligations (Yamamoto, 1994) and for *malaga* (movement back and forth) (Lilomaiva-Doktor, 1999). "Cash has become an indispensable part of exchanges in *malaga*, and in any cultural exchanges" (Logovili, 1999). Cash is increasingly used directly as a contribution in customary exchange and it may or may not have a negotiated direct equivalency for something else since the purpose is to serve and enhance the reputation and status of the *`aiga*. Samoans are said to engage in and distinguish Samoan capitalist exchanges from Samoan exchanges (Gershon, 2000). The former are based more on equivalencies and perhaps a profit motive and the latter on the importance and value of genealogical connections and perhaps an *`aiga* social status motive. Customary exchange to support Fa'a-Samoa more closely fits Samoan exchange as it is motivated not for profit per se, but for family and *`aiga* collective solidarity and reputation.

Community Profile of American Samoa[4]

The population of American Samoa has grown rapidly, doubling in just over 25 years from 32,297 in 1980 to an estimated 66,900 in 2006 (Table 1). The 2000 census, however, reflects a much lower annual growth rate of 2.0 percent between 1990 and 2000, compared to the 3.7 percent between 1980 and 1990 (American Samoa Statistical Yearbook 2001). While the

[4] Information in this section was taken in its entirety from Levine and Allen 2009. 2009. American Samoa as a fishing community. U.S. Dep. Commerce., NOAA Tech. Memo., NOAA-TM-NMFS-PIFSC-19, 74 p.

birthrate in American Samoa is relatively high (an average of 3.6 children per woman in 2000), much of this population increase is due to in-migration, largely from neighboring Samoa.

Table 1: American Samoa Census Population and Mid-year Population Estimates

Year	Population	Year	Population
2007	68,200	1990	46,773
2006	66,900	1980	32,297
2005	65,500	1970	27,159
2004	64,100	1960	20,051
2003	62,600	1950	18,937
2002	60,800	1940	12,908
2001	59,400	1920	8,058
2000	57,291	1900	5,679

Source: Levine and Allen 2009

The population of American Samoa is unevenly spread throughout three district subdivisions: Eastern district; Western district; and Manua/Swains District. In the past two decades the population has shifted from East to West. As reported from 2000 census data, the Western District (Tafuna to Fagamalo) had 32,435 people, while Eastern District (Nu'uuli to Onenoa) had 23,441 people. Manua District and Swains Island combined had only 1,415 people. The estimated population density for the entire territory is approximately 1,191 per square mile (Woods and Pool Economics, Inc. 2007). Given the islands' steep terrain, only thirty percent of the islands' land is habitable, making actual population density closer to 2,800 persons per square mile, with most people living along the coast (American Samoa Coral Reef Advisory Group, 2007).

The Manua and Swains Islands are an exception to the overall population trends exhibited in Tutuila. Population density in the Manua islands during the 2000 census was only 20 persons per square kilometer compared to 411 in Eastern District and 444 in the Western District (Statistical Yearbook, American Samoa 2006). The population in Manua and Swains has been decreasing steadily since 1950, when it reached a high of 2,983. The 2000 census estimated the population of these islands as 1,415 (only about 40 of whom live on Swains), a level lower than the 1900 population estimate of 1,756 (American Samoa Statistical Yearbook 2006). Manua and Swains were home to approximately 30 percent of the total population of all islands in 1900, but contained only 2.5 percent of the population in 2000.

American Samoa's population is young. According to census data, the median age is approximately 21 years, compared to about 33 years for the United States. The average household size is approximately 6 persons, and 81% of households have at least one child less than eighteen years of age. This young population demands many public services for early childhood education, health and medical care, family advocacy, and will need future employment opportunities. The 2000 Census reports that, unlike most large developed countries

where females outnumber males, American Samoa has a gender ratio of about 104 males for every 100 females, likely due to the number of male immigrants working in the tuna canneries[5].

According to the U.S. Department of Commerce, the American Samoa labor force participation rate in 2000 was 52 percent. By comparison, the overall U.S. rate was approximately 67 percent in 2000 (US Department of Commerce 2000). Subsistence activities provide a significant contribution to households; 16 percent of the population over 16 years of age is engaged in some form of subsistence activity, and 44 percent of those engaged in subsistence activity have no other source of employment.

The Manua Islands (and Swain's Island) are characterized by very different demographic and employment trends than the main island of Tutuila. On the Manua Islands, over forty percent of the population (over 16 years) engages in subsistence activities for a living. On Swain's Island, this number reaches fifty-five percent (US Census 2000). Kilarski et. al. (2005) found the level of subsistence fishing on Olosega (one of the Manua islands) to be the highest of all villages surveyed in their study.

Unlike the youthful population structure on Tutuila, the population of the Manua Islands is characterized by a high proportion of older persons. Twenty-four percent of the Manua population is forty-five years old and above, compared to only sixteen percent of Tutuila's population. While the percent of the population under 15 is fairly similar throughout American Samoa, only thirty-four percent of the population of Manua falls between ages 15-44, compared to forty-four percent of Tutuila's population. This is largely due to out-migration from the smaller islands to Tutuila or other locations for secondary schooling and employment opportunities.

Health issues

Risk factors for non-communicable diseases are very high for the majority of the population in American Samoa, a trend found in many Pacific Island countries (WHO 2007a). Diabetes, in particular, has become one of the most daunting public health challenges in Oceana (WHO 2008a). Diabetes is positively correlated with a number of risk factors including abdominal obesity, unhealthy blood lipid levels, and hypertension. These risk factors are associated with unhealthy lifestyles and behaviors such as smoking, diets high in saturated fat and salt, and lack of physical activity. Pre-diabetes, or impaired glucose intolerance, in Pacific Island populations is particularly high with American Samoa (47.3%), Cook Islands (23.7%), Marshall Islands (27.3%), Nauru (20.4%), Samoa (21.5%) and Tokelau (33.4%) facing a diabetes pandemic (WHO 2008b).

While there appears to be a genetic predisposition towards obesity among Pacific Islanders that may subsequently predispose them to Type 2 diabetes (Bindon and Baker, 1996), American Samoa has a disproportionate number of people with type 2 diabetes compared with neighboring Samoa or the U.S. mainland (Elstad et al. 2008). A 2004 World Health Organization survey (WHO 2007b) concluded that 52% of men and 42% of women aged 25 to 64 years in American Samoa had type 2 diabetes. This included individuals who either (1) reported that they had

[5] A long time Pago Pago cannery, Chicken of Sea/Samoa Packing, ended its canning operation in September 2009.

received a diagnosis of diabetes from a health care provider and currently took diabetes medications; or (2) had a fasting glucose level of ≥110 mg/dL as measured by survey technicians.[6] The latter group was referred to as Newly Diagnosed Diabetics.

The higher rates of type 2 diabetes in American Samoa compared to neighboring independent Samoa indicates that lifestyle is likely a highly significant contributing factor. One explanation cited in the WHO study was that lifestyles in Samoa are more physically demanding, with fewer people employed in sedentary jobs, and there is lower reliance on imported, energy-dense processed foods compared to American Samoa. The authors cited other research on contemporary diets in American Samoa, which are characterized by traditional foods high in fat and starch such as coconut cream and taro, combined with modern processed foods high in starch and fat such as rice, mutton flaps, corned beef, snack foods, and canned soda, along with meals from fast food restaurants that are now prevalent on Tutuila. Obesity is an associated issue. For males living in American Samoa the prevalence of obesity was estimated to have risen from 32% in 1976 to 63% in 2002, and for females to have risen from 58% to 75% (Keighley et al 2006). More recent data (WHO 2007b) suggest that the prevalence of obesity continues to rise, with 69% of males and 80% of females in the study population having a body mass index ≥ 30 kg/m. WHO (2007b) concluded that, "Diabetes is a serious condition that is a risk factor for renal failure, blindness, stroke and ischemic heart disease… Together with the high prevalence of risk factors for diabetes, such as obesity and physical inactivity, in American Samoa, this data suggests that a large proportion of the population is at risk of serious diabetes-related illnesses." WHO (2007b) noted that before 1999, a blood glucose level of 120 mg/dL was the accepted cut-off value used to diagnose diabetes. Using this higher standard, the prevalence of diabetes in the study population would be 30%, overall, with 31% for men and 28% for women. It is believed that less reliance on canned and packaged food and more fish in the diets of American Samoa residents could improve the current diabetes situation.

Public Safety

The main villages of Tutuila are connected by one coastal road. In the tragic 2009 tsunami that killed over 100 people in Tonga, Samoa, and American Sama, several villages on Tutuila were inaccessible due to damage sustained from the tsunami. In addition, the tsunami warning system also failed during the massive tsunami. The American Samoa government has upgraded the warning system, and fixed the road; however, damage from the tsunami is still evident in many villages.

Economic and Employment Overview

American Samoa's economy is dependent on two primary externally funded income sources: the American Samoan government (ASG), which receives significant operational and capital grants from the Federal government ($117 million of $182 million total government revenue in FY

[6] WHO (2007b) noted that before 1999, a blood glucose level of 120 mg/dL was the accepted cut-off value used to diagnose diabetes. Using this higher standard, the prevalence of diabetes in the study population would be 30%, overall, with 31% for men and 28% for women.

2005) (Statistical Yearbook 2006), and the two (only one is currently in operation) tuna canneries on the main island of Tutuila. Tuna exports in 2006 totaled 20.7 million cases (about 147 thousand tons) valued at $431.5 million (Department of Labor 2008). The canneries while in operation and grants from the US federal government accounted for over ninety percent of American Samoa's economic base (McPhee and Associates, 2008). Taxes and fees paid by the tuna cannery are another significant source of revenue for the government. These two primary income sources, in turn, support a services sector that derives from and complements the first two (Department of Labor 2008). American Samoa's total exports in 2006 were valued at $438.5 million (U.S. Department of Labor 2008). Canned tuna comprises the bulk of exports, which also include a limited quantity of grass mats and other handicrafts. Agricultural production in American Samoa includes taro, coconuts, bananas, oranges, pineapples, papayas, breadfruit, and yams; additional food must be imported. Shipping and transferring services connect American Samoa with the mainland United States, Samoa, Fiji, Hawaii, Australia, New Zealand, and Japan (U.S. Department of Labor 2007a). An estimated 17,395 people were employed in American Samoa in 2004. The American Samoa Government (ASG), which includes all general government departments, American Samoa Telecommunication Authority, LBJ Tropical Medical Center Authority, American Samoa Power Authority, and American Samoa Community College, is the territory's single largest employer. The world's two largest tuna processing plants are located in Pago Pago harbor, serving as the backbone of the private sector (see following section for more detail). In 2004, thirty-four percent of the territory's population was employed by the ASG, twenty-seven percent by the canneries, and thirty-nine percent by private industry or other sectors (American Samoa Statistical Yearbook 2006). These employment statistics have undoubtedly changed as a result of the Chicken of Sea cannery closure and effects of the tsunami, both of which occurred in September 2009.

Based on 2000 census data, American Samoa's median household income was reported as $18,219 in 2000, with 58% of families living below the national poverty level. The percentage having higher household incomes (>$50,000) declined from 20% in 1990 to 12% in 2000, while those with lower household incomes (<$10,000) increased from 22% to 25% during the same period. While median income is much lower than the United States average (US Census 2000), it is still almost twice the average of other Pacific Island economies (DOI State of the Islands Report 1999). The cost of living in American Samoa is generally lower than in the United States, with the majority of household income spent on store-bought food and very little spent on housing because of the islands' land tenure structure[7] (DOI 2007). Due to American Samoa's strong cultural traditions, church and family ceremonies comprise a significant portion of regular household expenditures. In 1995, 41% of regular household expenditures went towards important sociocultural events such as weddings, funerals, bestowment of matai titles, and additional church-related expenses (AS Statistical Yearbook).

The minimum wage for various industries in American Samoa remained stagnant from 2002, with fish canning and processing at $3.26 per hour, until the recent Fair Minimum Wage Act of 2007 increased the minimum wage by fifty cents to $3.76 on July 24, 2007 (Department of Labor 2007). In spite of resistance from the islands' government (Honolulu Advertiser 2007), which fears that higher wages are unsustainable in the islands' current economy, American Samoa was not granted exemption from the new wage law. All industries in American Samoa are subject to

[7] For the majority of households, housing costs amount to less than 10% of monthly income (US Census 2000).

an increase in minimum wage standards; the minimum wage in the territory will increase 50 cents each year until the standard U.S. minimum wage of $7.25 is reached.These and other changes have caused one of the canneries, Chicken of the Sea/Samoa Pack to end its operations in 2009. Starkist, the only remaining cannery is currently considering its future in American Samoa.

Guest workers for both skilled and unskilled labor make up an important component of American Samoa's economy; 43 percent of the American Samoan population in 2000 was born outside of American Samoa (US Census 2000). The demand for foreign skilled labor is due in part to the unavailability of cost-efficient, skilled local workers (many of whom emigrate for higher paid employment opportunities), but is also said to be the result of a perception by some employers that American Samoans are less productive, unwilling to undertake employment in certain areas, and unwilling to work for minimum wages (Doane and Gray 2006).

Because employment opportunities are somewhat limited in American Samoa, many residents seek work in Hawaii, on the U.S. Continent, and elsewhere. An estimated 70,000 Samoans[8] live in the United States, including about 20,000 in Hawaii. Military service is a common employment option for American Samoans; American Samoa has one of the highest military recruitment rates in the United States, as well as the highest per capita rate for Iraq casualties (Statemaster.com 2008).

Some employment opportunities are limited due to low education levels; in 2000, only 66% of American Samoans age 25 and older had a high school diploma, and only 7.4% had a Bachelor's degree. Unlike neighboring Samoa, tourism does not play a large role in American Samoa's economy. American Samoa did not share in the tourism boom experienced in Western Samoa in the 1980s; in fact, a significant drop in tourist arrivals occurred in the territory during the 1990s. Much of the tourist visitation to the islands is periodic day visits by cruise ships, which provide only a small input to the economy. Tourist arrivals declined from more than 10,000 in 1991 to 5,800 in 1995. By the year 2000, tourist visitation had increased slightly to 6,333, and was at 7,762 in 2006 (ASG Department of Commerce 2006). Tourism to American Samoa originates predominantly from the United States (52 percent), followed by New Zealand (30 percent), and Australia (9 percent). The composition of business travel resembles the tourism pattern with the addition of Samoa: US with 62 percent, New Zealand with 19 percent, Australia with 6 percent, and Samoa with 5 percent (ASG Department of Commerce 2006).

American Samoa's narrow economic base does not generate a level of local revenues adequate to provide essential public services to its citizens. To meet these needs, the Office of Insular Affairs (OIA) annually provides direct grant support for American Samoa general government operations. In 2007, OAI allocated approximately $23 million for operations, plus substantial additional funding for infrastructure and other types of support activities, including marine management (DOI Office of Insular Affairs 2007a).

Importance of Fishing in American Samoa

[8] This number includes individuals from both America Samoa and independent Samoa.

American Samoan dependence on fishing undoubtedly goes back as far as the peopled history of the islands of the Samoan archipelago, which is about 3,500 years ago (Severance and Franco 1989). Many aspects of the culture have changed in contemporary times, but American Samoans have retained a traditional social system that continues to strongly influence and depend on the culture of fishing. Centered around *`aiga* and allegiance to *matai*, this system is rooted in the economics and politics of communally held village land. It has effectively resisted Euro-American colonial influence and has contributed to a contemporary cultural resiliency unique in the Pacific islands region (Severance et al. 1999).

Traditional American Samoan values still exert a strong influence on when and why people fish, how they distribute their catch, and the meaning of fish within the society. When distributed, fish and other resources move through a complex and culturally embedded exchange system that supports the food needs of *`aiga*, as well as the status of both *matai* and village ministers (Severance et al. 1999). A 1996 survey of 60 fishermen in American Samoa (estimated by DMWR staff to be over half of the known active fishermen at that time) found a variety of culturally defined named gifts of fish to meet cultural and ceremonial needs and obligations sales of fish at reduced prices. Thirty percent of the fishermen surveyed reported that half or more of their catch was sold as *fa'ataualofa* (to give or sell at a reduced price to friends or kinsmen as an expression of an ongoing sustained relationship). Forty-two percent of the fishermen reported that half or more of their catch was not sold. Of the unsold portion of the catch, thirty-five percent was reportedly contributed to birthdays, weddings and funerals and twenty-two percent to culturally significant holidays. The number of times fishermen reported contributing to *to'onai* (Sunday afternoon serving of village chiefs) ranged widely but averaged about 20 times per year. Twenty-two percent of the fishermen also reported that half or more of their trips in that year were made at the request of *matai* (village chief). Nineteen percent of the fishermen also reported that half or more of the unsold portion of the catch was contributed to their *matai* as *tautua* (service) and this percentage is artificially low since twenty-five percent of the fishermen surveyed held their own *matai* titles. While eighteen percent of the fishermen reported almost no contributions, thirty-two percent of the fishermen also reported contributing to *fa'alavelave* (obligation to contribute to an event on behalf of the Matai and Aiga) 3 or more times per year. Thirty-two percent of the fishermen also reported giving away half or more of the unsold portion of their fish as *fesoasoani* (to help out: a less formal more individualized response to a less serious need than in the case of Fa'alavelave) (Severance, et.al. n.d.).

Because participants in American Samoa's fisheries are not concentrated in specific locales but rather reside in villages throughout the islands, an omnibus amendment to the Council's FMPs established the island of American Samoa as a single fishing community (64 FR 19067).

Pago Pago is home to a natural protected deepwater harbor, providing one of the best natural shelters anywhere in Pacific, with excellent maritime facilities. American Samoa has relatively reliable power, water and waste treatment systems, and telecommunications infrastructure for a remote Pacific island. While American Samoa does have a U.S. Coast Guard presence, the Coast Guard station does not possess the capabilities for water-based rescue or assistance, and there is no dedicated radio system in place in the territory to support patrol activities. There are two berthing locations available to commercial vessels at port: the main dock and the container dock each accommodate freighters, fishing fleets and cruise vessels. The shipyard includes a 3,000-ton

capacity marine railway that is capable of dry docking some of the largest purse seine vessels in the American fleet. The harbor provides full service port facilities, containerized cargo holding, warehousing, transshipment operations and tugboat services. Southwest Marine of Samoa is the only full-service shipyard in the region. Vessels looking for comparable facilities must go as far as New Zealand (Burke 2005).

The other (smaller) port facilities include Aunu'u, Auasi (Tutuila), Faleasao, Ofu, and Ta'u. In 1975, the American Samoa Government completed a civil works project to improve the inter-island transportation system, starting with Ofu Harbor. The port at Ofu Harbor now includes a 993-foot long revetment with a 220-foot long entrance channel that is 18 feet deep and 130 feet wide. It offers a 16-foot deep and 2.54 acre turning basin and aids to navigation.

The Dory Project signaled the introduction of modern fishing technology in American Samoa. Funded by the American Samoa Office of Economic Opportunity (OEO), the Dory Project was initiated in 1972, providing easy credit and loans to fishermen to develop offshore fisheries. The project developed a boat-building facility that produced 23 vessels over a three-year period. These dories were made available to local residents interested in commercial fishing on the understanding that the cost of materials and construction costs would be paid back to the government at a low rate of interest generated by fish sales. Records indicate that seventy percent of these dories were engaged in bottomfishing activities, conducted primarily at night time on the shallow reef area around Tutuila.

In the 1980s, Dory's were replaced by larger, double-hulled aluminum vessels called *alia*. The alia catamaran is typically 28 to 32 foot long and powered by an outboard-engine. Trolling and bottomfishing were the major methods of fishing, and spearfishing, netting, and vertical longlining were undertaken on occasion. Between 1982 and 1988, the bottomfish landings comprised as much as half of the total catch of the commercial fishery in American Samoa.

However, after 1988 the nature of American Samoa's commercial fisheries changed dramatically, with a shift in importance from bottomfish to trolling and longlining for pelagic species. Beginning in 1995, some alia captains began using horizontal longline gear. In 1996, horizontal longlining became the largest commercial fishery in American Samoa based on total landed weight of the catch, even though only about one-third of the fleet had converted to this method. Over the next few years the fleet grew rapidly with the addition of new alias up to about 38 feet in length and, more significantly, with the addition of other larger mono-hull vessels that fished much longer trips. The primary target species for longline vessels is albacore tuna, but the fishery has also produced significant increases in landings of yellowfin tuna, bigeye tuna, wahoo, blue marlin, mahimahi, and some other incidentally caught species.

During 2005, the various fishery monitoring programs in American Samoa identified 54 active fishing vessels, 51 home ported on Tutuila and 3 in the Manua islands. Many of these vessels participated in more than one fishery, and 41 of the Tutuila boats (including 27 vessels which were over 50 feet in length) did at least some longlining. Of the 54 total boats, 13 participated in the troll and bottomfish fisheries, and 4 were used in other forms of fishing activities. On average, the alia fleet on Tutuila consisted of 3-man crews, fished 11 hours, and caught about 173 pounds of fish; the Manua-based fleet typically had 2-man crews, fished about 5 hours and

landed 81 pounds of fish. Essentially all of the longlining was based out of Tutuila, where the majority of the catch was offloaded to the canneries.

Commercial landing data for American demonstrate the increases in both landings and revenue associated initially with the use of alias for longlining beginning in 1995 and then with the arrival of the much larger monohull longline vessels in the early 2000s. The 14,366,471 pounds landed in 2007 was the second highest on record, with the total value of the catch for this period being the highest on record.

American Samoa has a 50nm exclusion zone for large vessels greater than 50 feet, designed to protect the islands' local, small-scale fishery. In 2008, the Council voted to close the waters 75nm surrounding American Samoa to purse seine vessels as well. While purse seiners do not fish frequently in American Samoa's waters, it was determined that a recent increase in these vessels had the potential to disproportionately impact the local fishery. Purse seine vessels continue to be a major supplier of fish to the islands' cannery, but virtually all of their catch comes from waters outside of American Samoa's exclusive economic zone.

Until 1995, boat-based fishing in Tutuila and Manua was primarily trolling and bottomfish handlining, with the pelagic fishery in American Samoa being largely troll-based. In 1996, the majority of trolling fishermen converted their alias to longlining, although some of them continued to troll occasionally. Consequently, the fishery has experienced a decline in its catch and effort, especially since larger commercial trollers were most often the ones who converted to longlining. In 1996, 7 of the 35 trolling vessels were 25-40 foot long pleasure boats, captains of which fished for recreation on weekends, holidays, or competed in tournaments; the catch was rarely sold.

Yellowfin and skipjack tuna have always been the major trolling landings. In 1986, when trolling was the only pelagic fishing method, there were 53 boats landing 137,100 pounds of skipjack tuna and 54,622 pounds of yellowfin tuna by trolling. In 1996 when longlining was just getting started, these two species comprised 75% of the trolling landings with 35 boats landing 56,562 pounds of skipjack and 36,551 pounds of yellowfin tuna. Mahimahi, blue marlin and wahoo made up a significant proportion of the other 25% of the catch. By 2001, when longlining became the dominant fishing method in Amercan Samoa, the number of trolling boats and their total catch dropped dramatically. Only 18 boats were engaging in trolling, landing 15,126 pounds of skipjack and 5,513 pounds of yellowfin tuna.

Most local fishing and seafood gathering activities for local consumption in American Samoa take place largely in the shallow reef-flat areas between the outer fringing reef and the shoreline. Incidentally caught species from boats supplying the cannery occasionally sell wahoo and other incidentally caught species at little to no profit, which many believe keeps local market prices for fish low (Fini Aitaoto, personal communication). The availability of cheap incidental catch, fish imports from Western Samoa, and an increased reliance on imported store-bought food, has discouraged development of locally based offshore fishing for the local market.

In 2005, American Samoa's Comprehensive Economic Development Strategy included rehabilitation of the Farmer's Market in Pago Pago, including redesign of access and grounds,

construction of a new two-story building, and addition of a fish market and seafood section for local fishermen's catches. The new marketplace opened in 2010, but the fish market side has yet to operate.

Fish and fishing play a stronger and more central role in the Manua islands when compared with the main island of Tutuila. While the subsistence contribution of local fish to the diet of most islanders on the island of Tutuila may be small, it remains a significant source of food to Manua islanders. Manua residents continue to rely on nearshore fish as a substantial portion of their diet, as transportation limitations make store bought food harder to come by and more expensive. Demographic trends also differ dramatically in the Manua islands, where the population has aged (and decreased) significantly over recent years. These factors allow the lifestyle of Manua islanders to more closely resemble the islands' traditional past, with local residents more reliant on nearshore marine resources. Manua islanders continue to use some traditional fishing gear and techniques that are now rare or lost in Tutuila. Per capital fishing effort in Manua is also higher, but due to its remote location there is less detailed information about fish populations and fishing effort in Manua than on neighboring Tutuila.

3.4 Protected Species in American Samoa

Sea Turtles

The information regarding sea turtles in American Samoa has come from opportunistic tagging of turtles and from dead (stranded) turtles. Hawksbill and green turtles are the most common species found in local waters. There is one record of a leatherback turtle that was incidentally captured about five kilometers south of Swains Island and three records of olive ridleys (two dead and one live sighting; Utzurrum 2002). Hawksbill and green turtle populations have declined precipitously in American Samoa (Grant et al. 1997). Despite federal and territorial laws prohibiting the killing of sea turtles and an extensive education program, some sea turtles and eggs were harvested illegally in American Samoa (Grant et al. 1997). In addition to direct take of turtles and eggs, degradation of nesting habitat by coastal construction, environmental contaminants, and increased human presence are viewed as the major problems to the recovery of green and hawksbill turtle populations. Beach mining and beach erosion are also detrimental because the islands of American Samoa have very few beaches suitable for turtle nesting habitat. American Samoa's human population is one of the fastest growing of the Pacific Islands (USFWS and NMFS 1998a, 1998b), and the people of the Samoan Archipelago have traditionally harvested sea turtles for food and the shell. On the basis of recent surveys, the total number of nesting female sea turtles (hawksbill and green turtle species combined) is estimated to be approximately 120 (Utzurrum 2002).

Green Sea Turtle

The life cycle of the green sea turtle involves a series of long-distance migrations back and forth between their feeding and nesting areas (Craig 2002). In American Samoa, their only nesting area is at Rose Atoll. When they finish laying their eggs there, the green turtles leave Rose Atoll

and migrate to their feeding grounds elsewhere in the South Pacific. After several years, the turtles will return to Rose Atoll to nest again. Every turtle returns to the same nesting and feeding areas throughout its life, but that does not necessarily mean that all turtles nesting at Rose Atoll will migrate to exactly the same feeding area.

Two green turtles with tagged flippers, and three that were tracked by satellite after nesting at Rose Atoll, were recovered in Fiji (Balazs et al. 1994). In addition, a green turtle with tagged flippers from Rose Atoll was found dead in Vanuatu less than one year later (G. H. Balazs 1994, cited in Grant et al. 1997).

Hawksbill Sea Turtle

Hawksbill turtles are most commonly found at Tutuila and the Manua Islands. They are known to nest at Rose Atoll and Swains Island (Utzurrum 2002).

Leatherback Sea Turtle

In 1993, the crew of an American Samoa government vessel engaged in experimental longline fishing pulled up a small freshly dead leatherback turtle about 5.6 kilometers south of Swains Island. This is the first leatherback turtle seen by the vessel's captain in 32 years of fishing in the waters of American Samoa. The nearest known leatherback nesting area to the Samoan Archipelago is the Solomon Islands (Grant 1994).

Olive Ridley Sea Turtle

Olive ridley turtles are uncommon in American Samoa, although there have been at least three sightings. Necropsy of one recovered dead olive ridley found that it was injured by a shark, and may have recently laid eggs, indicating that there may be a nesting beach in American Samoa (Utzurrum 2002).

Loggerhead Sea Turtle

In 2006, there were two interactions observed between loggerhead turtles and American Samoa-based longline fishing gear. This indicates that they do exist in the pelagic environment of the EEA around American Samoa. There are no records of loggerhead nesting in American Samoa.

Marine Mammals and Seabirds

Southern Pacific Humpback whales have been observed around Fagatele Bay National Marine Sanctuary between June and September. Moreover, sperm whales are occasionally seen in the Sanctuary and around Tutuila as well. Several species of dolphins also frequent the sanctuary waters. In addition, there are anecdotal observations of both false killer whales and short-finned pilot whales occasionally stealing bait and fish from American Samoa-based longline gear. There are no pinnepeds (i.e., seals and sea lions) known to occur in American Samoa.

Seabirds

Table 3-3 presents the seabirds found in American Samoa. Twelve species of migratory seabirds reside on Rose Atoll. The bristle-thighed curlew (*Numenius tahitiensis*) is a migratory species listed by the IUCN Red List Category as "Vulnerable" because of a small, declining population (estimated to be 7,000 birds worldwide). The primary threat is predation occurring on wintering grounds (BirdLife International 2009). This migratory shorebird resides on Rose Atoll in American Samoa. In addition, the Newell's shearwater is regarded as a visitor to American Samoa.

Table 0-2. Seabirds Known to Be Present Around American Samoa.

Common Name	Scientific Name
Resident Seabirds (breeding birds):	
Puffinus pacificus	Wedge-tailed shearwaters
Puffinus lherminieri	Audubon's shearwater
Puffinus nativitatis	Christmas shearwater
Pseudobulweria rostrata	Tahiti petrel
Pterodroma heraldica	Herald petrel
Pterodroma brevipes	Collared petrel
Sula sula	Red-footed booby
Sula leucogaster	Brown booby
Sula dactylatra	Masked booby
Phaethon lepturus	White-tailed tropicbird
Phaethon rubricauda	Red-tailed tropicbird
Fregata minor	Great frigatebird
Fregata ariel	Lesser frigatebird
Sterna fuscata	Sooty tern
Anous stolidus	Brown noddy
Anous minutus	Black noddy
Procelsterna cerulea	Blue-gray noddy
Gygis alba	Common fairy-tern (white tern)
Visitors/Vagrants	
Puffinus tenuirostris	Short-tailed shearwater
Pterodroma inexpectata	Mottled petrel
Pterodroma alba	Phoenix petrel
Fregetta grallaria	White-bellied storm petrel
Nesofregetta fuliginosa	Polynesian storm petrel (Pratt considers this a resident)
Larus atricilla	Laughing gull
Sterna sumatrana	Black-naped tern

Chapter 4: Environmental Impacts

4.1 Impacts to Physical Environment and Essential Fish Habitat

Lion's Park – Nu'uli Pala Lagoon

Under Alternative 1, no new boat ramps would be constructed and existing conditions of the physical environment and habitat in Lion's Park would remain.

Under Alternative 2, the impacts of the boat ramp construction on the physical environment and habitat would be minimal and limited to the construction phase of the project. The boat ramps will consist of a 48x14 foot precast concrete slab placed on a bed of lava rock (2 to 6 inches in diameter). The total amount of fill to be discharged seaward of the high tide mark will not exceed 50 cubic yards. For each ramp, there will be minimal excavation (approximately 42 cubic feet which is equivalent to the volume of four bath tubs) to accommodate the toe of each precast ramp, with upland disposal of the excavated material in the local landfill. No pile driving nor dredging will be conducted for the projects. Minor sedimentation within the small project area may increase during the construction phase; however, Best Management Practices such as silt screens will be employed. The sedimentation will not be new sediment into the system, but will be existing sediment stirred up during construction and lasting only temporarily. The project area has been physically altered in the past where the area had been dredged for fill materials to construct the nearby airport, indicating that the general project area has historically been altered. The Nuuuli Pala Lagoon site is a natural silt basin and has higher turbidity levels than beyond the reef. Minimal sedimentation input during the construction phase from cement pouring and mixing during the construction phase would have no direct impact to the existing surrounding environment or EFH as the minor sedimentation will only likely be within an area of 100 square feet. No dredging of coral reefs or on any Habitat Areas of Particular Concern will be conducted in association with this project.

Faga'alu

Under Alternative 1, no new boat ramp would be constructed and existing conditions within Faga'alu Bay would be maintained. Currently, Faga'alu is exposed to sedimentation brought about by upstream quarry operations. This is one of the focal areas of watershed management of the American Samoa Environmental Protection Agency.

Under Alternative 2, the impact of the boat ramp construction on the physical environment and habitat would be minimal and limited during the construction phase of the project. The boat ramps will consist of a 48x14 foot precast concrete slab placed on a bed of lava rock (2 to 6 inches in diameter). The total amount of fill to be discharged seaward of the high tide mark will not exceed 50 cubic yards. For each ramp, there will be minimal excavation (approximately 42 cubic feet which is equivalent to the volume of four bath tubs) to accommodate the toe of each precast ramp, with upland disposal of the excavated material in the landfill. No pile driving nor dredging will be conducted for the projects. Minor sedimentation within the small project area may increase during the construction phase; however, Best Management Practices such as silt screens will be employed. The sedimentation will not be new sediment into the system, but will

be existing sediment stirred up during construction and lasting only minimal duration. There will be no permanent impact to the environment when the boat ramps are installed and will be an addition to the existing man-made structures lining the coastline particularly the boulder sea-walls. Minimal sedimentation input during the construction phase from cement pouring and mixing during the construction phase would have no direct impact to the existing surrounding environment or EFH as the minor sedimentation will only likely be within an area of 100 square feet. No dredging of coral reefs or on any Habitat Areas of Particular Concern will be conducted in association with this project.

4.2 Impacts to Target and Non-Target Fish Species

Under the no-action alternative, existing impacts to target and non-target species would be maintained. Currently, there are two operational boat ramps on Tutuila which provide access to less than 20 trailer-able small fishing vessels on Tutuila to fishing grounds for coral reef, bottomfish, and pelagic species. Coral reef, bottomfish, and pelagic fishery resources occurring around American Samoa are believed to be in healthy condition and the amount of current fishing pressure on these stocks is believed to be sustainable.

Under Alternative 2, no adverse impacts to target and non-target species are expected to occur. Fish stocks are considered healthy around American Samoa. While the new boat ramps will allow vessels to access offshore areas to conduct fishing activities, the boat ramps are not expected to increase the number of fishing vessels or the amount of fishing effort around Tutuila. The majority of the working population in the American Samoa earn below the poverty level and it is believed that access to resources to purchase new vessels is not available to many residents. If an increase in fishing vessels and associated fishing effort occurs, this activity will be monitored by the Department of Marine and Wildlife Resources (DMWR) which conducts surveys of fishermen at boat ramp locations. Fisheries data is collected and compiled and incorporated into assessments of the health of the fishery. Annual catch limits (ACLs) have been established for coral reef, bottomfish, and crustacean fisheries in American Samoa. Annual catch limits are not required for pelagic species due to their highly migratory nature. There potential increase in fishing for bottomfish species is not believed to lead to an overage of any ACL.

4.3 Impacts to Protected Species

No interactions or adverse effects to protected species are expected to result from the construction of the two boat ramps. The project areas are not nesting beaches for marine turtles. Although sightings of turtles have occurred in the general areas, these proposed locations are not believed to be important foraging areas for sea turtles. Furthermore, there are no reports or anecdotal evidence to suggest that turtles occur in significant numbers in these areas nor interact with activities located nearshore. Best Management Practices will be employed to reduce and/or eliminate waste generated by the project such as daily cleaning of the construction site at close of business daily. The 48x14 foot boat ramps will occupy a small area within much larger bays and nearshore areas. Therefore, the minimal footprint of the boat ramps are not anticipated to result in habitat exclusion for protected species within the project areas. No marine mammals have

been sighted in the project areas and no interactions or adverse impacts are anticipated from the project to marine mammals.

4.4 Impacts to Public Health and Safety

The addition of two new boats will improve public health and safety in terms of search and rescue and natural disaster relief efforts. Tutuila has one main road that mostly follows the coastline. The new boat ramps will provide additional access points to nearshore and offshore areas of the southern coastline of Tutuila which will aid search and rescue efforts. Also, in the event of a road closure due to a natural disaster, the boats ramps could provide access points to provide aid relief to remote areas affected by a road closure. The new boat ramps are not expected to significantly increase the number of boaters on Tutuila, because vessel ownership is not cheap and includes fuel and safety equipment costs, as well as regular maintenance. A large majority of Tutuila's population is considered to earn an average income of below national poverty line. Although significant boating activity is not expected to result, appropriate signage will be displayed near the boat ramps indentifying safe boat practices and conditions.

4.5 Impacts to Fishing Community

The establishment of two new boat ramps is expected to benefit the fishing community on Tutuila by providing additional access to points to nearshore and offshore fishing areas. For some fishery participants, the new boat ramps will reduce trailering time and vessel transiting time that will reduce fuel consumption and costs. The boats ramps may also spread out fishing effort which could also benefit the fishing community by increasing catch rates in areas that historically saw higher fishing effort due their proximity to existing boat ramps

4.6 Impacts to Biodiversity and Ecosystem Function

The proposed action involving the funding of ASMCP projects for two small boat ramps will have no impacts to ecosystem function or biodiversity. The boat ramps will consist of a 48x14 foot precast concrete slab placed on a bed of lava rock (2 to 6 inches in diameter). The total amount of fill to be discharged seaward of the high tide mark will not exceed 50 cubic yards. For each ramp, there will be minimal excavation (approximately 42 cubic feet which is equivalent to the volume of four bath tubs) to accommodate the toe of each precast ramp, with upland disposal of the excavated material in the landfill. No pile driving nor dredging will be conducted for the projects. Minor sedimentation within the small project area may increase during the construction phase; however, Best Management Practices such as silt screens will be employed. The sedimentation will not be new sediment into the system, but will be existing sediment stirred up during construction and lasting only minimal duration. The projects do not involve dredging nor the removal of any important ecosystem features such as coral reefs. No reduction of biodiversity is anticipated because the boat ramps will not involve the harvest or removal of any species. Because the project footprints are also so small, and that there will not any dredging, no habitat loss is expected and no species displacement will occur.

4.7 Cumulative Impacts

Cumulative impacts are the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

There are wide-ranging factors (that change over time) that affect fishing participants as well as fishing communities. Current factors in American Samoa include high fuel costs, increased seafood imports and restricted access to traditional fishing grounds. High fuel costs affect fishing participants in that it is simply increasingly expensive to go fishing. The effect is that fishery participants reduce fishing trips, switch to less fuel-intensive fisheries or simply do not go fishing at all. The boat ramps are in locations that will reduce the time to trailer a boat as well as reduce vessel transit times if fishing near the boats as opposed to the status quo. This will benefit the fishing community on Tutuila.

The proposed locations of the boat ramps are not pristine areas, but have been subject to dredging and sedimentation in years past. Both areas are public parks currently used by residents of American Samoa. There are known reasonably foreseeable future actions in the areas of the proposed boat ramps. A larger action that may affect some participants in the American Samoa fishing community is the proposed expansion of the Fagatele Bay National Marine Sanctuary, which includes some no-take areas.

Because the project areas are very small and no dredging will be conducted, as well as no reasonably foreseeable actions in the project areas, there is no expectation that potential impacts of the projects will produce significant cumulative impacts. The short-term impact to the immediate project area is not expected to be significant, nor are impacts expected to be adverse when added to existing conditions. This is because the amount of sedimentation or turbidity in the surrounding nearshore is expected to short-term, minimal amounts, and limited to the immediate surrounding area of the project site.

4.7.1 Climate Change

In a 2007 report, the Intergovernmental Panel on Climate Change (IPCC) states that: "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level (IPCC 2007)." Climate change and potential sea level rise may negatively effect target and non-target fish species, protected species, human communities, marine ecosystems, essential fish habitat and other habitats found in and around American Samoa. Fish stocks and sea turtle populations would continue to be monitored in American Samoa through logbook reports and longline vessel observer coverage, as well as through international efforts to monitor some marine populations.

Climate change resulting in sea level rise may affect some marine populations, however many creatures have survived differing climactic conditions through the course of history. Other potential impacts could be a shift in nesting beaches of sea turtle populations with sea level rise,

changes in food (though not readily understood) due to acidification of seawater; and changes in ocean currents that could affect foraging or migratory activities. Under natural conditions, beaches can move landward or seaward with fluctuations in sea level. Past contamination from effluent discharges and runoff has degraded some shallow marine habitats and therefore in some instances it may not be possible to distinguish climate change impacts on marine life.

Climate change would not, however, impact the effectiveness of Alternatives 1 or 2 or the impacts of these proposed alternatives in the short term. However Sea level is expected to rise globally by approximately 1 meter by 2100 (Dr. Fletcher, pers. comm.., July 2011). If this occurs, many areas around Tutuila could become inundated permanently. DMWR and the Council will need to monitor the boat ramps to assess if sea level rise is affecting access to the boat ramps.

4.8 Other Resource Categories and Issues

Regulations implementing the National Environmental Protection Act (NEPA) indicate that the following additional issues are considered when evaluating impacts of a proposed action:

Degree to which effects on the human environment are highly controversial

The effects of the proposed action are not controversial. The funding of the ASMCP projects of two new boats ramps will result in small project sites and no new sedimentation input into the system is expected to result. The Army Corps of Engineers has consulted with relevant agencies on the projects and all necessary authorizations from local and federal agencies have been provided. The American Samoa Project Notification Review System Board has also provided authorization.

Degree to which effects are highly uncertain or involve unique or unknown risks

The funding of the ASMCP projects of two new boats ramps is not a novel project nor does it involve unique or unknown risks. Boat ramp projects are commonplace and as such the Army of Corps of Engineers has a developed a general Nationwide Permit program for such projects.

Degree to which proposed action affects unique areas, historic and cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

Both boat ramps will be located on public land owned by the American Samoa government and administered by the Department of Parks and Recreation. The footprint of the boat ramps will only take up a small percentage of public areas. Neither boat ramp location is within ecologically critical areas. No dredging or removal of coral or other important nearshore habitat will be conducted.

Degree to which proposed action affects districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places.

Neither of the boat ramp locations affects districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. The American Samoa government's Project Notification Review System board reviewed and approved the land use permits for these areas. In that review and approval, historic places were considered and none were found at the project site.

Degree to which proposed action could be expected to result in the introduction or spread of a nonidigenous species.

It is believed that all of the vessels using the boat ramps will be local, small vessels from Tutuila. There are less than 20 vessels that are trailer-able on Tutuila that potentially would use the boat ramps. It is unlikely that the vessels that use the boat ramps will go inter-island within American Samoa (e.g. Manua Islands) or to neighboring Samoa. Therefore, the potential for the boat ramp projects to result in the spread of nonidigenous is very remote.

Degree to which proposed action is likely to establish precedent for future actions with significant effects or represent a decision in principle about a future consideration.

The new boat ramps will not result in automatic approval or funding of additional boat ramps. As such, any additional boat ramp projects will be evaluated on a case by case basis. The proposed action involving the funding of the ASMCP projects of two new boats ramps on Tutuila was subject to FY2010 NMFS cooperative grant and using the Sustainable Fisheries Fund. The Council applies annually for cooperative grant funding to use the SFF, and projects and funding levels vary interannually.

Chapter 5- References

ASG Department of Commerce. 2006. American Samoa Statistical Yearbook 2006.

Bindon, J.R., and P.T. Baker. 1996. Bergmann's rule and the thrifty genotype. Journal of Physical Anthropology. Volume 104, No. 2

Craig, P., A. Green and F. Fuilagi. Subsistence harvest of coral reef resources in the outer islands of American Samoa: modern, historic and prehistoric catches. In: Fisheries Research 89 (2008): 230-240.

Department of Labor 2008. Impact of Increased Minimum Wages on the Economies of American Samoa and the Commonwealth of the Northern Mariana Islands. Office of the Assistant Secretary for Policy.

Elstad, E., C. Tusiofo, R. K. Rosen, S. T. McGarvey.
2007. Living with *ma'i suka*: individual, familial, cultural, and environmental stress among patients with type 2 diabetes mellitus and their caregivers in American Samoa. Prev Chronic Dis 2008;5(3).http://www.cdc.gov/pcd/issues/2008/jul/07_0101.htm.U.S.

Gershon, Ilana. 2000. How to know when not to know: strategic ignorance when eliciting for Samoan migrant exchanges. Social Analysis. 44(2): 84-105

Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007, the physical science basis (S. Solomon et al., editors). Contribution of working group I to the fourth assessment report of the intergovernmental panel on climate change. Cambridge University Press.

Kilarski, S., D. Klaus, J. Lipscomb, K. Matsuokas, R. Newton and A. Nugent. 2006. Decision support for coral reef fisheries management: community iinput as a means of informing policy in American Samoa. A group project submitted in partial satisfaction of the requirements of the degree of Master's in Environmental Science and Management for the Donald Bren School of Environmental Management. University of California, Santa Barbara.

Levine, A. 2008. Documenting traditional knowledge of marine use and management in American Samoa. Project report to Preserve American Initiative Grant Program, from Human Dimensions Research Program, Fisheries Monitoring and Socioeconomics Division, NOAA Fisheries Pacific Islands Fisheries Science Center, July 30, 2008.

Lilomaiva-Doktor, Sailiemanu. 2009. Beyond "migration": Samoan population movement (Malaga) and the geography of social space (Va). Contemporary Pacific.21(1):1-34.

Longovi'i, Lauesi. 1999. Interview. Cited in Lilomaiva-Doctor. 2009

McPhee & Assoc. (with Dick Conway and Lewis Wolman). 2008. American Samoa's Economic Future and the Cannery Industry (Funded by: The U.S. Department of the Interior, Office of Insular Affairs),

O'Meara. J. Tim. 2002 Samoan planters: tradition and economic development in Polynesia. Wadsworth, Thompson Learning.

Schoeffel, Penelope. 1999. Samoan exchange and 'fine mats': an historical reconsideration. Journal of the Polynesian Society.108(2): 117-148

Territorial Planning Commission (TPC) and Department of Commerce (DOC). 2000. American Samoa's comprehensive economic development strategy year 2000. American Samoa Government. 49 p.

Yamamoto, Matori. 1994. Urbanization of the chiefly system: multiplication and role differentiation of titles in Western Samoa. Journal of the Polynesian Society. 103(2): 171-202.

U.S. Department of Commerce.2000. Census of Population and Housing, American Samoa.

U.S. Census Bureau. 2004. Population and Housing Profile: 2000. Profile of Population and Housing: American Samoa.

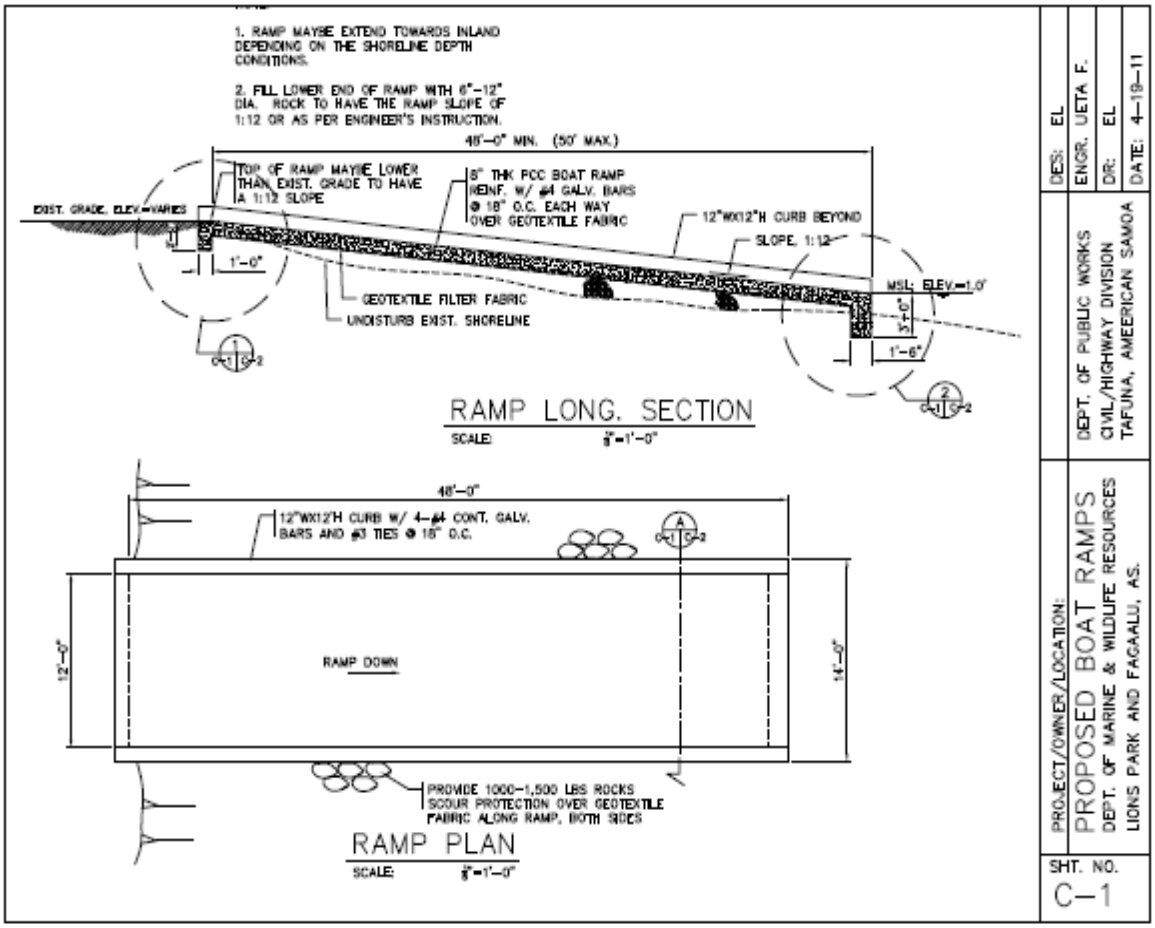
World Health Organization.2008a. Noncommunicable diseases and mental health. Available at : http://www.wpro.who.int/sites/ncd/overview.htm

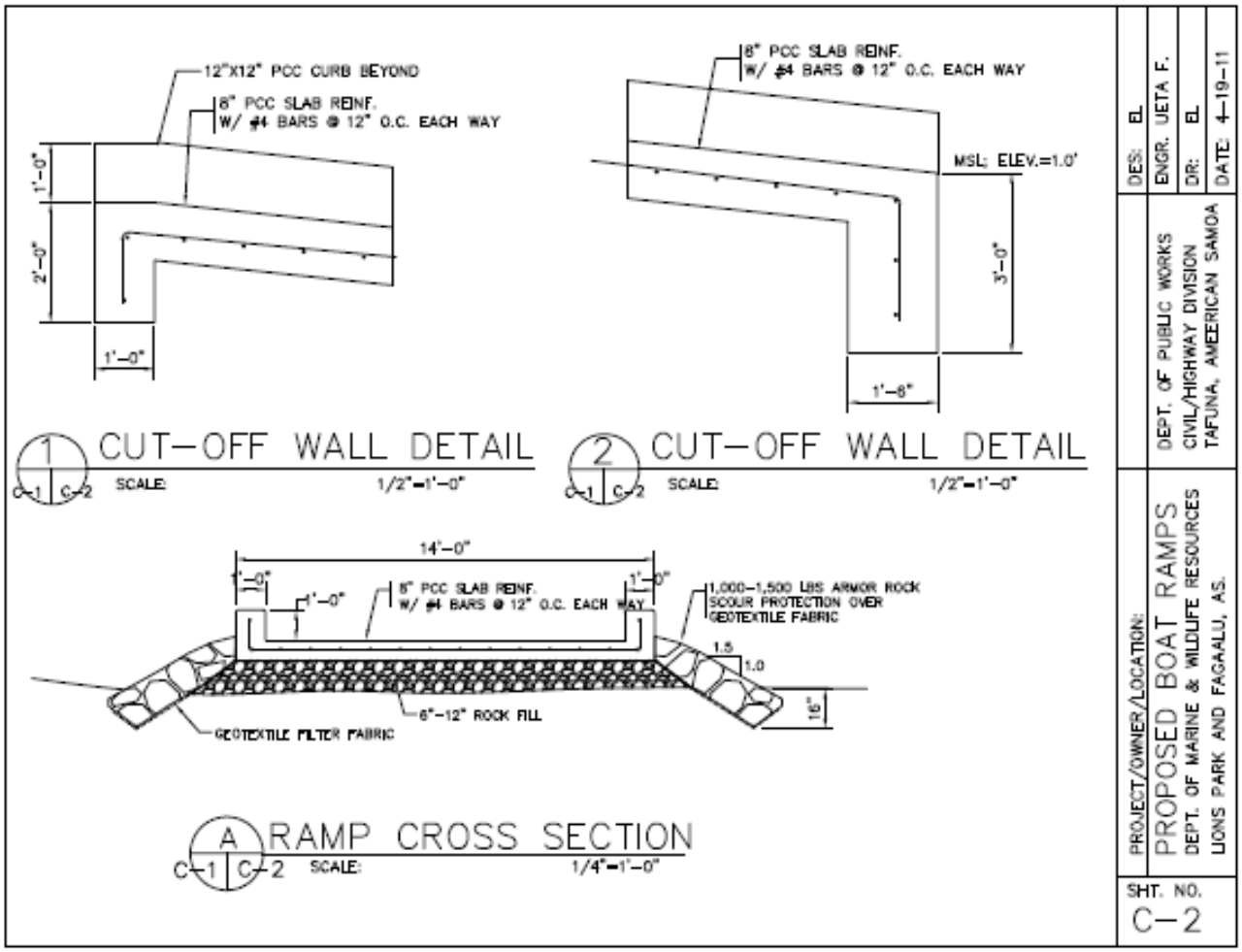
World Health Organization.2008b. Basic health information on Type 2 Diabetes Mellitus. Available athttp://www.wpro.who.int/information_sources/databases/regional_statistics/rstat_di

Western Pacific Regional Fishery Management Council (WPFMC). 2005. Fisheries Ecosystem Plan for the American Samoa Archipelago. September 24, 2009.

Appendix I- Boat Ramp Construction Design Plan

The following design plans were developed by the Department of Public Works.




12"X12" PCC CURB BEYOND
8" PCC SLAB REINF.
W/ #4 BARS @ 12" O.C. EACH WAY
1'-0"
2'-0"
1'-0"
1 CUT-OFF WALL DETAIL
SCALE: 1/2"=1'-0"
8" PCC SLAB REINF.
W/ #4 BARS @ 12" O.C. EACH WAY
MSL: ELEV.=1.0'
3'-0"
1'-8"
2 CUT-OFF WALL DETAIL
SCALE: 1/2"=1'-0"
14'-0"
1'-0"
1'-0"
1'-0"
8" PCC SLAB REINF.
W/ #4 BARS @ 12" O.C. EACH WAY
1,000-1,500 LBS ARMOR ROCK
SCOUR PROTECTION OVER
GEOTEXTILE FABRIC
1.5
1.0
16"
6"-12" ROCK FILL
GEOTEXTILE FILTER FABRIC
A RAMP CROSS SECTION
SCALE: 1/4"=1'-0"
DES: EL
ENGR. UETA F.
DR: EL
DATE: 4-19-11
DEPT. OF PUBLIC WORKS
CIVIL/HIGHWAY DIVISION
TAFUNA, AMEERICAN SAMOA
PROJECT/OWNER/LOCATION:
PROPOSED BOAT RAMPS
DEPT. OF MARINE & WILDLIFE RESOURCES
LIONS PARK AND FAGAALU, AS.
SHT. NO.
C-2

Appendix II- Army Corps of Engineers Nationwide Permit

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF:

April 8, 2011

received 05/09/2011

Regulatory Branch

File No. POH-2011-00076

Mr. Ufagafa Ray Tulafono
Department of Marine & Wildlife Resources
American Samoa Government
Pago Pago, AS 96799

NOTICE OF VERIFICATION
NATIONWIDE PERMIT 36 (Boat Ramps)
New DMWR Boat Ramps at Faga'alu and Tafuna (Lyon's Park),
Tutuila, American Samoa

Dear Mr. Tulafono:

This letter verifies that your proposed construction of two new Department of Marine & Wildlife Resources (DMWR) boat ramps, one at Faga'alu and one at Tafuna (Lyon's Park), for the Island Wide Boat Ramp Projects, is authorized under the Corps' Nationwide Permit authority at 33 CFR 330 and the March 12, 2007 Notice of Issuance of Nationwide Permits (72 FR 11092), Paragraph B.3 (Nationwide Permit No. 36, Boat Ramps). This verification is issued under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344).

The authorized work consists of the construction of two new boat ramps in accordance with your Department of the Army permit application dated January 18, 2011, and the supplemental project information submitted on your behalf by the AS DPW (including attached ramp plan and longitudinal section) and received via e-mail on March 22 and 28, 2011. Each boat ramp will consist of a 48 x 14 foot precast concrete slab which will be placed on a bed of lava rock (2 to 6 inches in diameter, approximately 22 cubic yards). The total amount of fill to be discharged seaward of the high tide line for each ramp will not exceed 50 cubic yards. There will be minimal excavation (approximately 42 cubic feet) to accommodate the toe of each precast ramp, with upland disposal of the excavated material. The work will not include any pile driving.

The American Samoa Department of Commerce, Coastal Management Program (ASCMP) issued Federal Consistency Certification for construction of the boat ramps via letter dated December 16, 2010. The American Samoa Environmental Protection Agency issued Section 401 Water Quality Certification for construction of the two boat ramps via letter dated December 16, 2011. The American Samoa Historic Preservation Office, via letter dated December 17, 2010, concurred with your determination of "no effect" to historic properties for the undertakings, based on previous disturbance of the two project sites.

In order for you to utilize this authorization, your activity must comply with the applicable 2007 Nationwide Permit General Conditions and the 2007 Nationwide Permits Honolulu District Regional Conditions (copies enclosed). In addition, the following Special Condition shall apply to this authorization:

a. If you discover any previously unknown historic or archaeological remains while accomplishing the authorized work, you must immediately notify the American Samoa Historic Preservation Office (SHPO).

You may now begin the boat ramp installation work. This verification is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to **March 18, 2012**. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permit is modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this nationwide permit.

You are advised that a nationwide permit does not grant any property rights or exclusive privileges. Also, it does not authorize any injury to the property rights of others, nor any interference with any existing or proposed Federal projects. This authorization does not relieve the permittee of any need to obtain other Federal, State, or local authorizations required by law.

General Condition # 26 requires that a signed certification be submitted upon completion of the authorized work. Therefore, please sign, date, and return the enclosed compliance certification upon completion of the DMWR boat ramp rehabilitation at Fagasa and Pago Pago.

File No. **POH-2011-00076** is assigned to this action. Please cite this number in any correspondence with us relating to this boat ramp work. Please contact Mr. Peter Galloway of my Regulatory Staff at 808-438-8416 (FAX: 808-438-4060) or by electronic mail at *peter.c.galloway@ usace.army.mil* if you have any questions. We are interested in your experience with our Regulatory Program and encourage you to complete a customer service survey form at http://per2.nwp.usace.army.mil/survey.html

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

Enclosures