APPENDIX I: American Samoa Fishing Community Impact Statement

I.1 Overview of community

American Samoa is an unincorporated territory of the U.S.A consisting of the islands of Tutuila, Swains and the Manu'a group (Ofu, Olosega and Ta'u) and Rose Atoll. The total land area is 77 square miles. The Territory's population is about 60,000 and is growing rapidly, with a doubling time of only 20 years. Most of the islands are mountainous with limited flat land suitable for agriculture. American Samoa is lowest in gross domestic product and highest in donor aid per capita among the US Pacific islands (Adams et al. 1998).

American Samoa has a small developing economy, dependent mainly on two primary income sources: the American Samoa Government (ASG), which receives income and capital subsidies from the United States, and two tuna canneries on the island of Tutuila. These two primary income sources have given rise to a third: a services sector that derives from and complements the first two. In 1993, the latest year for which ASG has compiled detailed labor force and employment data, the local government employed 4,355 people (32.2 percent) of total employment, followed by the two canneries with 3,977 people (29.9 percent) and the rest of the services economy with 5,211 workers (38.4 percent). Altogether, the three segments employed 13,543 workers, while 2,718 people were registered as unemployed (that is, actively seeking employment). This gives a total labor force of 16,261 and an unemployment rate of 16.7 percent.

With a total population in 1993 estimated at 52,900, the labor force represented 30.7 percent of the population, very low when compared with the overall US labor force ratio (well over 50 percent) but typical of the smaller developing Pacific island economies. Of the 31,822 residents 16 years or older, the total labor force was equivalent to 51.1 percent. That half of the 16 years-plus population is not in the labor force is explained by American Samoa's lack of major industry other than government and fish canning. Work opportunities are certainly limited but not having a job in the money economy does not necessarily equate with unemployment in the territory, where subsistence activity contributes to the extended family's total well-being.

Official data notwithstanding, by many measures, American Samoa is not a poor economy. Its estimated per capita income of $5,000 is almost twice the average for all the Pacific island economies (at $2,700) (Bank of Hawaii Economic Research Dept. 1999). Per capita income in American Samoa does not represent the same market basket and value as it would, for example, in Honolulu. There are aspects of work and the creation of value in the communal societies of the Pacific islands that are not captured by market measures. For instance, to the extent that unemployment among the younger population can cause both economic and social ills, American Samoa's tightly organized *aiga* (extended family) system is one way to keep young people from becoming economically unproductive and socially disruptive. Another avenue for American Samoan youth not available to the vast majority of youth in the Pacific islands is emigration to the United States, where an estimated 70,000 Samoans live, 20,000 of them in Hawaii.

A large proportion of the territory's workers (in the case of the canneries as much as 90 percent) is from western Samoa. While it is correct to say that western Samoans working in the territory are legally alien workers, in fact, they are the same people, by culture, history and family ties.

I.2 Description of the fisheries

I.2.1 History of exploitation, vessel characteristics and fleet composition

I.2.1.1 Small-scale fishery

The harvest of pelagic fish has been a part of the Samoan way of life since the islands were first settled some 3,500 years ago. Until the 1950s on the island of Tutuila, and even into the 1970s in the Manu'a Islands, the indigenous residents of American Samoa captured skipjack tuna in offshore waters using traditional canoes and gear (Severance and Franco 1989). Other tuna species, billfish, wahoo and mahimahi were also occasionally taken by traditional techniques.

The introduction of outboard motors in the 1950s and 1960s brought about a decline in traditional fishing methods in favor of motorized dinghies and skiffs for trolling and handlining. The development of offshore fisheries began in earnest during the early 1980s. It was at this time that the FAO-designed *alia* catamaran was introduced into the islands. The number of small vessels participating in commercial pelagic and bottomfish fisheries quadrupled between 1980 and 1985. During the latter period, almost all of the commercial catch of pelagic species was taken by trolling. Most pelagic fishing occurred near banks and seamounts where seabird flocks feed (thus indicating the presence of baitfish that tuna may also be feeding upon), or at fish aggregating devices (FADs) deployed around Tutuila Island. FADs were introduced to American Samoan coastal waters in 1979 and proved to be a popular way to increase the catch rates of widely dispersed pelagic fish (Craig et al. 1993). FADs attracted and retained schools of fish and made it easier for vessels to locate concentrations of tuna.

The extensive use of longline gear by the small-scale fleet in American Samoa is a recent phenomenon, with longline catches rising from zero prior to 1994 to almost 900,000 lbs in 1998. The stimulus for American Samoan fishermen to shift from troll or handline gear to longline gear was the fishing success of 28-34 ft *alia* catamarans equipped with longline gear operating in the EEZ around western Samoa. Following the example of the western Samoa fleet, the fishermen in American Samoa deploy a short monofilament longline with 250-350 hooks from a hand-powered reel. The predominant catch is albacore tuna, which is marketed to the local tuna canneries.

Fishermen who set longline gear in the Exclusive Economic Zone (EEZ) around American Samoa are required to obtain a federal permit from the National Marine Fisheries Service (NMFS) Pacific Islands Area Office. There is presently no limit on permits (i.e., no limited entry). To date, over 60 permits have been issued, although only 26 were active on a regular basis in 1999 (Curren 2000).

The technology employed by the small-scale fishing fleet in American Samoa is relatively unsophisticated. Typically, the boats are double- or single-hulled vessels equipped with outboard engines. Until recently, average boat length was 28 ft. Many boats are outfitted with wooden handreels that are used for bottomfish fishing as well as for trolling. Less than ten percent of the boats carry a depth finder, fish finder or global positioning system (Severance et al. 1998). The small vessels equipped for longline fishing store their gear on deck on a hand-powered reel, which can hold as much as 10 nautical miles (nm) of monofilament mainline. Most longliners leave for the fishing grounds in the early morning and return in the afternoon or early evening. The small *alia* fish up to 25 nm from shore, but effort has been mainly concentrated on banks 5 to 10 nm off the southern coast of Tutuila.

Less information is available on the fishing grounds of the small boats using trolling gear. Moana (1988) noted 12 years ago that small boats were increasingly traveling to distant banks and seamounts such as South Bank and Southeast Bank, both of which are located about 45 nm from land. This trend of fishing further offshore was also observed in a more recent study of the small-scale pelagic fishery in American Samoa (Severance et al. 1999)

Fishermen in American Samoa are acquiring larger boats (38-50 ft) with a greater fishing range and capacity for chilling fish. In 1998, a local private, non-profit organization received a grant from the Administration for Native Americans to equip a 40 ft double-hull fishing vessel with hydraulically powered longline gear. The new boat is being built by a local firm and is expected to be completed early in 2000[1].

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[1]Since 1981, boat builders in American Samoa have been constructing plywood and fiberglass *alia* catamarans for the local fishing industry (Itano 1996). Western Samoa has recently submitted a request to FAO to design a larger *alia*. The new design will also be available to boat-builders in American Samoa.

In addition, a 52 ft steel vessel joined the fleet late in 1999 and six 38-42 ft *alia* are reportedly being purchased by local businessmen. Most of the *alia* are assembled in western Samoa from pre-cut aluminum plates manufactured in Australia. This newer version of the *alia* has a higher freeboard and is equipped with a larger fuel tank, navigational aids and proper safety gear and it is capable of extending the range of American Samoa's small-scale fishery to at least 100 nm offshore (Capt. W. Thompson letter to WPRFMC dated 3 Feb. 2000). The older, "stretched" version of the original *alia* design was constructed in western Samoa without consultation with naval architects or marine surveyors. It proved to be unseaworthy and is blamed for the high loss of boats and crews during 1996-1997, the years of dramatic expansion in the western Samoa longline fishery (Stanley and Toloa 1998).

Tournament fishing for pelagic species began in American Samoa in the 1980s. Most of the boats that participate are *alia* catamarans and small skiffs. Catches from tournaments are often sold, as most of the entrants are local small-scale commercial fishermen. In 1996, three days of tournament fishing contributed about one percent of the total domestic landings. Typically, 7 to 14 local boats carrying 55 to 70 fishermen participate in each tournament, which are held 2 to 5 times per year (Craig et al. 1993).

I.2.1.2 Large-scale distant water fishery

Large-scale commercial longline fishing in what is now the EEZ around American Samoa was initiated by Japanese vessels in the late 1940s. The foreign vessels later supplied albacore tuna to the two canneries established in the Territory by Van Camp Seafood Company and Star-Kist Foods in 1954 and 1963, respectively. From 1950 to 1965 there was a progressive expansion of the area of operation of these longliners from the waters in the immediate vicinity of American Samoa to more distant waters (Otsu and Sumida 1968; Yoshida 1975). The expansion of fishing area paralleled an increase in fleet size. Between 1954 and 1965 the number of foreign longline vessels off-loading in Pago Pago increased from less than 20 to over 150. In the mid-1960s, the Japanese vessels began to be replaced by Taiwanese and Korean longline vessels as the canneries' major suppliers of albacore. In recent years, the number of foreign longline vessels delivering fish to the canneries has sharply declined, and, presently, only about 40 vessels are making landings in American Samoa. A typical Asian longline vessel is 80-150 ft in length, highly mechanized and sets 50-60 nm of mainline with 1,500-2,000 hooks each day (WPRFMC 1995).

Legal fishing by foreign longline vessels in the waters around American Samoa ceased completely in 1980 after the implementation of the pelagic fisheries Preliminary Management Plan for the Western Pacific Region,[2] which placed onerous requirements (e.g., permits, fees, observers) on foreign vessels. However, foreign longline vessels occasionally fish illegally in the EEZ around American Samoa. In 1992, for example, the Coast Guard seized a Taiwanese longline vessel fishing near Swains Island.

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[2] The PMP was superceded by the Council's Pelagic Fisheries Management Plan in 1986.

There is a possibility that legal fishing in the EEZ by foreign vessels may resume under a Pacific Insular Area Fishing Agreement (PIAFA). This agreement could give foreign vessels access to EEZ waters around American Samoa in exchange for a negotiated fee and subject to a variety of permit conditions.

The domestic longline fleet based in American Samoa consists mainly of small vessels but five additional locally-owned vessels larger than 50 ft based in Pago Pago are also engaged in the longline fishery. These vessels are outfitted with modern electronic equipment for navigation, communications and fish finding and they are able to chill and freeze tuna catches. The owner of one of these vessels has also acquired permits to fish in the EEZs of neighboring island nations such as Niue, Cook Islands, Tokelau, Fiji and Samoa. The owners of five other large US longline vessels that are not based in American Samoa have received NMFS longline general permits that allow the boats to longline in the EEZ around the Territory, but only one of the owners has used his vessel for this purpose.

US purse seine vessels began exploratory fishing in the central and western Pacific in the late 1970s. The rapid expansion of the fleet during the 1980s coincided with an increase in the quantity of skipjack and yellowfin tuna landed at the canneries in American Samoa. At present, about 34 US purse seiners supply fish to the tuna canneries. The purse seiners commonly measure 200-250 ft in length and are equipped with sophisticated "fish-finding" equipment, including helicopters. The purse seine nets typically capture 15 to 45 metric tons of fish in a single set. Most of the fishing activity by these vessels occurs in the EEZ waters of Papua New Guinea, Federated States of Micronesia and other Pacific island nations far to the west of American Samoa. During an ENSO event, however, these vessels may shift their fishing activity to areas in the central Pacific, including the northern portion of the EEZ around American Samoa (see Figure 5.1 of framework proposal).

Until recently, US purse seine fishing effort in the western Pacific was divided about equally between sets on floating objects (logs and FADs) and on free-swimming schools. During 1999, however, 90 percent of the fishing effort was around untethered FADS (i.e., rafts known as *payao*) constructed and deployed by the purse seiners themselves. An average of 20 rafts per boat is estimated for the 34 vessel US fleet, for a total of approximately 700 untethered FADs. FAD technology has gained wide acceptance in the US purse seine fishery because it increases harvesting efficiency. FADs are easily deployed, tracked and located with radio beacon devices. Locating unassociated, free-swimming tuna schools is more difficult and requires long hours of searching and knowledge of the fishing grounds. The deployment of drifting FADS by the vessels themselves augments the supply of naturally occurring drifting objects that attract forage animals and tunas under them in the open ocean. FAD performance is thus similar to log performance. Both FAD and log sets are executed before day break and have a very high success rate (more than 90 percent) for catching tuna. This is nearly double the success rate of unassociated school sets, which are executed at all hours of the day (Sakagawa in press).

Domestic purse seine vessels operating in the central and western Pacific are not required to report catches made in the US EEZ. However, these boats often do so on a voluntary basis using report forms provided under the Multilateral Treaty on Fisheries. According to these reports,

The most productive fishing grounds for purse seiners are far from American Samoa. According to catch reports compiled by NMFS, six US purse seine vessels made seven sets within the EEZ around American Samoa between 1988 and 1997. The total catch from these sets was 36.3 metric tons of skipjack tuna. Only in one year during that period did three or more vessels fish in American Samoa's EEZ. All seven sets were made by vessels that recorded "searching" while transiting the EEZ around the Territory. There is no information available on domestic purse seine catches in the EEZ around American Samoa prior to 1988.

Fishing activity increased during 1998-1999, when a total of four sets, two in each year, were made by US purse seiners operating in the EEZ of American Samoa. These sets resulted in a total catch of 100.7 mt of skipjack tuna and 20.8 mt of yellowfin tuna. The four sets were made in the same general area – the northern portion of the EEZ in the vicinity of Swains Island – as those reported in the previous 10-year period (R. McGinnis, letter dated 19 May 2000 to Paul Dalzell, WPRFMC).

Domestic albacore troll vessels also supply tuna to the canneries in American Samoa on a seasonal basis. The South Pacific albacore troll fishery, which began in 1986, operates from December through early April, with 20-30 US vessels joining an international fleet (WPRFMC 1995). This high seas fishery targets dense concentrations of albacore that form along the sub-tropical convergence zone that lies 35-47° S and 170-130° W. Vessels are generally 60-80 ft in length, operating with crews of 3-5, and capable of freezing 45-90 tons of fish. The domestic albacore troll fleet is not known to fish in the EEZ around American Samoa, so this type of vessel is excluded from the proposed management action.

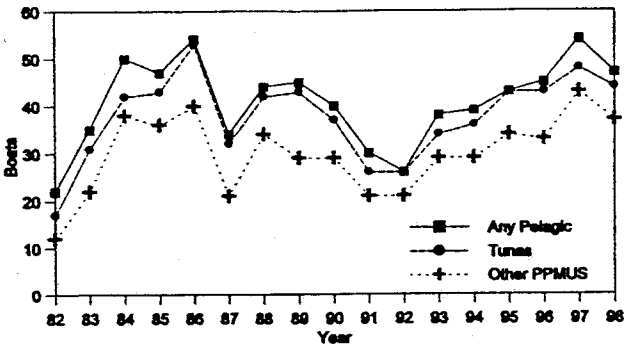

Figure I.1. Number of small boats participating in American Samoa pelagic fishery (after WPRFMC 1999)

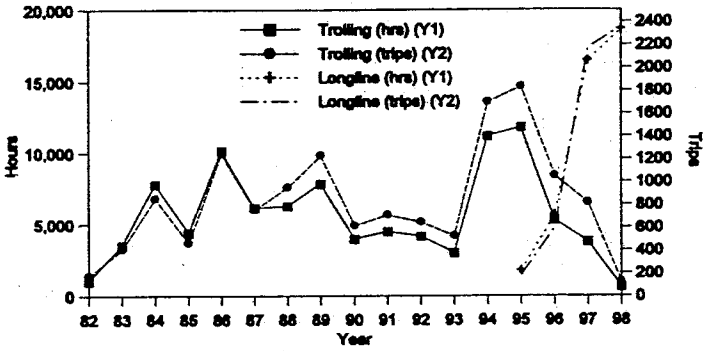

Figure I.2. Fishing effort by small boats using longline and troll gear in American Samoa pelagic fishery (after WPRFMC 1999)

Between 1992 and 1997, there was a marked increase in the number of American Samoa-based small vessels landing pelagic fish in American Samoa, although the number is still below the level that existed prior to the 1987 hurricane that damaged or destroyed a large segment of the fleet (Figure I.1). The level of trolling effort rose markedly between 1993 and 1995 but has declined since 1996 (Figure I.2). The decline in trolling effort coincided with a shift in gear types by small-scale fishermen from trolling to longlining.

I.2.2 Effort levels and landings in small-scale fishery

Total landings of pelagic fish by the American Samoa small-scale fleet have fluctuated widely due to the effects of hurricanes, entry and exit of highliners and annual variations in fishing effort (Figure I.3). Catches increased in volume after 1993, initially as a result of an increase in trolling activity and later because of the widespread adoption of longline gear. The

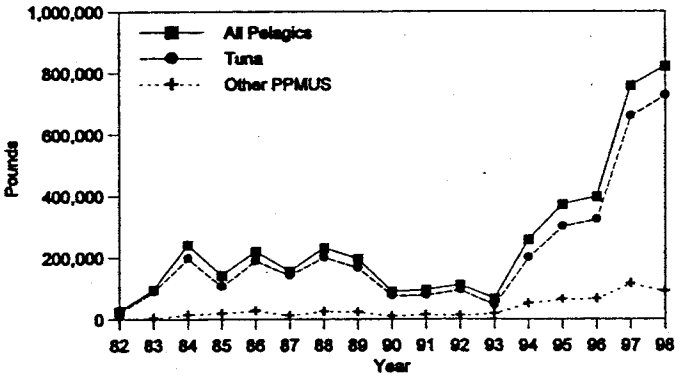

Figure I.3. Annual landings by boats using longline and troll gear in American Samoa pelagic fishery (after WPRFMC 1999)

harvest of "pelagic management unit species" (PMUS) and other pelagic species doubled between 1996 and 1997. This increase is largely due to higher catches by small boats using longline gear. Most of the longline landings are albacore, with yellowfin tuna, bigeye tuna, blue marlin, mahimahi and wahoo making up most of the remainder of the catch. The dominant species in the troll catch are skipjack and yellowfin tuna, with smaller but significant quantities of blue marlin, mahimahi, wahoo and dogtooth tuna (Figure I..4).

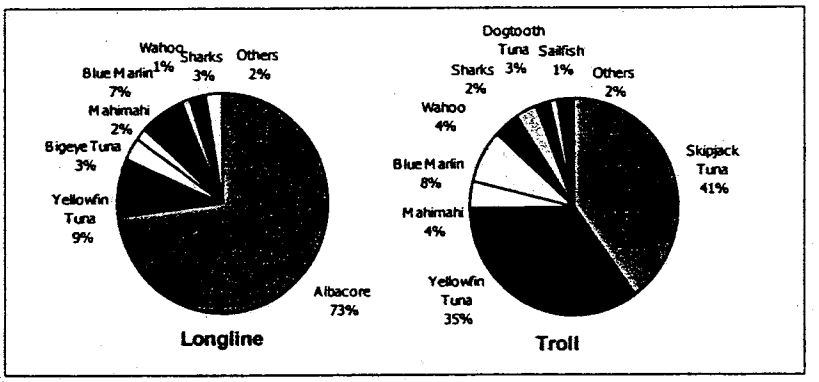

Figure I.4. Composition of catches of small boats using longline and troll gear in American Samoa pelagic fishery (after WPRFMC 1999)

I.3 Description of economic characteristics of small-scale fishery

I.3.1 Harvesting sector

The economic performance of the small-scale fleet has improved dramatically in recent years. Despite a slight decrease in the price of tuna and other PMUS, the revenue from commercial landings of PMUS and other pelagic species doubled between 1996 and 1998 (Figure I.5). The increased catches are largely due to the increasing use of longline gear by small-scale boats.

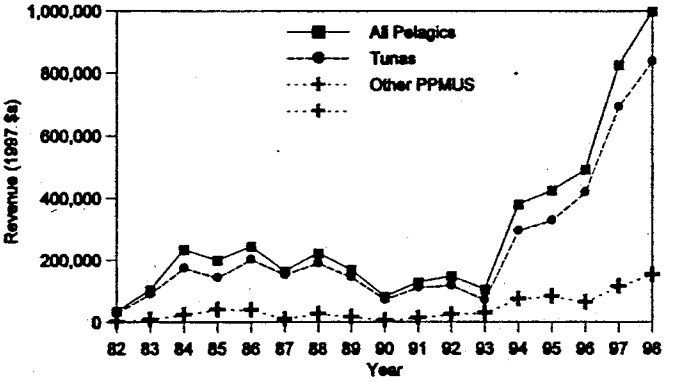

Figure I.5. Ex-vessel value of catches of small boats in American Samoa pelagic fishery (after WPRFMC 1999)

Table I.1 provides estimates of average gross and net revenue and fixed and variable costs for small boats using longline gear. Estimates of operating costs are based on a 1997 NMFS survey of *alia* vessels in American Samoa, and capital costs were estimated using information provided by Chapman (1998). Average trip revenues are derived from estimates of current effort, catch rates and average ex-vessel prices reported in WPRFMC (1998).

It is estimated that the average 28 ft *alia* catamaran equipped with longline gear earned a net revenue (before labor costs and taxes) of about $15,000 in 1997. Factors such as experience and skill level directly affect both revenues and costs and there is undoubtedly a high variability across boats in the values of parameters. The cost-earnings analysis did not include a labor cost or identify how expenses, revenues and profits are shared among crew, captain and owner. Some owners pay each crew member a flat salary, while others pay the crew a percentage of the revenues after certain expenses have been deducted. The average vessel is operated by a captain and three crew members. Most boats are not owner-operated.

Table I.1. Average annual gross and net revenue (before labor costs and taxes) and fixed and variable costs for a 28 ft *alia* catamaran using longline gear in American Samoa pelagic fishery

Annual Revenue

Number of fishing trips per year: 100 (average trip length is 7.6 hrs)

Number of hooks set per trip: 214

Catch per trip (lbs): Tuna - 300; Other PMUS - 50; Misc. fish - 5

Price per pound ($): Tuna - 1.06; Other PMUS - 1.40; Misc. fish - 1.44

Total Revenue $39,520

Required Capital

Vessel [1]	13,000
Engine	7,000
Fishing gear (longline)	3,000
Radio	200
Safety	1,000
Total Required Capital	24,200

Fixed Costs		**Variable Costs**	
Debt service [2]	3,748	Fuel and oil	3,350
Insurance (5%)	1,210	Provisions	2,400
Maintenance and repair	1,500	Bait	10,300
Depreciation [3]	2,057		
Miscellaneous (permit, etc.)	35		
Subtotal	8,550	Subtotal	16,050

Total Costs $24,600

Net Revenue $14,920

[1] 28-ft *alia* catamaran constructed in American Samoa or Western Samoa

[2] Debt service assumed to occur over a 10-year period, with a 15% annual interest rate and 20% down

[3] Depreciation calculated on a straight line, 15% salvage basis, assuming a vessel life span of 10 years

Catch composition and marketing strategy have a major influence on vessel earnings in American Samoa, where local fresh fish markets and cannery tuna markets operate with different price structures. The most lucrative tuna fishing operations in the Pacific islands at present are those producing high-grade, fresh tuna for export. The ex-vessel price for premium-quality fresh fish is as high as $4.75 per pound in American Samoa, compared to the $1.06 per lb cannery price. A major constraint to opening up new marketing channels is that few fishermen have adopted the proper shipboard handling and chilling of tuna that are essential for fresh export. The restricted carrying capacity of the original 28 ft version of the *alia* limited the amount of ice that could be taken on fishing trips to maintain fish quality. Insufficient deck space of the *alia* has contributed to poor shipboard handling. As more medium sized vessels (35-50 ft) enter the fishery, sufficient ice can be carried for proper chilling of the catch.

I.3.2 Markets and ancillary businesses

Most of the albacore tuna landed by the small-scale fishery are sold for canning, whereas other tuna species and non-tuna are sold fresh in local markets. There is interest in producing fish for fresh export but limited capacity for proper shipboard handling and storage of fish, inadequate shoreside ice and cold storage facilities and infrequent and expensive air transportation links are restrictive factors. If constraints to export marketing can be overcome, economic returns and export earnings by the fishing industry in American Samoa could increase substantially.

The American Samoa Economic Advisory Commission has identified air transportation as the single greatest obstacle to economic development. A commissioner noted that a fish dealer/broker in Fiji can chose from four flights per day, whereas a fish dealer in American Samoa has two flights per week. A priority of the Commission is to obtain for American Samoa an exemption from the prohibition on the use of foreign carriers similar to the exemption that enjoyed by the state of Alaska.

In 1998, the private, non-profit organization Tautua Samoa Association received a $346,000 federal grant from the Administration for Native Americans for start up of a small-scale fish processing facility. The organization also plans to apply for a federal grant in the amount of about $500,000 from the Economic Development Administration to complete the facility. Once implemented, the project will result in the establishment of a facility to procure fresh bottomfish and pelagic species landed by local fishermen and process it for local and export marketing. The facility will also process frozen "miscellaneous" fish landed by the foreign longline and US purse seine vessels which supply the two local tuna canneries. The miscellaneous fish includes tuna and incidental pelagic species unsuitable for canning. Portion-controlled steaks and other products would be processed from cannery by-products for export to food service markets in Hawaii and the continental USA. The processing facility will be located in the Senator Daniel Inouye Industrial Park on land leased from the American Samoa Government. The project will provide 20 to 40 full-time jobs and is expected to encourage additional investment in the local fishing industry.

I.4 Description of the socioeconomic aspects of the fishing industry and fishing community

The natural protection afforded by Pago Pago harbor and four special provisions of US law form the basis of American Samoa's largest private industry - tuna canning - now more than forty years old. Canned tuna is American Samoa's major export. The Territory is exempt from the Nicholson Act, which prohibits foreign ships from landing their catches in US ports. American Samoa products with less than 50 percent market value from foreign sources enter the United States duty free (Headnote 3(a) of the US Tariff Schedule). In addition, the parent companies of American Samoa's fish processing plants enjoy special tax benefits. Furthermore, wages in the Territory are not set by federal law but by recommendation of a special US Department of Labor committee that reviews economic conditions every two years and establishes minimum wages by industry type.

Encouraging domestic harvest of offshore pelagic fishery resources is highly compatible with existing economic activities. A fish processing industry developed in American Samoa in the 1950s and 1960s with the establishment of two tuna cannery operations. Since that time, the canneries have been the largest private sector employer in American Samoa and its leading exporter. The production volume of the canneries has increased steadily over the years, and StarKist Samoa is currently the world's largest tuna processing facility. In 1998, Pago Pago received 208,300 tons of fish worth approximately $232 million, making it the leading port in the USA in terms of the dollar value of fish landings. Ancillary businesses associated with the tuna processing industry, including those involved in re-provisioning the tuna fleet, also contribute significantly to America Samoa's economy. Fleet expenditures for fuel, provisions and repairs in 1994 were estimated to be between $45 million and $92 million (Hamnett and Pintz 1996). The majority of the tuna cannery employees are citizens of western Samoa and Tonga who have obtained permits to work in this particular sector of American Samoa's economy (Schug and Galea'i 1987).[3] The American Samoa Government calculates that the canneries represent directly and indirectly about 15 percent of current money wages, 10-12 percent aggregate household incomes, 7 percent in local government receipts and 20 percent of power sales.

The single largest employer of American Samoan residents is the Territorial government, which is facing mounting debts and a major budget deficit. In recent years, Federal financial assistance to the government has declined. Consequently, the number of jobs available in the Territorial government is decreasing (Department of Commerce 1998). The shortage of jobs has led to heavy out-migration to the United States.

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[3]About 50 % of the workforce in American Samoa was born in Western Samoa or Tonga (Department of Commerce 1998), where wages are considerably lower than in American Samoa. For example, the minimum wage in Western Samoa is approximately US$0.46 per hour, as compared to $2.45-$3.87 in American Samoa.

Pelagic fisheries are viewed by the American Samoa Government as having an important role in the expansion and diversification of the local economy and in helping the Territory attain a higher level of economic self-reliance. As in most other Pacific islands, stocks of pelagic species in the vicinity of American Samoa offer far greater resource potential than deep slope bottomfish or inshore fish stocks. Inshore resources are heavily exploited or over-exploited in most areas of American Samoa (Wass 1980; Saucerman 1995). The exploitation of slow growing, deep slope snappers in American Samoa is limited by suitable habitat and the low standing stock of the resource (Itano 1996).

The government has undertaken projects to support pelagic fishery development. The most successful has been the deployment of fish aggregation devices that significantly increased the production of the small-scale pelagic fishery.

The increase in albacore catches by small boats equipped with longline gear encouraged a number of private, non-profit organizations in American Samoa to seek federal assistance to expand local harvesting and processing capacity. Two organizations have obtained grants from the US Administration for Native Americans (ANA) to purchase and equip larger vessels (40+ ft) for longline fishing. A third group was awarded an ANA grant for start up of a fish processing operation.

A future source of funding for such projects will be the Western Pacific Fishery Demonstration Program administered by the Western Pacific Regional Fishery Management Council. This program was authorized under the Magnuson-Stevens Act to address concerns that communities comprised of the descendants of indigenous people in the Council's area of jurisdiction have not been appropriately sharing in the benefits from the region's fisheries. The Act authorizes direct grants to Western Pacific communities for the purpose of establishing demonstration projects to foster and promote the involvement of eligible communities in the fisheries of the region.

The development of the local fish harvesting sector in American Samoa continues to be constrained by a shortage of private capital and, to some extent, by the economic preferences and cultural values of local fishermen. The median household income in the Territory is $16,114, and 56% of families have incomes below the federal poverty level (Department of Commerce 1998). Most residents interested in commercial fishing do not have sufficient financial resources to invest in large, expensive vessels. A new 40 ft *alia* can be acquired for about $60,000, with earlier versions of the *alia* available from $24,000-40,000. By comparison, a 65 ft longline vessel would cost about $350,000 and a purse seiner would cost several million dollars. Assuming a 30% down payment and a 10-year loan at 10% annual interest, the initial payment of $18,000 and an annual loan payment of $6,835 are an affordable investment for small-scale fishing enterprises in American Samoa, whereas an initial payment of $105,000 and an annual loan payment of nearly $40,000 are affordable only for a select few.

The majority of the fishermen in American Samoa do not rely on the sale of their catch as their only source of income. According to a recent survey, 65% of local fishermen are employed at another job (Severance et al. 1999). Furthermore, all Samoans have cultural obligations to extended families, traditional leaders and village ministers that require the exchange of food and other resources. Undertaking fishing on a part-time basis, rather than as a full-time business, provides local residents with the flexibility to fulfill these obligations, which an integral part of *fa'a Samoa* (the Samoan way of life).

The technologies and patterns of fishing that have evolved over the years in American Samoa are culturally acceptable as well as economically reasonable for small-scale fishermen. They have demonstrated a willingness to adopt new types of fishing gear and methods so that their catching power and efficiency has increased incrementally. The small to medium-size vessels favored by fishermen are easily and inexpensively built and maintained and they are capable of harvesting diverse fishery resources utilizing a variety of gear types. According to an early report on fisheries development in the American Pacific islands, this flexibility is essential in establishing commercially-viable fisheries in the region (PBDC 1984).

I.5 Description of social and cultural framework of domestic commercial, recreational and subsistence fishermen and the fishing community

Samoa has a long history of dependence on pelagic fishery resources. The narrow reef shelf around the main islands of American Samoa and the lack of shallow productive lagoon waters limit potential inshore fishery yields. Severance and Franco (1989) and Severance et al. (1999) documented the traditional importance of capturing large pelagic fish, particularly skipjack tuna, and described the technology and skills developed by Samoans to catch these fish. This included special canoes (*va'a alo*) designed for lightness and speed which could follow tuna schools, and tuna hooks made from mother-of-pearl and turtle shell. In the past, fishermen in canoes might fish as far as 30 miles from shore when following tuna schools. Other tunas, billfish, wahoo and mahimahi were occasionally caught with baited lines and trolling gear.

The methods and equipment for catching skipjack and other pelagic species have evolved and island residents are no longer entirely dependent on local fishing for food. In contemporary Samoa, seafood continues to be a major component of the local diet. There has been no recent attempt to formally assess the subsistence fishing contribution to American Samoa[4] but subsistence fishing is known to be an important supplement to cash income in many communities in the Territory (Severance et al. 1999).

[4] Wass (1980) reported that annual per capita consumption of seafood in American Samoa is 148 lbs, which is several times higher than the US national average.

In addition, fishing continues to contribute to the perpetuation of Samoan culture, which involves exchange of food and other resources to support extended families and traditional leaders. Participation in commercial activities, wage labor and a cash economy has not weakened these obligations so much as it has allowed new opportunities for customary exchange of goods and services, both formally and informally, through kinship and friendship networks. Individual Samoans participate as members of extended families or *aiga* that share resources and responsibilities. Each *aiga* is headed by a titled "chief" or *matai* who is the decision-maker and spokesperson for the family in many matters of village life. Untitled men and women of the village have many obligations for service and are expected to contribute goods (including fish), cash and labor to important village ceremonies ranging from holidays to weddings and title investitures.

Traditional 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., unpubl. research). Customary exchanges include:

Fa`alavelave -- As a noun, mutual assistance to kinsmen in times of need; as a verb, to provide assistance in times of need. This assistance can be in the form of food from the land or sea, or money derived from local or overseas labor markets.

Tautua – As a noun, service to the kin group and to the matai as leader of the kin group; as a verb, to serve the kin group and its matai.

Fesoasoani – To help out; a less formalized, more individualized, response to a less serious need than in the case of fa`alavelave.

To`onai – A ceremonial need served after Sunday service, where ministers, matai, other village leaders and important visitors to the village reaffirm cultural and spiritual solidarity.

Fa`ataualofa -- To give away or sell at a reduced price to friends or kin as an expression of an ongoing, sustained relationship.

Commercial fishermen are expected to fish when village ceremonies are pending and to be generous in sharing their catch. Some keep fish in freezers with the expectation that they may be called upon by their *matai* to provide food for cultural purposes. Reef fish and bottomfish are acceptable offerings but yellowfin and skipjack tuna are preferred. At times, tuna are ceremonially cut up for formal presentation to the *matai* and village pastor (Severance and Franco 1989).

Severance et al. (1999) recently conducted a survey of fishermen in American Samoa who fish for pelagic species. The 60 fishermen interviewed in 26 villages represent about 50% of the total number of fishermen in the Territory who fish for pelagic species. Thirty-five percent of the fishermen surveyed reported that they sell less than half of their catch. Forty percent of these fishermen also reported that half or more of the catch that they sold was done so as *fa'ataulofa*, that is, sold at a reduced price to friends or kinsmen as an expression of a sustained social relationship.

The survey examined the cultural importance of the distribution of the unsold portion of the catch. The average number of times during the past year that individual fishermen contributed fish to Sunday village meetings was 22. Nineteen percent of the fishermen surveyed reported that half or more of their catch was contributed to a *matai* as a form of *tautua*, that is, service to the kin group. This service is expected of untitled men if they are to rise in status and perhaps achieve a *matai* title themselves. Twenty-five percent of the fishermen surveyed already hold *matai* titles, but they may be obligated to contribute fish to the village pastor or to a higher-ranked individual. Another form of obligatory contribution takes the form of assistance to kinsmen in times of need known as *fa'alavelave*. Forty-two percent of the fishermen surveyed reported contributing fish as *fa'alavelave* three or more times during the past year. A more individualized way of assisting kinsmen is referred to as *fesoasoani*. Thirty-two percent of the fishermen stated that half or more of the unsold portion of their catch was offered as *fesoasoani*.

In summary, despite increasing commercialization of the catch, fishing continues to contribute to the perpetuation of Samoa culture and social cohesion of American Samoa communities. The dependence of the early Samoans on fishing for food security shaped their social organization, cultural values and religion. Of course, many aspects of Samoan culture have evolved but fishing remains an important cultural practice for many villages. The role of fishing in cultural continuity is at least as important as the contributions made to the nutritional or economic well-being of island residents.

I.6 Social impacts of proposed action

Pelagic fish landings by the small-scale fleet are important to American Samoa as a source of food for local consumption, for local income and employment and a means of preserving and perpetuating Samoan cultural values. The preferred alternative enhances the economic and social values associated with the pelagic fishery by maintaining the potential for economically viable catch rates of pelagic fish by the small-scale fleet, thereby furthering sustained community participation in the fishery.

The allocation of a portion of the EEZ to small vessels is consistent with the FMP objective to promote, within the limits of managing at optimum yield, domestic harvest of the management unit species in the Western Pacific EEZ and domestic fishery values associated with these species by enhancing the opportunities for a) satisfying recreational fishing experiences; b) continuation of traditional fishing practices for non-market personal consumption and cultural benefits; and c) domestic commercial fishermen to engage in profitable fishing operations. The area closures will provide for sustained community participation in the pelagic fishery without significantly decreasing the catches of large vessels which target pelagic fish. Taking no action could lead to reduced pelagic fish densities and catch rates within the fishing range of the small-scale fleet. Economic and social costs would be severe for the small-scale fishery, which does not have the option of large pelagic vessels to travel farther from port to obtain higher catch rates.

The establishment of closed areas ensures that fishing grounds of traditional importance to the small-scale fishing fleet will be reserved for its continued use. This is consistent with Article 6.18 of the FAO Code of Conduct for Responsible Fisheries:

> *Recognizing the important contributions of artisanal and small-scale fisheries to employment, income and food security, States should appropriately protect the rights of fishers and fish-workers, particularly those engaged in subsistence, small-scale and artisanal fisheries, to a secure and just livelihood, as well as preferential access, where appropriate, to traditional fishing grounds and resources in the waters under their national jurisdiction.*

Furthermore, partitioning large and small fishing vessels into appropriate areas to reduce the likelihood of interaction is consistent with the objective of the pelagic fisheries FMP to diminish gear conflicts in the EEZ, particularly in areas of concentrated domestic fishing, and Article 7.6.5 of the Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries:

> *States and fisheries management organizations and arrangements should regulate fishing in such a way as to avoid the risk of conflict among fishers using different vessels, gear and fishing methods.*

The area closures are also consistent with the policy of the American Samoa Government, as expressed in the Revised Constitution (1966) "...to protect persons of Samoan ancestry against...the destruction of the Samoan way of life....(and) to protect the lands, customs, culture, and traditional Samoan family organization of persons of Samoan ancestry, and to encourage business enterprises by such persons...." (Section 3).

APPENDIX III: Draft Regulatory Impact Review/Initial Regulatory Flexibility Analysis

III.1 Introduction

Executive Order 12866 requires that long term national costs and benefits of significant regulatory action be assessed through the preparation of Regulatory Impact Reviews. In addition, the Regulatory Flexibility Act, 5 U.S.C. 601 et seq. (RFA) requires government agencies to assess the impact of their regulatory actions on small businesses and other small organizations via the preparation of Regulatory Flexibility Analyses. This document contains initial results of these analyses for the following proposed action. NMFS requests comments on these alternatives and their analysis, as well as comments on other alternatives not considered here which achieve the management objectives with reduced impacts on small businesses.

III.2 Problem Statement and Need for Action

The entry of large vessels into the pelagics fishery in the Exclusive Economic Zone (EEZ) around American Samoa could conflict with the objectives of the Council's management plan for pelagic fisheries (FMP) by 1) failing to achieve optimum yield, as defined in the FMP; 2) creating gear conflicts, particularly in areas of concentrated fishing; 3) reducing the opportunities for (a) profitable fishing operations; (b) traditional fishing practices for non-market personal consumption and cultural benefits; and (c) satisfying recreational fishing experiences. The proposed action (a limitation on fishing by certain size vessels within a specified area around American Samoa) is needed to maintain sustained community fishing effort and cultural continuity, encourage the harvest of underutilized pelagic fishery resources without overcapitalization, maintain catch rates of pelagic fish at commercially viable levels within the fishing range of the small-boat fleet and provide a framework for adaptive management and rapid implementation of regulatory adjustments.

III.3 Existing Management Measures

A National Marine Fisheries Service (NMFS) longline general permit is required for longline fishing in American Samoa's EEZ. This fishery is presently open access, with no limits on the number of longline vessels, individual or total vessel capacity, catch or effort. A control date of November 13, 1997, has been established and all applicants for longline permits after that date are informed that they may not qualify for exemptions to limitations placed on longline vessels greater than 50 ft in overall length. There has been no legal fishing by foreign longline vessels in the EEZ around American Samoa since 1980, when the pelagic fisheries Preliminary Management Plan (PMP) for the Western Pacific Region was implemented. Although this plan has mechanisms for foreign fishing, they involve onerous requirements (e.g., permits, fees, observers) on foreign vessels which have made them unattractive. There is a possibility that legal fishing in the EEZ by foreign vessels may resume at some time under a Pacific Insular Area Fishing Agreement (PIAFA), which could give foreign vessels access to the EEZ around American Samoa in exchange for a negotiated fee and subject to a variety of permit conditions.

III.4 Management Objectives

The following management objectives are address in this management measure:

- Maintain the potential for economically viable catch rates in American Samoa's small-scale fishery as it evolves from a traditional subsistence activity harvesting heavily exploited inshore marine resources to a more commercial activity extending the range of fishing offshore to harvest underutilized pelagic fish (i.e., achieve optimum yield as defined in pelagic FMP).

- Avoid gear conflicts between large and small-scale vessels within the fishing range of the small-scale pelagic fishery.

- Provide for sustained community participation in the small-scale pelagic fishery, recognizing that American Samoa is becoming increasingly dependent on pelagic fish for food, income, employment and perpetuation of Samoan culture.

- Provide a framework for adaptive management and rapid implementation of regulatory adjustments.

III.5 Management Alternatives

Alternative No. 1 (preferred) - Prohibit fishing for pelagic management unit species (PMUS) by US vessels more than 50 ft in overall length around all the islands of American Samoa, from the seaward baseline of the territorial sea to approximately 50 nautical miles (nm) offshore (Figure 12.1). Owners of vessels greater than 50 ft in length who held a NMFS Longline General Permit on or prior to November 13, 1997, and made a landing of PMUS in American Samoa on or prior to that date is exempt from the prohibition to take PMUS within the closed areas. Non-profit corporations owning and operating vessels larger than 50 ft in length for the purpose of pelagic fisheries training, as defined by the American Samoa Department of Marine and Wildlife Resources, are exempt from the prohibition to take PMUS within the closed areas.

Alternative No. 2 - Prohibit fishing for PMUS by US vessels more than 50 ft in overall length around the islands of Tutuila, Manu`a and Rose, from the seaward baseline of the territorial sea to approximately 50 nm offshore. Around Swains Island, the closed area would extend from the seaward baseline of the territorial sea to approximately 30 nm offshore (Figure 12.1). Owners of vessels greater than 50 ft in length who held a NMFS Longline General Permit on or prior to November 13, 1997, and made a landing of PMUS in American Samoa on or prior to that date is exempt from the prohibition to take PMUS within the closed areas. Non-profit corporations owning and operating vessels larger than 50 ft in length for the purpose of pelagic fisheries training, as defined by the American Samoa Department of Marine and Wildlife Resources, are exempt from the prohibition to take PMUS within the closed areas.

Alternative No. 3 - Prohibit fishing for PMUS by US vessels more than 50 ft in overall length around all islands of American Samoa from the seaward baseline of the territorial sea to approximately 100 nm offshore (Figure 12.2). Owners of vessels greater than 50 ft in length who held a NMFS Longline General Permit on or prior to November 13, 1997, and made a landing of PMUS in American Samoa on or prior to that date is exempt from the prohibition to take PMUS within the closed areas. Non-profit corporations owning and operating vessels larger than 50 ft in length for the purpose of pelagic fisheries training, as defined by the American Samoa Department of Marine and Wildlife Resources, are exempt from the prohibition to take PMUS within the closed areas.

Alternative No. 4 - Prohibit fishing for PMUS by US vessels more than 50 ft in overall length within the areas around the islands of American Samoa which are presently closed to foreign longline vessels (Figure 12.3). Owners of vessels greater than 50 ft in length who held a NMFS Longline General Permit on or prior to November 13, 1997, and made a landing of PMUS in American Samoa on or prior to that date is exempt from the prohibition to take PMUS within the closed areas. Non-profit corporations owning and operating vessels larger than 50 ft in length for the purpose of pelagic fisheries training, as defined by the American Samoa Department of Marine and Wildlife Resources, are exempt from the prohibition to take PMUS within the closed areas.

Alternative No. 5 - No action.

III.6 Economic Impacts of Alternatives

Alternative No. 1 (Preferred) – Under this alternative, the closed areas comprise one-third of American Samoa's total EEZ (Figure 12.1). A 50-nm area closure would encompass all of the areas where the small-scale fleet presently fishes, as well as several additional banks and seamounts which are likely to aggregate tuna. The direct benefits of any area closure clearly fall to those vessels which receive permits, while the costs fall on those who do not. The benefits of closing an area around American Samoa to large fishing vessels are awkward to quantify as pelagic fisheries interactions are difficult to document and model due to inadequate data, insufficient knowledge of the biology and population dynamics of the resource and poor understanding of environmental influences. In addition, how various gears fishing in the same time and area compete for locally available fishery resources and the effects on availability of the target fish are poorly understood. There is evidence from other pelagic fisheries that intensive fishing effort within core areas can reduce catch per unit of effort (CPUE) on a localized scale. Such an effect was observed on the Pacific coast of Mexico, where an increase of longline fishing effort led to marked overall decreases of CPUE in both longline and troll fisheries. After Mexico established a sport fishery preserve which extended 50 nm offshore along the Pacific coast, improvements in striped marlin catch rates were reported by trollers, which reflected the fishing down and rebuilding of two localized near shore areas where fish are attracted and regularly linger during their life cycle.

In addition, fluctuations in local ocean environmental conditions or prey availability can cause striking and unpredictable changes in the relative abundance and catch rates of pelagic fish, as a function of local movement patterns rather than overfishing. If these fluctuations reduce the availability of pelagic fish in a localized area, they have a much more severe impact on small-scale fleets with limited fishing range than on larger, more mobile vessels which can seek alternate fishing grounds, including the two-thirds of the EEZ which would remain open under this alternative. As an example of the differences in fishery impacts between the American Samoa-based fleet and the types of vessels which might be expected to be excluded by this measure, a typical 65 ft longliner in Hawaii sets 1,200-1,500 hooks per day with an annual catch of 250,000 pounds, compared to 200-500 hooks per day and 35,000 pounds landed per year by a typical American Samoa small-scale longline vessel. Similarly, the average annual catch of skipjack by a US purse seine vessel operating in the central and western Pacific from 1990 to 1997 was 3,161 mt. Again, the fishery effects of an influx of vessels such as these into American Samoa's nearshore EEZ are difficult to quantify. The costs to excluded vessels are similarly speculative as few such vessels have fished anywhere in American Samoa's EEZ within the last decade. One large, non-American Samoa based longliner made one trip to fish in this area since 1990 and a total of six US purse vessels made seven sets within the EEZ around American Samoa between 1988 and 1997. In addition to the potential for catch competition, gear conflicts are likely if large longliners set their (Hawaii) average of 30-50 miles of mainline within an area that extends only 50 miles offshore. Although the likelihood and magnitude of such occurrences is difficult to predict, the intent of this alternative is to reasonably precluded or minimize such negative shocks to the catches of small-scale vessels. These fishing vessels represent very small owner operated businesses which have limited abilities to withstand even short term revenue interruptions. Small-scale fishery participants have little acess to credit advances or other mechanisms to help them weather such an event, and a boom and bust fishing pattern could severely disrupt American Samoa's developing fishery infrastructure.

Alternative No. 2 – This alternative would establish a 50-nm area closure around Tutuila, Rose and the Manu`a islands but only a 30-nm area closure around Swains Island (Figure 12.1). The closed areas comprise about 26 percent of American Samoa's EEZ. Swains Islandwas beyond the fishing range of the small-scale fleet based in Tutuila until the recent addition of safer vessels. One of the larger domestic vessels based in tutuila is already finding the area between Tutuila and swains highly productive for albacore longline fishing. Considering that it has been observed that the negative impacts on small-scale tuna fisheries by purse seine fishing are more likely within 60 nm of shore, a smaller closed area around Swains Island would not protect the tuna catch potential for the small-scale fishery as well as a 50-nm closed area (Alternative No. 1). Additionally, a pilot longline fishing project conducted by the American Samoa Department of Marine and Wildlife Resources reported good catches of swordfish in the vicinity of Swains Island.

Alternative No. 3 – This alternative would establish a uniform 100-nm area closure around all islands of American Samoa (Figure 12.2). The closed area would comprise about 77 percent of American Samoa's EEZ. This closure would consist of a continuous band from Swains Island to Rose Atoll and would extend beyond the areas previously fished by the small-scale fleet. This alternative not only encompasses all of the known banks and seamounts which are likely to aggregate tuna but provides an additional buffer to account for natural variations in local tuna movement patterns and for the strong possibility that additional seamounts with tuna aggregations will be discovered. It also considers the expanded fishing range of the newest entrants to American Samoa's small-scale fleet. These new boats are capable of fishing safely to over 100 nm offshore. In addition, albacore tuna concentrations have shifted farther offshore since late 1998, according to the owner of a large, mobile longline vessel based in American Samoa. This alternative was rejected because the predominant type of small-scale vessel is the *alia* catamaran, which has limited capacity to store and chill large quantities of fresh fish, thus making long-range fishing beyond 50 nm from shore highly inefficient.

Alternative No. 4 – This alternative would establish closed areas around the islands of American Samoa that have the same boundaries as areas that were closed to foreign longline vessels in 1986 (Figure 12.3). The closed areas extend approximately 30 miles around American Samoa and constitute about 12 percent of the total EEZ but do not encompass most of the grounds currently fished by the small-scale fleet or the offshore banks and seamounts that are known to aggregate tuna. This alternative was rejected as being insufficient to provide positive benefits to the small-scale fleet.

Alternative No. 5 – Under the no action alternative, expansion of the pelagic fishery in the EEZ of American Samoa will be controlled. Highly capitalized, mechanized vessels with high levels of fishing power could fish within the limited range of the small-scale fishery, leading to gear conflicts and catch competition between the two groups of vessels. Asian longline fleets operated near American Samoa during the 1960s and 1970s until the Magnuson act was implemented in 1977. The history of that fishery demonstrates the potential for a decline in tuna catch rates in conjunction with increasing fishing effort by large longline vessels. Albacore catch rates in the waters around American Samoa declined as the Asian longline fleet expanded rapidly in the 1950s. Analysis of this fishery from the 1950s to the 1970s indicates that the larger increase in longline fishing effort may have had an effect on the average catch per day and catch per 1000 hooks (CPUE) of these vessels, which declined steadily between 1959 and 1971.

It is difficult to predict whether large domestic longliners will seek new fishing areas in American Samoa's EEZ, however it seems not implausible given increasing area closures and regulatory measures affecting Pacific (Hawaii), Atlantic and Gulf of Mexico longliners. In addition to the potential for catch competition, gear conflicts are likely if large longliners set their (Hawaii) average of 30 miles of mainline within the limited range of the American Samoa-based small-scale fleet. The latter represent very small owner operated businesses which have limited abilities to withstand even short term revenue interruptions. Small-scale fishery participants have little access to credit advances or other mechanisms to help them weather such an event. In addition, a boom and bust fishing pattern could severely disrupt American Samoa's developing fishery infrastructure. For example, a non-profit private organization in American Samoa recently received a grant of $346,000 from the Administration for Native Americans (ANA) for the start-up of a small-scale fish processing operation. When operational, the facility is expected to process fresh tuna procured from local fishermen and to sell finished products in local and export markets.

III.7 Description of Small Businesses to Which the Rule Will Apply

The American Samoa based pelagic small-scale longline fishing fleet consists of 61 permit holders operating vessels ranging from 20 to 45 ft in length. At least a dozen additional vessels, mostly in the 41-50 ft range, are planned for acquisition. The average capital investment in these vessels is between $25,000 and $60,000. All of these vessels would be permitted to fish within the proposed closed areas. Also currently located in American Samoa are four longline vessels which are greater than 50 ft in length. Two of these would be permitted to fish within the proposed closed areas as they would qualify for the exemption for vessels which held NMFS general longline permits and made qualifying landings prior to the control date of Nov. 13, 1997. The third belongs to a non-profit organization which acquired it with financial assistance from the ANA. The owners did not obtain a NMFS General Longline Permit or make a qualifying landing of fish prior to the control date but could be exempted if fishing in closed areas meets criteria for "pelagic fisheries training." The vessel is used to train commercial fishermen to provide an experienced local work force that can fill new jobs as captains and crew as the small-scale pelagic fishery develops in American Samoa. Without an exemption, the area closures would force the vessel to travel at least 50 nm offshore to fish for pelagic species. As a consequence, training could become less efficient and more costly. Five additional large (> 50 ft) domestic vessels that received NMFS longline general permits prior to the control date did not land Pelagic Management Unit Species (PMUS) in American Samoa and, in fact, only one of these five vessels has fished with longline gear in the EEZ around American Samoa and it did not land PMUS. The average capital investment in these vessels is estimated to be $350,000.

The establishment of a closed area to benefit the small-scale fishery is likely to have little actual effect on the domestic purse seine vessels that supply tuna to the fish processing industry in American Samoa regardless of the specific management alternative. The most productive fishing grounds for purse seiners are far from the EEZ of American Samoa and a total of six US purse seine vessels made only 7 sets within the EEZ around American Samoa between 1988 and 1997. These seven sets resulted in a total catch of 36.3 mt of skipjack tuna. Fishing activity increased during 1998-1999, when a total of four sets were made by US purse seiners operating in the EEZ. These sets resulted in a total catch of 100.7 mt of skipjack tuna and 20.8 mt of yellowfin tuna. The average annual catch of skipjack tuna by a US purse seine vessel operating in the central and western Pacific from 1990 to 1997 was 3,161 mt, with an ex-vessel value of nearly $2 million. Thus, even if the entire American Samoa EEZ catch was landed by a single vessel, a closure of the entire EEZ would reduces its annual catch by less than four percent.

III.8 Cost/Benefit Analysis of Alternatives

Because the intent of this measure is to avert potential future events, it is difficult to predict and quantify its costs and benefits. Obvious and direct benefits are the avoidance of gear conflicts and catch competition between large and small-scale vessels fishing within the (limited) fishing range of the small-scale pelagic fishery. These preventive measures are, in turn, expected to allow for the continuing and controlled development of a profitable, small-scale fishery which is accessible to residents of American Samoa. These residents have an average annual per capita income of $5,000 and a median annual household income of $16,000. With an unemployment rate approaching 17 percent and few alternate employment opportunities, small-scale fishing ventures represent an important path to sustainable development and economic self-reliance for American Samoa. A sustainable fishery also has significant social importance to residents of American Samoa who have historically utilized fishery resources and whose traditional cultural practices rely heavily on access to these resources. It is believed that the costs associated with this measure can be borne relatively easily by operators of excluded large vessels, while the costs of no action may prove ruinous to American Samoa's small-scale fleet. For further discussion of the status of the American Samoa economy, see Appendix I to the framework proposal (Fishing Community Impact Statement), as well as Appendix II (Environmental Assessment).