TERRITORY OF AMERICAN SAMOA
OFFICE OF THE GOVERNOR
FAGATOGO 96799

A. P. LUTALI
GOVERNOR
ENI F. HUNKIN, JR.
LIEUTENANT GOVERNOR

(684) 633-4116

EXECUTIVE ORDER NO. 14-1987

ADOPTION OF THE
HAZARD MITIGATION PLAN

Section 1. Authority.

This executive order is issued under the authority of Section 6 of Article IV of the Revised Constitution of American Samoa and Section 26.0105(b) of the American Samoa Code Annotated.

Section 2. Adoption.

The Hazard Mitigation Plan for the Territory of American Samoa, prepared and maintained by the Office of Territorial Emergency Management Coordination, is approved and adopted, and shall be implemented in accordance with General Memorandum No. 85-1987 of September 17, 1987. A copy of the Plan is attached to this executive order as Appendix A and is by this reference incorporated herein.

Section 3. Force and effect.

In accordance with Section 26.0105(b) of the American Samoa Code Annotated, this executive order and the Hazard Mitigation Plan, as incorporated herein, have the force and effect of law.

Section 4. Effective date:

This executive order is effective immediately.

Dated: September 17, 1987.

A. P. Lutali

A. P. LUTALI
Governor of American Samoa

HAZARD MITIGATION PLAN

FOR THE

TERRITORY OF AMERICAN SAMOA

OFFICE OF TERRITORIAL EMERGENCY MANAGEMENT COORDINATION

SEPTEMBER 1987

APPENDIX A

TERRITORY OF AMERICAN SAMOA
OFFICE OF THE GOVERNOR
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A. P. LUTALI
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September 17, 1987

GENERAL MEMORANDUM NO. 85 -1987:

To : Distribution List

From : Governor of American Samoa

Subject: Hazard Mitigation Plan

The American Samoa Government recognizes its responsibility to mitigate the risks to human life and the destruction of property which may occur as a result of natural or man-made hazards.

The Hazard Mitigation Plan has been prepared and adopted to assess these risks, identify alternative opportunities to mitigate hazards, and develop appropriate strategies to eliminate or reduce risks.

The Commissioner of Public Safety is directed to coordinate with all public agencies and appropriate private entities of the Territory for the implementation of the Plan by the Office of Territorial Emergency Management Coordination.

The Advisory Board, consisting of the Attorney General, Director of Public Works and Director of Development Planning, will advise and assist the Commissioner of Public Safety with the successful implementation of the Plan.

Comments and recommendations by public agencies and private entities to improve the effectiveness of the Plan and its implementation are most welcome at any time and should be forwarded to the Commissioner of Public Safety. The Plan will be reviewed and updated at least annually.

A. P. Lutali

A. P. LUTALI

DISTRIBUTION:

As per standard list

HAZARD MITIGATION PLAN

for the

Territory of American Samoa

(FEMA-785-DR-AS)

Office of Territorial Emergency Management Coordinatiion

September 1987

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CHAPTER I

PURPOSE OF THE PLAN

A. Introduction

On Saturday, January 17, 1987, the Manu'a Islands group of the Territory of American Samoa suffered extensive damage from the 125+ mile per hour winds of Hurricane Tusi. Governor A.P. Lutali assessed the status of the stricken Islands, notified the Federal Emergency Management Agency (FEMA) of the devastation and requested that the islands be provided disaster relief and assistance. Shortly thereafter, on January 24, 1987, the President of the United States declared the Territory of American Samoa a major disaster area. With the declaration, the Islands of Ofu, Olosega and Ta'u which comprise the Manu'a Islands group, became eligible for assistance administered by FEMA.

This plan has been prepared by the American Samoa Government as a condition for receipt of assistance. It has been prepared by the Office of Territorial Emergency Management Coordination, in conjunction with activities of an interagency hazard mitigation team, and has been executed by the Governor to respond to FEMA recommendations for hazard mitigation. It has been prepared according to guidelines and requirements of Section 406 of the Federal Disaster Relief Act of 1974.

B. Purpose and Scope of the Plan

This Hazard Mitigation Plan has been prepared to reduce or eliminate risk to human life and the destruction of property which may occur as a result of natural or man-made hazards.

Under Section 406, FEMA encourages governments to develop and maintain a systematic program to identify hazards, monitor changes in hazard vulnerability and develop and implement measures to reduce vulnerability. This Hazard Mitigation Plan analyzes the risk from hazards, reviews existing laws, programs and regulations, assesses the capacity of the government to respond to hazards or catastrophic events, and proposes appropriate hazard mitigation measures and actions to implement the Territory-wide plan.

As a condition to receiving Federal disaster assistance, Section 406 of the Disaster Relief Act (Public Law 93-288) stipulates that the American Samoa Government evaluate the extent to which it is vulnerable to natural hazards and to plan and carry out actions to mitigate the risk from identifiable hazards. Section 406 also stipulates that repairs to damaged property provided by Federal aid be done in accordance with established and applicable codes, specifications and standards.

As a result of the post-disaster assessment report, the FEMA Hazard Mitigation Survey Team identified specific recommendations to be included in the plan. These recommendations will provide guidance to reduce future hurricane damage and risk to persons. They address the areas of:

1) construction regulations and standards;
2) building materials and methods;
3) building inspections and permits;
4) communications, systems and disaster response;
5) emergency medical response;
6) medical facilities; and
7) an action plan and schedule to fulfill Section 406.

In addition to the recommendations cited by FEMA, this plan will address the various hazards which may affect the Territory of American Samoa at large. The assessment of risk and the development of strategies to reduce or eliminate the risk is not limited to hurricanes. The plan includes other natural hazards, for example, tsunamis and earthquakes. It also includes man-made or technological hazards, e.g. catastrophic fires and oil spills.

The plan will assess their risk, identify alternative opportunities to mitigate hazards and propose the appropriate strategy. These elements of the Hazard Mitigation Plan have been identified by ASG agencies which maintain direct or indirect authority over mitigation. This plan is their working document to protect government property and facilities.

C. Authority

This plan is required under the Disaster Relief Act of 1974, Public Law 93-288, as amended , 42 USC 5121 et seq, ("The Act") and is made part of the FEMA-State Disaster Assistance Agreement, designated FEMA-785-DR, and particularly by paragraph 10, whereby:

> "The State agrees that, as a condition for any Federal loan or grant, the State or that applicant shall evaluate the natural hazards in the area in which the proceeds of the grants or loans are to be used and shall make appropriate recommendations to mitigate such hazards for Federally-assisted projects. The State further agrees: (1) to prepare and submit, not later than 180 days after the declaration, to the Regional Director for concurrence, a hazard mitigation plan or plans for the FEMA designated areas, and (2) to follow up with applicants, within State capabilities, to assure that as a condition for any grant or loan under the Act, appropreate hazard mitigation actions are taken; and (3) to review and update as necessary disaster- mitigation portions of the State emergency plan. ....."

The American Samoa Government derives authority to undertake this Hazard Mitigation Plan from the Disaster Assistance Act of 1978, Title 26, Chapter 1, American Samoa Code Annotated. The Disaster Assistance Act provides for preparedness and recovery, as well as, mitigation and establishes the Office of Territorial Emergency Management Coordination (TEMCO) to carry out the mandate of the Act. TEMCO is responsible for preparing the Territorial Disaster Assistance Plan and this Hazard Mitigation Plan.

D. Background

The Territory of American Samoa is comprised of seven islands situated 2300 miles southwest of Hawaii. The Territory's population is estimated at 36,500 persons. Most of the population resides on Tutuila, the political center, largest and commercially most important of all islands. Aunu'u is a small offshore island and political entity of Tutuila. Swains Island is an atoll currently unpopulated due to high surf conditions which forced evacuation in 1987. Rose Island, situated northwest of Tutuila, is an unpopulated coral atoll designated as a wildlife reserve. These islands were not significantly affected by Hurricane Tusi on January 17, 1987.

The Manu'a Islands, consisting of Ofu, Olosega and Ta'u, which lie approximately 65-80 miles east of Tutuila, suffered extensive damage and destruction. Most of the population of 1700 persons were left homeless and without food or safe drinking water.

Wind, rain, landslides and flying debris caused approximately 60 injuries requiring medical evacuation and an estimated 16.0 million dollars of property damage. The high winds caused major damage to nearly every building on Ta'u with at least 50% destruction to residences, stores and other facilities on Ofu and Olosega.

FEMA and the American Samoa Government opened seven disaster application centers, one in each affected village and on Tutuila. As of May 14, 1987, the centers registered 538 individuals, issued 499 applications for temporary housing assistance and 493 applications for individual and family grants. The Small Business Administration took 104 loan applications for home and persons property replacement and 46 business applications to restore commercial activities.

Damage to publicly owned facilities excluding schools was estimated at $461,000. The electrical power system accounted for most of the value with significant damage or destruction to generating facilities and power poles. Some damage occurred to above ground water lines and well pumping stations. Major road damage occurred at two locations on Ta'u. Two of the three elementary schools and the high school were completely destroyed. Estimated damage to school buildings and equipment is 5.2 million dollars.

The cost to remove debris and take emergency protection measures is conservatively estimated at 3.4 million dollars.

In light of the extensive damage to the Manu'a Islands and the destruction perennially caused by other forces of nature, FEMA is recommending that this plan address the affected islands and the potential danger to the Territory's people and property that may result from natural and man-made hazards.

CHAPTER II

HAZARD IDENTIFICATION

The Territory of American Samoa is occassionally affected by natural catastrophies and is regularly subject to the fear of man-made hazards. Hurricanes of the devastational power of Hurricane Tusi seldom occur throughout the Samoa archipelago. High winds and wave surge associated with tropical storms or troughs are more prevalent and cause routine damage and destruction to buildings, shoreline, agriculture and wildlife habitat. Tsunamis are potentially the most dangerous and present the greatest risk to the residents of the Territory who reside primarily on the narrow perimeter shoreline of the islands. Human lives and property are perpetually endangered with the chance of catastrophic fuel oil and chemical fires, especially within the Pago Pago Bay area. And geologic hazards, such as earthquakes, are common but seldom destructive.

A. Natural Hazards

1. Hurricanes

Hurricanes have caused extensive damage on occassion. Prior to Hurricane Tusi on January 17, 1987, the Samoan archipelago had not experienced substantive destruction for twenty years. The hurricanes of 1966 and 1967 struck American Samoa and caused perceptible damage but devastated the newly independent nation of Western Samoa and left its agricultural economy in disarray, from which many feel it has never fully recovered. Available local historical data about hurricanes is limited due to poor record keeping and loss from fire and deterioration. Oral history, especially memories of the elderly, provide some evidence of the frequency and severity of previous disasters, the most severe of which occurred in the Manu'a Island group on January 9, 1915.

Records indicate that hurricanes tend to occur on a cyclical basis in various areas of the south western Pacific. In recent years, Fiji and French Polynesia have been struck by several hurricanes which took parallel tracks. In late 1986 and early 1987 four tropical storms, including Hurricane Tusi, followed similar paths causing damage in American Samoa and the Cook Islands.

Given the history of hurricane occurence, it is evident that American Samoa will always be at risk and may be subject to several tropical depressions or natural catastrophic events during a single year. But because hurricanes have not occured at regular intervals in the immediate vicinity of American Samoa, the reliability of their prediction is low.

The impact of hurricanes upon society, the environment and the economy of island nations should not be taken lightly. The damage from wind, rain, and ocean waves can be staggering for small island groups like American Samoa.

Heavy rains often cause riverine or stream flooding which can wash away protective structures, bridge abutments and roadways leaving tons of scattered debris. Landslides on steep mountain slopes can suddenly bury structures and people without warning. Rains, in conjunction with windblown salt spray, can saturate the potable water table, cause salinification of soils normally used in agricultural production and contaminate water supplies.

Winds in excess of 125 miles per hour can level all but the most resistant structures. On Tutuila winds of this velocity would cause damage in the hundreds of millions of dollars. Plants and trees will be uprooted and forests will show the effects of the disruption for many years. The disruption can upset ecological and biological systems and dislocate wildlife.

The high velocity winds can drive towering ocean swells onto shore that significantly impact coastal areas. The shoreline flooding can result in the disfruption of agricultural due to saltwater intrusion. Shoreline roadway, revetment, infrastructure and utilities can be totally destroyed.

Human safety is of paramount concern. Protective measures often are not enough to isolate people from the danger of the high winds, rain and storm surge. After the storm people suffer from schock, malaise and psychological disorders. Where homes have been lost, water supplies contaminated, utilities disrupted and sudden economic dislocation has occurred, people will bear the cost of the storm for many years to come.

2. Tsunamis

Tsunamis are one of the most destructive forces in nature often resulting in significant loss of life and destruction of property. The Great Tokaido-Nankaido tsunami of 1707 killed 30,000 people in Japanl.

Tsunamis are sea waves of seismic origin. Tectonic forces, i.e., earthquakes that cause a deformation of the seabed, appear to be the principal seismic mechanism responsible for the generation of tsunamis. Coastal and submarine landslides and volcanic eruptions can also trigger tsunamis. Tsunamis are principally generated by undersea earthquakes of magnitudes greater than 6.5 on the Richter Scale. They are very long-period waves (5 minutes to several hours) of low height when traversing oceanic water, but their speed of propagation can be in excess of 500 miles per hour. When tsunamis approach a coastal region where the water depth decreases rapidly, wave refraction, shoaling, and bay or harbor resonance may result in significantly increased wave heights.

Tsunamis recorded in American Samoa have not been as large as those recorded in many other regions of the Pacific, as for example, in Hawaii or Japan. The abrupt rise of the islands of American Samoa from the ocean floor and the very limited extent of the shallow-water shelves surrounding the islands are apparently not conducive to the buildup of

tsunamis through shoaling or shelf resonance. However, as is typical of triangle-shaped bays, Pago Pago Harbor does amplify tsunamis, with the largest elevations occuring at the back of the bay.

Several tsunamis (1917, 1919, 1922, 1952 and 1960) have been reported to cause damage at Pago Pago Harbor during the last century. Historical data of tsunami activity in American Samoa are concentrated in Pago Pago Harbor. Only isolated reports describe tsunami activity on other parts of the Island of Tutuila, and there are no known reports of activity on other islands of the Territory of American Samoa. Historical data cover a period from 1837 to the present.

Tsunamis have not occured on a regular interval in the Pacific. The concentration of tsunamis from 1917 to 1922 and from 1946 to 1960 is a consequence of increased tectonic activity. The frequency and magnitude of tsunamis in American Samoa have been studied by the the U.S. Army Corps of Engineers and the expected levels of flooding and wave heights have been calculated for purposes of floodplain management. The results of the study have been published in "Tsunami Elevation Predictions for American Samoa." The approximate elevations are based upon a maximum wave surge during a 100 year period.

The May 22, 1960 tsunami was undoubtedly one of the largest that has been recorded in the Samoa group. Troughs of 6-10 feet at peak wave amplitude were observed at mid-Bay, resulting in waves of 10 -12 feet at the end of the Bay. Actual run-up was measured at 15.5 feet above mean sea level in some areas of the village of Pago Pago and damage was estimated at $50,000.

Present technology does not permit the reliable prediction of tsunmamis before the occurence of a tsunami generating earthquake. The Tsunami Early Warning Center in Honolulu, Hawaii can issue a warning of risk from either a real or potential tsunami generated by tectonic activity in the Pacific.

3. Earthquakes

Earthquakes are felt frequently throughout the Territory and have been known to cause minor damage to structures. They have not been known to produce devastating results.

The tremors felt in American Samoa generally originate three to five hundred miles to the west and southwest of American Samoa. They result from tectonic activity along the Tonga and Kermadec Trenches, where accretion and subduction of the Pacific and Fijian Plates take place. Earthquakes can often occur as a result of the movement of magma in the vacinity of a "hot spot" in the Earth's crust, the nearest of which is located under the island of Savai'i in Western Samoa. These, however, are of a local nature and pose no significant threat to American Samoa.

An earthquake with a measurement of 6.5 on the open-ended Richter Scale is said to be the lower threshold at which damage to structures may

occur. Of the thousands of earthquakes which occur annually along the Tonga and Kermadec Trenches, few exceed a magnitude of 6.5. Only one earthquake in recent years has noticably jolted buildings, but little damage was reported.

American Samoa's seismic risk has been determined to be analogous to Zone 3 (which corresponds to intensity VII of the Modified Mercalli Scale). The estimate of risk is determined on the basis of American Samoa's proximity to the sources of the seismic activity.

The greatest potential impact from earthquakes may be focused in areas where buildings are constructed upon fill or fill over coral reef. Many of the structures in the Pago Pago Bay area are built upon unstable soils capable of slippage and spurious movements during earth tremors. Most of the commercial, residential and government structures throughout the Territory are potentially at risk because they have not been built to comply with the Uniform Building Code specifications for Zone 3. Exception is given to buildings recently constructed and those built to Federal specifications.

The overall impact of earthquakes with a magnitude greater than 6.5 on the Richter Scale has not been addressed for American Samoa. Such an event, however, would most likely result in considerable damage to building foundations with lesser damage to building shells resulting in reconstructions costs in the millions of dollars.

4. Land Slides

Land slides are a common occurence throughout the Territory and tend to be taken for granted as a major source of risk to lives and property. However, in combination with other events, e.g., a hurricane, they take on catastrophic dimensions. As a rule, small landslides in rural areas or soil slippage in forested areas go unrecognized. Village populations and buildings must be affected before people recognize landslides as a threat.

There have been many instances of landslides in the Territory. The destruction of several elementary school buildings in the village of Nua during a heavy rainstorm in 1985 and landslides which covered roads on Ta'u during Hurricane Tusi are only two examples of recent landslide activity.

Land slides are caused by various factors or conditions. Clearing of vegetation for agricultural cultivation and development removes roots of plants and trees that hold soils in place. Improper cutting, grading and excavation for construction of roads and buildings destablizes ground surfaces, while natural erosional activities undercut subsoils.

Land slides are most numerous and dangerous during high wind and rainfall periods and particularly during hurricanes. Soils on hill and mountainsides can become supersatured by heavy rains producing soils of almost jellatinous nature. Coupled with the vibration caused by high

winds that shake plants and trees, soils will suddenly fail, and because of their viscous nature, will move rapidly downhill.

Every hillside in the Territory, holding soils and with a slope greater than 20 percent, may be subject to sliding at one time or another. Villages, houses or commercial activities located at the base of the these slopes rest in danger of damage and/or total destruction. Where hillsides are no longer in their natural state and forests have been disturbed, the danger to lives and property is increased. During critical periods of high winds and rainfall, estimates of damage can run into millions of dollars.

5. High Surf

High surf is an ordinary occurence throughout the Territory of American Samoa and its impact is generally limited to the immediate shoreline. High surf and ocean wave surge become a threat to lives and property during periods of extremely high winds or during a hurricane.

High surf or wave surge continually lead to the erosion or destruction of shoreline and fixtures designed to impede the degradation of the shoreline. About 2000 feet of shoreline is impacted on an annual basis and damage estimates for shoreline repairs and repairs to revetment run between $150,000 to $200,000.

Storms from the south and southeast account for most of the damage to the southern shore of Tutuila where the majority of roadway and infrastrucuture are located. High surf resulting from the combination of spring tides and strong winds also contribute to shoreline destruction. Catastrophic damage is possible during hurricanes, when coastal areas could be totally inundated by 20 or 30 feet waves.

American Samoa's islands will not escape the erosionary forces of nature. While the government may institute measures to halt or retard shoreline erosion, it is unlikely that the government will possess the resources to stop the natural process of coastal deterioration.

At several sites in both the Eastern and Western Districts of Tututila, loss of the shoreline road may occur in the future. In critical areas, e.g. between the canneries and the village of Aua, loss of water, sewer line and overhead utiltities is very possible. In other areas shoreline flooding can result in salt water inundation and the salinization of low-lying agricultural lands.

During critical events, i.e., hurricanes, the government should not expect that man-made mitigation measures to reduce shoreline erosion, e.g. revetments and seawalls, will significantly reduce the risk to lives and property. Evacuation is required of low-lying areas adjacent to the sea.

6. Flooding

The islands of American Samoa are subject to coastal and riverine flooding. Coastal flooding has been shown to result from tsunamis and high surf or wave surge in coastal high hazard areas. Riverine flooding results from stream overflow at times of high rainfall. (Coastal flooding will not be discussed in this section)

Riverine flooding presents a lower level of risk to life and property in American Samoa than high surf and tsunamis. It is not likely to be a catastrophic event and is generally predictable, given the level of perennial rainfall in the Territory. American Samoa's annual rainfall averages in excess of 150 inches per year and can exceed 200 inches in areas subject to orographic rainfall.

Riverine flooding is not wide-spread because of the lack of floodways and floodplains. In general, narrow streams traverse mountain valleys into low-lying villages where overflow occurs. Overflow of the streams is not a serious matter, as some control of stream flow has been applied in villages, although not in an adequate or professional manner.

Some villages are perennially prone to stream overflow with damage resulting to property. Pago Pago village maintains inappropriate floodway protection. Residences are built too close to the streambed, the streambed has been altered and residences have been built without due regard to flood protection. Consequently, a few houses are prone to flooding and damage on an annual basis.

Floodplain values with respect to ecological or environmental concerns (E.O. 11988 and E.O. 11990 of the U.S. Water Resources Council) do not come into play, because American Samoa does not have wide streambeds nor does it have floodways as defined by the Council.

Residential structures along streams face the most impact and the danger is greatest from the tremendous amount of rain expected to fall and pass through the streams during a hurricane. In villages with the heaviest rainfall, e.g. Fagatogo, rainfall could reach 13 inches per hour as estimated by the U.S. Army Corps of Engineers. Possible damage from streambed flooding during the most extreme conditions could reach the millions of dollars.

7. Drought

The islands of the Territory of American Samoa are occassionally subject to drought during the southern winter. Winds cease to carry enough moisture to create significant rainfall.

American Samoa last experienced low rainfall conditions during a sixth month period of 1982. Villages with inadequate catchment systems and water supply capacity suffered the most. Those villages on the government water system fared better, but supply was nevertheless constrained.

Without a substantial increase in new well and tank construction supply of potable water to the Territory's residents will remain inadequate in times of drought.

B. Man-made or Technological Hazards

1. Fire

Minor fires occur regularly on Tutuila and cataclysmic fires are a real threat within Pago Pago Bay.

Few fires in the past have been cataclysmic. Most fires are residential fires and result from faulty wiring and household appliances or children playing with matches. The Fire Department responds to an average of 20 fires per year. The impact of the fires vary relative to the distance from the main fire station in Fagatogo village and their intensity.

The Fire Department fears explosions and cataclysmic fires which could burn out of control for days. The last major fire occurred on Flag Day 1980. No one could have predicted that a portion of the Rainmaker Hotel would burn to the ground as a result of an airplane accident. People might have expected it to burn to the ground for reasons of poor maintenance, lack of water, improperly maintained equipment or inadequate fire protection.

Catastrophic fires can result from natural hazards, e.g. hurricanes or earthquakes, but they are mostly likely to occur from petroleum fuels at fuel storage areas. The government tank farm located in Gatavai village and the refueling dock next to the Rainmaker Hotel possess the greatest potential for an accident which could lead to many casualties, loss of lives and property damage in the millions of dollars.

The potential for dangerous fires also exist in many of the vessels which lay at anchor in Pago Pago Harbor daily. These fires cannot be easily subdued because of the lack of adequate fire fighting equipment and may not be easily contained if they are in the immediate vicinity of harbor facilities.

2. Oil Spills

Minor oil and fuel spills are reported weekly by the American Samoa Environmental Quality Commission and the U.S.Coast Guard. There have been no major oil or fuel spills in recent years.

The spills occur within Pago Pago Bay as a result of the movement and berthing of vessels, highway accidents, and leakage from tanks located at the government tank farm in Gatavai village. They seldom cause noticable damage to flora and fauna, although the incessant occurence is likely to

affect natural habitat over time. Large spills have the potential of endangering the flora and fauna of the Bay because local government agencies lack the capacity to handle large spills quickly.

Oil spills are most dangerous when there is fear of fire. A large oil spill from a tanker berthed near the Rainmaker Hotel and the main wharf of the harbor is particularly hazardous.

3. Hazardous Materials

The use of known hazardous materials is increasing in American Samoa. However, the frequency of their storage and use is not adequately reported and the overall impact upon people and the environment from their misuse or release is unmeasured, but known to be potentially significant.

The release of hazardous materials can be caused by dramatic natural conditions, like hurricanes or tsunamis, but normally the release is the result of improper handling, discharges by vessels, inappropriate storage, containerization or transport. Pesticides and herbicides are now known to be used in agricultural applications inappropriately.

The potential for massive loss of life or damage to the environment is calcuable, although American Samoa has no known chemical or hazardous materials storage facilities and the frequency at which vessels transport hazardous materials through the port is not monitored.

CHAPTER III

HAZARD MITIGATION CAPABILITY ASSESSMENT

1. Office of the Governor

The Governor is the chief executive officer of the Territory of American Samoa and responsible for all activities of the executive branch of government. The Governor derives authority to issue executive orders, proclamations, regulations and ammendments regarding disasters under Section 26.0105 of the Disaster Assistance Act of 1978 (Title 26, Chapter 1, American Samoa Code Annotated).

Under Section 26.01059(b), the Governor may issue executive orders, proclamations, and regulations, and amend or rescind them. Executive orders, proclamations, and regulations have the force and effect of law.

The Governor may declare a disaster emergency by executive order or proclamation if he finds a disaster has occured or the threat thereof is immiment. The executive order or proclamation shall activate the disaster response and recovery aspects of the Territory and the Governor can react in a manner consistent with the powers conferred upon the Governor in Section 26.0105(g)(1-9).

2. Legislature of American Samoa

In its capacity as the principal law making body of American Samoa, the Legislature is responsible for enactment of all laws and regulations related to hazard preparedness, response and mitigation. In addition to its law making role, the Legislature budgets, authorizes and allocate funds for use under Title 26, Chapter 1.

It may at its discretion terminate a state of disaster emergency declared by the Governor at any time.

3. Territorial Emergency Management Coordinating Committee (TEMCO)

The Governor directs preparedness, response, rehabilitiation and recovery through the Office of Territorial Emergency Management Coordination (TEMCO). TEMCO is authorized by the Disaster Assistance Act of 1978 (Title 26, Chapter 1, ASCA). A Disaster Assistance Coordinator is appointed by the Governor and supervises the activities of TEMCO.

TEMCO is responsible for preparing and maintaining a Territorial Disaster Assistance Plan under Section 26.0106. In 1986 TEMCO completed

and subsequently revised a Comprehensive Emergency Management Plan dealing with preparedness. The Territorial Disaster Assistance Act establishes TEMCO to:

1) reduce the vulnerability of people and communities to damage, injury and loss of life from natural and man-made hazards;

2) authorize and provide for response, rehabilitation, restoration and recovery from disasters;

3) coordinate activities and provide for a management system embodying predisaster preparedness and postdisaster response; and

4) assist in prevention of disaster caused or aggravated by inadequate planning for and regulation of public and private facilities and land use.

TEMCO has not previously prepared a hazard mitigation plan for American Samoa, although it is given extensive authority under the Disaster Assistance Act to devise prevention measures. The Department of Public Works, in conjunction with TEMCO, studies and identifies areas particularly susceptible to hazards. The studies concentrate on means of reducing or avoiding damage. Based on the studies or other evidence that existing standards or measures are inadequate to combat hazards, TEMCO can specify changes. The Governor may then request legislative action to mitigate the impacts of the hazards.

4. Development Planning Office

A. Coastal Management Program: Floodplain Management

The Coastal Management Program (CZM) of the Development Planning Office oversees floodplain management and development in floodplain areas, i.e., coastal high hazard areas and riverine watersheds. Executive Order 3-1981, codified as Title 26, Chapter 4, ASCA establishes DPO/CZM as the lead agency and local obligations for floodplain management.

The executive order enables participation in the National Flood Insurance Program by American Samoa. Participation is based upon the ability of the Coastal Zone Program to guarantee compliance with the provisions of Chapter 3, Section 60, of the FEMA regulations to dminister the program. American Samoa is presently operating under the emergency provisions of the program, but will become eligible for coverage under the regular program with the completion of a detailed floodplain study by the U.S. Army Corps of Engineers. The study will establish a Flood Insurance Rate Map and permit flood insurance to be applicable to developers and home owners within affected areas.

The Coastal Management Program presently strives to implement provisions of Section 60. New construction which is about to occur in floodplain areas must meet the recommendation of the Federal Emergency Management Agency for floodproofing in floodways or flood prone areas. These recommendations generally involve permanent measures, e.g. elevation of buildings above the highwater mark, building on piles and construction to resist flotation and lateral movement. Where Federal funds are applied to projects, the CZM program requires and environmental assessment or impact statement associated with Executive Order 11988 and 11990 of the U.S. Water Resources Council.

B. Coastal Management Program: American Samoa Zoning Board

The American Samoa Zoning Board is established under Title 26, Chapter 3, ASCA to establish minimum regulations for the protection of land and the unique character of American Samoa and to promote orderly land use in the Territory. The Zoning Board is given the authority to establish specific land use regulations, to issue variances to designated uses, to provide for assurance of compliance and to issue an order to penalize for violations of the code and regulations.

Ten land use designations (zones) are defined for the Territory. The majority of land is not zoned, but zones have been established for governmnent land within Pago Pago Bay and all land in Tula village.

The majority of land not zoned, unused or underdeveloped is designated as watershed conservation. Watershed conservation zones allow for residential and agricultural uses but the uses must be carried out to assure maximum protection of the watershed. Variances to conduct activities not associated with permitted uses in watershed conservation areas, e.g. commercial and industrial development, may be granted by the Board upon appeal. In recent years the Zoning Board has been responsible for reviewing business licenses in addition to variances for these activities.

The Coastal Management Program serves as staff for the Zoning Board and implements the Permit Notification and Review System (PNRS). DPO is the designated clearing house for all land use permits in the Territory and derives its authority from Executive Order No. 3-1980, ASCA. As clearing house it implements an environmental and consistency review authority under 15 CFR Part 930 of the Coastal Zone Management Act (16 USC 1451). All land use permits must be cleared for consistency with American Samoa's environmental laws while the Department of Public Works reviews consistency with building codes before a permit to proceed is granted.

The capacity of the Zoning Board and PNRS to carry out their responsibilities has been recently evaluated and major revisions to the permit system procedures have been recommeded. Major complaints about the system dealt with slowness and inefficiency. Other inadequacies included a lack of attention to monitoring permits which resulted in undersirable construction and development activities. The FEMA Disaster

Survey Team identified various problems related to the absence of proper construction techniques and permitting of construction in the Manu'a Islands prior to Hurricane Tusi.

C. The Territorial Planning Commission

The Development Planning Office is designated as staff for the Territorial Planning Commission (TPC) which is enabled by Title 10, Chapter 1, ASCA. The TPC is established to oversee the general planning program of ASG and DPO is responsible for the development of plans, processes and analyses required to accomplish the objectives of the commission.

The statutes and administrative code do not give direct authority to either the Development Planning Office or the Territorial Planning Commission to plan or implement hazard mitigation. However, both the TPC and DPO are enabled with sufficient authority to address hazard mitigation planning as an element of overall planning and development.

No comprehensive planning for the Territory of American Samoa has taken place in recent years. Plans created have tended to be localized and have not directly addressed the problems of hazards or hazard mitigation. However, the plans have addressed environmental concerns, and where projects were about to be developed in floodplain areas, the measures to reduce the hazards have been implemented. For example, wide culverts have been built in the village of Fagatogo in order to carry a potential 100 year storm. Planning was based upon the U.S. Army Corps of Engineers floodplain study and FEMA floodplain managements requirements for the Flood Insurance Program.

The Development Planning Office will continue to incorporate measures to reduce the risk of hazards in its planning agenda. The absence of comprehensive planning which includes hazard mititagion measures should be on the future agenda of Territorial Planning Commission.

5. Environmental Protection Agency

The American Samoa Environmental Protection Agency (ASEPA) is the Territory's environmental regulatory authority responsible for establishing, developing, coordinating and enforcing the following programs: a) Safe Drinking Water; b) Water Pollution Control; c) Air Pollution Control; and d) Pesticide Management. ASEPA is also responsible for enforcing regulations associated with the Federal acts from which these programs derive funding.

ASEPA is established by Title 24, ASCA. ASEPA has a broad range of powers associated with environmental planning, control and enforcement under Title 24. While Title 24 does not specifically give ASEPA powers to deal with hazard mitigation, it is evident that ASEPA is established to reduce potential environmental problems. It can influence planning to

avoid hazards, may require specific measures to reduce their risk through permit application and issuance, and may inspect and issue notification of violations relative to potential hazards.

ASEPA has developed and implemented programs and projects to eliminate the source of risk to lives and improve water quality in recent years. An Ocean Clean-Up Program to remove flotsam and jetsam from surface waters and eliminate submerged items which could be washed ashore and affect lives and property has been underway. Citations for dumping refuse in harbor waters, a harbor patrol to enforce the Clean Water Act and hazardous materials regulations are being effectuated.

Release or spills of hazardous chemicals or petroleum products which could have an impact upon persons and property are a major concern to ASEPA. Because professional hazardous materials and petroleum spill response teams are not locally available to American Samoa, ASEPA must rely upon assistance from the U.S. Environmental Protection Agency and the U.S. Coast Guard from Honolulu, Hawaii in the case of a major event. Minor oil spills can be removed by the Harbor Refuse Program contractor. Local response and capacity to sufficiently remove the danger to people and structures is not adequate.

Hazardous materials or petroleum spills regulation measures should be adopted to develop spill prevention and counter-measures for spill control. Stronger enforcement action against pollution violators should be required. Where danger of leakage from underground tanks exits, measures should be taken to eliminate the source of the risk which include repair or replacement of tanks. And where enforcement is insufficient and risks can be eliminated or reduced, training should be provided to inspectors, enforcement and harbor patrol officers.

In the case of hazardous materials a plan should be developed creating a network on island to dispose and to ship off-island waste products. Agencies must resolve the issue of increasing levels of hazardous waste and the government must begin to consider control, handling and storage of hazardous materials.

6. Department of Public Safety, Fire Department

The Fire Department, a division of the Department of Public Safety, is concerned with all potential natural phenomena or hazards and man-made or technological conditions which would lead to fire or damage from fires.

The Fire Department is authorized to deal with hazards or disasters from Title 26, Chapter 1, ASCA, the Disaster Assistance Plan. The Fire Department will sound alarms, establish a fire watch, extinguish fires, assist in rescue and recovery and organize and enforce fire prevention measures to reduce vulnerability to buildings and areas of fire.

Fortunately, there have been no major fires and no catastrophic fires in the past few years that have caused extensive damage to property

or loss of lives. The Flag Day - 1980 fire at the Rainmaker Hotel was the last test of the capacity of the Fire Department to respond to an emergency of major magnitude. The Fire Department responds to an average of 3 to 4 fires per quarter. The fires do not generally result in major destruction and casualties are few, because the public has often aided in fire suppression.

The Fire Department has not taken an agressive role in mitigation measures in the past which would reduce or eliminate the vulnerability of buildings to fire, as authorized in Title 26. The role of the Department has been one of training and education. Department leadership has sought to develop efficient, competent and experienced personnel capable of responding to the communities needs.

Response time is of major concern to the Fire Department. Because of the location of the present fire station in the central Pago Pago Bay, it is often difficult to reach outlying areas or villages before a fire consumes the entire structure. In the case of villages, e.g., Fagatogo and Utulei, which have homes in close proximity to oneanother, the fires may be difficult to contain. Where catastrophic fires could occur at the tank farm, the Fire Department is not fully capable of responding appropriately because of a lack of proper equipment, manpower and communication.

7. Department of Medical Services

The Department of Medical Services provides a wide range of medical programs and health services to the population of American Samoa. The health system is entirely owned and operated by the government of American Samoa and there is no private practice of medicine, dentistry or pharmacy. The LBJ Tropical Medical Center, located roughly in the center of Tutuila, is the main facility through which the majority of curative and preventative services are provided. In addition to LBJ, primary medical care and health services are provided through seven district dispensaries: three on Tutuila Island; four in the Manu'a Islands, and one on Aunu'u Island.

Title 26, the Disaster Assistance Plan, authorizes the Public Health Division to establish emergency care, immunization and treatment stations, temporarily inter the dead and provide inspection and analysis of water supplies, sewage disposal and damaged food stocks in the event of a disaster. Although the Act does not give the Department of Medical Services disaster mitigation powers, the LBJ Tropical Medical Center maintains a Disaster Preparedness Plan, conducts periodic fire drills, and does have an evacuation plan.

The Director of Health has the authority to make policy decisions regarding the need for migitation activities for the Department of Medical Services, including the establishment of priorities. However, external government agencies must approve the budgetting of funds for major expenditures, and the ASG Capital Improvements Committee must approve any applications for CIP funding.

The LBJ Tropical Medical Center has been designed to withstand winds of over 150 miles per hour. Should Tutuila experience a hurricane it is expected that the facility will withstand the stress although some damage is expected to the roof covering. The dispensaries are of wood frame construction and are more vulnerable to high winds, although the four health centers withstood the winds of Hurricane Tusi as well, or better, than any most structures of similar construction in Manu'a; a testimony to their structural adequacy.

The greatest threat to the continued provision of emergency health services during and after cyclones, is the potential for internal damage to the facilities, and their drugs, supplies, and equipment from wind blown water and/or sand. The structural integrity of these facilities must be maintained in order to assure the protection and continued availability of essential medical services during, and immediately following, any major disaster in these islands. Generally speaking the window openings of these facilities are open to the elements. Where there are windows, no protection against breakage is provided.

At the present time communication between the LBJ Tropical Medical Center and the outlying dispensaries is by telephone only. No emergency communications between facilities exist. Only one hand held radio is available to the EMT unit. This unit can communicate with the police and disaster command post, but not with the hospital emergency center. The lack of a direct communication link between the disaster response field medical teams and the central hospital was found to be a major barrier to the efficient deployment of medical resources during Hurricane Tusi.

Analysis of events occuring during Hurricane Tusi clearly indicates a need to provide protection against interior damage of existing medical facilities. This protection must be available on-site, and must be of such a nature that facility personnel can initiate these measures without the assistance of external agencies of government. Significant capital improvement projects, such as major construction cannot be expected to be possible in the short-run due to ASG financial constraints, although it is feasible to provide protection against interior damage from high winds.

8. Department of Port Administration

The Port Administration is primarily responsible for all activities associated with harbors, navigation and the movement of people and goods through the Territory. Operation of Pago Pago International Airport, movement of vessels in territorial waters, wharf activities and the Port of Entry fall within the responsibities of the agency.

Title 26, the Disaster Assistance Plan, empowers Port Administration to warn all vessels of an impending danger, secure all facilities to prevent damage from various hazards and to provide available vessels for evacuation or transportation of disaster victims, or for damage assessment teams or supply of emergency materials and food as needed.

Title 26 does not specifically enable the Port Administration to undertake hazard mitigation.

Port Administration uses a departmental Disaster Plan which is standard operating procedure in the event of an alert of possible danger. The plan includes specific steps to be taken in case of a hurricane or tsunami. It is primarily response-related and does not involve structural mitigation measures. The Disaster Plan was put into effect before Hurricane Tusi struck American Samoa. After Hurricane Tusi, Port Administration's primary role included the transporting of provisions, materials and supplies to Manu'a through the use of landing craft.

Numerous problems were encountered by Port Administration during and after the storm. Most were concerned with adequate and timely communications, which should be addressed in a Hazard Preparedness Plan. A critical problem associated with the structural design of the main harbor at Ta'u Island surfaced after the storm. Port Administration vessels were not able to be secured at the wharf because of high ocean waves. Several days passed before the vessels could enter the harbor and unload supplies.

9. Department of Public Works

The Department of Public Works oversees construction of all projects and facilities funded by the American Samoa Government and has regulatory responsibility over private construction in the Territory. The Department of Public Works operates government water supply systems, the sewage and waste water system and the highways system.

a) The Architecture and Engineering Division provides essential archtectural, electrical and structural engineering services for the Territory. The Inspection Branch provides regulatory code enforcement, essential to ensure the safety and welfare of the public through regulation, building, electrical and plumbing permits, fire and hazard ordinances.

b) The Civil Division plans, designs, inspects and manages all aspects of the territorial highway system and traffic system. It also has domain over flood channels and seawalls and is responsible for land surveys and property records.

c) The Water Division operates and maintains the many wells, catchment and supply facilities associated with the ASG water system. It also operates and maintains community sewage collection, pumping and treatment systems and provides septic tank cleansing to residents not on the government systems.

Title 26 authorizes the Department of Public Works to restore and maintain utilities and services, accomplish damage assessment, initiate debris removal, repair roads and bridges for minimum safety, repair facilties and provide for temporary housing after a disaster. Title 26 makes no mention of hazard mitigation activities to be assumed by the Department of Public Works. However, it is evident and implicit that the various divisions within the department possess broad authority to develop mitigation measures and implement them.

a. Architecture and Engineering Division

The Architecture and Engineering Division (A&E) has primary responsibilty for ensuring that all buildings and homes in the Territory meet certain minimum safety standards and general building codes. A major problem facing A&E is the fact that most buildings in American Samoa do not meet minimum specifications and, therefore, are not safe to live in, especially during periods of high winds or hurricanes.

Authority of A&E to deal with hazard mitigation is granted by Title 15, Section 15.0501 - 15.0503.

The American Samoa Government has adopted the Uniform Building Code, Short Form, 1964 Edition, Volume 1, (Title 26, Chapter 10, ASCA) with two exceptions that do not affect the structural integrity of buildings. In 1985, the ASG contracted for development of localized housing standards consistent with CABO (Counsel of American Building Officials) for residential structures which have yet to be adopted. And earlier, ASG established a system of uniform quality grades for materials to be used in construction.

A&E has not been completely successful in dealing with hazard mitigation relative to buildings and homes. Nevertheless, through trial and error, new measures have been implemented to rectify problems, while much remains to be done.

As a result of FEMA's survey of damage from Hurricane Tusi in the Manu'a Islands, FEMA identified problems with control over building construction that must be corrected:

1) construction standards for homes and buildings in Manu's were not enforced;

2) a system to issue building permits and assure construction codes are met was not operating properly;

3) inspection programs that assure buildings are inspected at appropriate times during construction were not carried out;

4) appropriate building materials and construction methods were not monitored; and

5) the public and officials did not recognize the worth of building to specification.

In addition, A&E has identified problems with the proximity of building construction througout the Territory; the quality of the cement and aggregate used in construction; the type of roofing; and specifications needed for proper fire and floodproofing.

b. Civil Division

The Civil Division plays a major role in hazard mitigation through construction of floodway channels, shoreline revetment and roadway improvements. The practice of hazard mitigation by the Civil Division is more often than not obscurred by the final completed project. While the Civil Division can meticuously design and construct waste water channels to carry rains away safely from new roads, the prevention measure is mostly overlooked.

The Civil Division has been partially successful at hazard mitigation. It has constructed seawalls, breakwaters and stream culverts to minimize the effects of high surf and heavy rainfall throughout the Territory. However, the continual battle with nature to perserve what man has built will be costly affair. Much of the road along the southern shore of Tutuila is in constant threat of being eroded away by high surf. The cost of adequate shoreline protection measures to preserve both the road and structures from damage is monumental. Generally speaking, the government does not possess the financial wherewithall to handle the job properly.

After Hurricane Tusi the Civil Division has been primarily concerned with restoration of damaged roads, removal of debris from roadways and stream culverts, and rehabilitation of seawalls in Manu'a. After the job is complete the Civil Division will need to identify measures which can be taken to individually protect each critical area in Manu'a that has been restored.

c. Water Division

The Water Division operates and maintains the government water supply on a 24 hour basis. Water Division's primary functions are: 1) to ensure the availability of potable water of approved quality in the quantities and rate of flow to meet the average and peak demands of the community; 2) to provide standby generation facilities to mitigate power outages; 3) to build additional water storage tanks in case of electrical failure to tanks; and 4) to expand and upgrade chlorination facilities.

The Water Division has the primary responsibility of restoring, maintaining and protecting the water supply during a natural or man-made hazard. Authority to respond to hazards is granted under Title 15, Section 15.0501 - 15.0403 and Title 26. Authority is also granted under the Safe Drinking Water Act.

During hazards the water supply and system is vulnerable to interruption because of power outages, lack of storage facilities or contamination. The impact on the Territory's water supply during hazards has been to cut off water service to the public, hence denying access to a basic necessity of life.

The Water Division has been successful in providing safe potable water to the Territory. This has been accomplished by closely monitoring the toxins and bacteria in the water supply and by installing chlorination devices on the wells.

The most critical problem facing the Water Division is potential electrical shortages to water pumps. Because the power lines in the Territory are above ground, and exposed, power outage are common. When power outages occur, the water pumps do not work. With the transfer of power management to the American Samoa Power Authority, the Water Division has been helpless in dealing with this problem internally. Moreover, water storage facilities mus be built to supplement the water supply when the pumps are not operating.

During Hurricane Tusi the Manu'a Islands did not have any water because the pumps were not working and there are not storage tanks in Manu'a. This caused unhealthy and unsanitary conditions. Despite these problems and given the severity of the hurricane, the Water Division had been able to restore adequate water service to the villages within 4 days.

Other major problems that the Water Division must resolve are: lack of storage tanks; water contamination; lack of trained personnel; shortages of supplies; and chemical spills.

10. American Samoa Power Authority

The primary purpose of the American Samoa Power Authority (ASPA) is to deliver electrical power to all islands and areas of the Territory. ASPA's main functions include planning, design, construction, generation, transmission and distribution of electric power to the Territory. ASPA's staff operates and maintains the system.

Title 26 has not been revised to show ASPA's responsibilities separately from the Department of Public Works since the division of the agencies. Responsbilites for hazard mitigation were not deliniated for ASPA.

Except for design and supervision of construction of power house buildings and offices, which is done by the Department of Public Works, all technical and engineering design of the power utility systems have been done by ASPA's own professional staff.

Because ASPA has operated at a financial loss in recent years, ASPA has had minimal revenue to repair and upgrade generation equipment and

transmission lines. Efficiency of the system is low and maintenance costs are high. Power lines should have been placed underground or moved to safer locations in areas where population density is high to avert danger and provide for human safety. But modification and rerouting of the lines have been nearly impossible due to the lack of funds and the high cost of improvement.

ASPA's system is very vulnerable to hazards, particularly hurricanes. The aged poles and transmission lines continually fail during high winds and they are particularly at risk where they are situated at the shoreline. The location of the power stations near the ocean exposes the powerhouse, equipment, oil storage tanks and warehouses to damage from salt spray, strong winds and potential tsunamis. Major damage to the electrical system would cause disruption of essential services, e.g. telephone and communications, water supply, waste water disposal and hospital operations.

11. Office of Communications

The Office of Communications is primarily responsible for providing telecommunications services to the Territory. It is fully owned and operated by the American Samoa Government. It operates a modern telephone system which includes a satellite link to COMSAT operations in Tafuna, provides telex and telefax services to off-island locations and functions as a computer node for a small government local area network.

In times of disaster, Title 26 empowers the Office of Communications to monitor and control all communications in order to assure centralized control when necessary. The Director acts as the principal Communications Advisor during all emergency or disaster operations. Title 26 does not authorize hazard mitigation actives.

The Office of Communications has obtained a very efficient, computerized telephone system with modern switching equipment that enables American Samoa to communicate with the world at a moment's notice and with high quality transmission. Telephone facilities and lines are well maintained and staff have responded quickly to interruptions in service. The Office of has been able to maintain a high level of performance and upgrade the system because the Office operates with an annual profit.

The operations of the Office of Communications are subject to natural hazards, particularly hurricanes and high surf, as the telephone transmission system utilizes the same power poles as the electrical system. In times of disaster, stand-by power is available and emergency communications equipment is housed in buildings designed to withstand hurricane force winds.

12. Office of Marine and Wildlife Resources

The Office of Marine and Wildlife Resources (OMWR) takes the lead in protection, preservation and management of wildlife, wetlands, biosystems, coastal ecosystems and marine life in the Territory. It also functions as an economic development agency to spur various commercial and recreational fishing activities in the Territory.

Title 26 authorizes OMWR to make watercraft available for evacuation or transportation of disaster victims as needed for damage assessment, supply of food or other emergency purposes. OMWR is provided no authority under Title 26 to do hazard mitigation activities.

OMWR has not developed a hazard mitigation plan or mitigation measures to protect its property, wildlife, marine resources or other aspects of the environment from the risk of hazards.

The danger to the natural environment is real. Much of the marine environment in Pago Pago Bay is continually exposed to the threat of petroleum spills, point source pollution or releases of hazardous materials. Some rare or endemic species of birds and other wildlife are subject to be impacted by hurricances. Watersheds may be endangered from the misuse and leakage of poisonous chemicals. Nearshore communities or and reef life could be temporarily or even permanently affected by oil spills.

OMWR is presently working on a comprehensive management plan for the protection of wildlife resources, which could be modified to include hazard protection for its buildings, facilities and wildlife and marine resources.

CHAPTER IV

IMPLEMENTATION STRATEGIES

1. Summary and Conclusions

The Governor of American Samoa, through the Office of Territorial Emergency Management Coordination (TEMCO), will assure that the recommendations of FEMA's Hazard Mitigation Survey Team and the hazard mitigation strategies developed independently by government agencies will be implemented according to the work program and schedules as outlined in section 3 of this chapter.

TEMCO will assist ASG agencies develop hazard mitigation strategies under the direction of an Advisory Board established to oversee hazard mitigation activities. TEMCO will revise the plan based upon agency policies and monitor agency performance in accordance with scheduled actions.

All of the recommendations for improvement identified by the FEMA Hazard Mitigation Survey Team Report will be addressed and/or implemented within the next four years. They cover:

* regulation of building construction by adoption of building codes;
* control over construction by regulation of building materials and methods;
* improvement of building inspections and the permit system;
* limitation, reduction and/or removal of temporary housing;
* purchase of mobile battery-driven communications equipment for hospital and emergency operations; and
* repair and upgrading of medical facilities to accommodate hurricane force winds.

The work program includes hazard mitigation actions identified independently by ASG agencies, in addition to the FEMA recommendations. They include alternative measures to protect people, structures and the environment from all the natural and man-made hazards identified in Chapter I of this plan.

All of the recommendations by FEMA and the actions identified by ASG agencies do not require the acquisition of supplementary funding for structural changes or purchase of equipment. The hazard mitigation actions reflect the probable lack of funding for future years. The

actions can generally be carried out with existing staff and through regulation and legislation.

2. TEMCO: Planning and Plan Implementation

TEMCO will assist in updating and implementation of the Hazard Mitigation Plan. The Disaster Assistance Coordinator, under authority of the Commissioner of Public Safety, will serve as staff to an Advisory Board concerned with the implementation of the plan.

There is established an Advisory Board, consisting of the Attorney General, Director of the Department of Public Works and Director of the Development Planning Office, to advise and assist the Commissioner of Public Safety with the successful implementation of the Hazard Mitigation Plan.

The Advisory Board will develop hazard mitigation policies and strategies in coordination with participating ASG agencies. TEMCO will serve as staff to the Advisory Board and assure that agencies take the actions as designated by the Advisory Board and documented by the Hazard Mitigation Plan. TEMCO will provide quarterly and annual reports to FEMA as required to insure that the Territory of American Samoa remains eligible for disaster aid and assistance.

3. American Samoa Government Hazard Mitigation Measures

In the following section, mitigation measures are defined for specific problems identified with agency hazard mitigation capabilities in Chapter II. The problems are grouped by natural and man-made hazards as defined in Chapter I. Problems and hazard mitigation measures involving specific agencies follow thereafter in section C. The problem is stated, FEMA recommendations or alternatives for its solution are given, any background or issues pertinent to the solution is listed, an appropriate action is recommended and the lead agency and schedule for implementation is defined.

A. Natural Hazards

1. Hurricanes

Problem 1:

Many homes or structures in American Samoa do not meet minimum building construction specifications because they were built to outdated building code regulations or they were "self-built".

FEMA #6 recommends: Establish a reasonable construction standard to minimize damage from hurricanes and other hazards. This could be the Uniform Building Code with the

amendments proposed by the Pacific Basin Development Council's Localized Housing Standards for American Samoa. The additional standards issued by the Fiji Building Standards Committee should be considered.

Background: The Pacific Basin Development Council funded a study to identify reasonable building codes for American Samoa in 1985. The source of funding was the US Department of Housing and Urban Development.

Action: Adopt the most recent edition of the Uniform Building Code with exceptions for Localized Housing Standards as defined by the PBDC study and CABO (Council of American Builders) for single family residences. Adopt the most recent edition of the Uniform Plumbing Code and National Electrical Code.

Lead Agency: Department of Public Works, A&E Division

Schedule: April 1988 to December 1988

Problem 2:

The presently adopted building code is not adequately enforced, particularly in Manu'a. This was the most important factor that contributed to major structural damage and injuries.

FEMA #2 recommends: Establish and implement a system to issue Recommends: buildings permits and assure construction will not occur without a permit.

FEMA #3 recommends: Establish and implement an inspection program that assures buildings are inspected at appropriate times during construction and upon completion.

Alternative: Enforce the building, plumbing and electrical permit system according to the established statutes, and set up a permit and inspection office in Manu'a with the cooperation of Development Planning Office PNRS system which issues the consolidated land use permit.

Alternative: Institute various controls associated with the permit system, e.g., hold delivery of construction materials until permit is issued, require home owners' insurance before building.

Alternative: Set up a task force to study the problem, especially for Manu'a.

Action: Enforce the building, plumbing and electrical permit system according to the established statutes, and set

up a permit and inspection office in Manu'a with the cooperation of Development Planning Office PNRS system which issues the consolidated land use permit. Set up a task force to study, recommend and implement needed changes and control measures.

Lead Agency: Department of Public Works, A&E Division
American Samoa Coastal Management Program

Schedule: October 1987 to April 1988

Problem 3:

Building materials are substandard and construction methods are inappropriate. Use of satisfactory materials and good craftmanship cannot be guaranteed.

Background: The type of concrete used to build homes is of poor quality. Cement used is of poor quality and the aggregate mix is often too weak. Roofing iron is not thick enough. This has caused many homes with iron roofs to be severly damaged. Thickness of 25 guage roofing is not satisfactory for homes. Fasteners to hold roofing in place are not strong enough.

FEMA #4 recommends: Determine appropriate building materials and construction methods and implement a system to assure buildings are constructed with these materials and construction methods.

Alternative: Pass legislation controlling the use of materials, e.g. wood, cement, roof fasteners and roofing for buildings. Regulate the importation of cinders and crushed rock used in aggregate.

Alternate: Include testing of cement and aggregate for stress as a requirement of building inspections and the certification of building materials prior to construction by inspectors.

Action: Pass legislation controlling the use of materials, e.g. wood, cement, roof fasteners and roofing for buildings. Regulate the importation of cinders and crushed rock used in aggregate. Include testing of cement and aggregate for stress as a requirement of building inspections and the certification of building materials prior to construction by inspectors.

Lead Agency: Department of Public Works, A&E Division, Civil Division

Schedule: July 1988 to June 1989.

Problem 4:

Government officials and the public are not fully aware of the benefits to be derived from regulating construction utilizing building codes adopted from standardized specifications.

FEMA #5 Recommends:	Establish and implement a program to educate public officials and the public of the benefits of building according to the building code.
Alternative:	Set up a program in the high schools and community college that teaches proper carpentry and other trade skills and design and distribute a brochure to inform the public of the benefits of building codes.
Alternative:	Initiate an education program for village officials, DPW and DPO inspection and permit personnel, and consistency review agency personnel that explains the benefits from following building codes.
Action:	Set up a program in the high schools and the community college that teaches proper carpentry skills and design and distribute a brochure to inform the public of the benefits of building codes. Investigate the possibility of night school training at the Tafuna Vocational High School. Initiate an education program for village officials, DPW and DPO inspection and permit personnel, designers and tradesmen and consistency review agency personnel that explains the benefits of following building codes.
Lead Agency:	Department of Public Works Department of Education American Samoa Community College
Schedule:	Orientation for officials--January 1988 Education programs--September 1989

Problem 5:

Site visits by the FEMA survey team showed that temporary structures, which are not built to code, are routinely erected and often become permanent structures. This problem occurs on all islands of the Territory.

FEMA #6 Recommends:	Establish a list of temporary structures, inspect these structures periodically to assure additions and improvements are not made, verify the

removal of each structure and record the verification date.

Background: The survey team noted that it is imperative that temporary structures be monitored frequently. The Department of Public Works must enforce the construction standards and guarantee that temporary structures remain temporary and are removed within one year.

Alternative: Identify the appropriate legal means to enable the destruction of temporary structures and pass legislation giving the Department of Public Works authority to carry out the action.

Action: Identify the appropriate legal means to enable the destruction of temporary structures and pass legislation giving the Department of Public Works authority to carry out the action. Then establish a list of temporary structures, inspect these structures periodically to assure additions and improvements are not made, verify the removal of each structure and record the verification date.

Lead Agency: Department of Public Works
Attorney General

Schedule: legal review -- June 1988 to December 1988
program implementation -- January 1989

Problem 6:

Residences and commerial structures in the Territory have been and are being built too close to one another and the roads. Setback regulations have not been totally effective in regulating the placement of these structures.

Background: Setbacks refer to a fixed distance structures should be placed from other structures, roadways or utilities.

Action: Establish a setback regulation for houses from the roadway and between houses for the Territory. Establish temporary regulations for Manu'a relative to disaster reconstruction and permanent regulations for land use.

Lead Agency: Department of Public Works, Zoning Board

Schedule: September 1987 to August 1988

2. Tsunamis

Problem 1:

The Territory of American Samoa does not have areas designated as coastal high hazard areas subject to tsunami destruction.

Action: The Coastal Management Program should identify vulnerable coastal high hazard areas that were designated by the US Army Corps of Engineers as subject to potentially destructive tsunamis. The areas should be identified on a map with sufficient resolution for use as a land use guidance tool.

Lead Agency: Development Planning Office, Coastal Management Program

Schedule: January 1988 to April 1988

Problem 2:

Present building codes do not account for potential destruction from tsunamis or high surf and the government does not wholeheartedly restrict development in potentially dangerous areas.

Action: Assure that when the Uniform Building Code and CABO localized building regulations are adopted that the code has provisions for protection against tsunamis and high surf.

Lead Agency: Department of Public Works, A&E Division
Office of the Governor

Schedule: June 1988 to July 1990

Problem 3:

The government does not have a comprehensive shoreline protection plan or measures that would minimize the impact of destructive tsunamis or high surf.

Action: A plan should be written which outlines measures to protect territorial coastal areas from deterioration. The plan should detail options which minimize personal injury and damage to the physical and biotic environment for tsunamis or high surf.

Lead Agency: Development Planning Office, Coastal Management Program with Office of Marine and Wildlife Resources

Schedule: October 1988 to February 1989

Problem 4:

The government does not have a plan or procedures to protect fixed facilities at the main port in Pago Pago Bay from the destructive forces of tsunamis.

Background: The Port Administration has developed a Disaster Plan which is primarily a "response" plan of action for hazards. The Plan was implemented during Hurricane Tusi.

Action: The Port Administration Disaster Plan should be updated to include a hazard mitigation section for hurricanes, tsunamis and fires that will protect buildings, communications equipment and containers from damage.

Lead Agency: Port Administratrion

Schedule: April 1988 to June 1988

3. Earthquakes

Problem

Present building codes do not account for potential damage from earthquakes. The government has not officially established earthquake zones for construction regulation purposes.

Action: Assure that when the Uniform Building Code and CABO localized building regulations are adopted that the code has provisions for protection against earthquatkes and theat zones are established according to UBC criteria.

Lead Agency: Department of Public Works, A&E Division
Office of the Governor

Schedule: June 1988 to July 1990

4. Landslides

Problem 1:

No studies have been carried out to document sensitive areas prone to landslides and susceptible to slope failure.

Action: The government must attempt top identify areas that are susceptible to sliding and the conditions that would cause slope failure. Villages in the immediate vicinity of potential slides should be studied for their vulnerability to slides. Preventative measures should be recommended to mitigate the problems.

Lead Agency: Development Planning Office, Coastal Management Program

Schedule: October 1988 to December 1988

Problem 2:

The government does not presently have restrictions on building in areas subject to landslides.

Action: After unstable areas have been identified and studied for their destructive potential, regulations should be followed and land use restrictions should be established.

Lead Agency: Department of Public Works with Attorne General

Schedule: April 1990 to December 1990

5. High Surf

Problem

Certain shoreline sites along the southern coast of Tutuila are rapidly eroding from high surf. Some portions of the main road and essential utilities will be lost without resolution of the problem.

Alternative: Request supplementary funding from DOI and immediately allocate funding for protection and repair of the areas thath are in critical condition.

Alternative: Begin a comprehensive program to eliminate high surf as a hazard to people and infrastructure by developing an action plan to forstall and mitigate destruction.

Action: All of above.

Lead Agency: Department of Public Works, Civil Division

Schedule: October 1987 to September 1988

6. Flooding

Problem 1:

American Samoa is not a regular member of the Flood Insurance Program and homes and businesses which want to develop in the designated floodplain area can not receive flood insurance at a reduced rate.

Action: The Development Planning Office must maintain communication with FEMA and the U.S. Army Corps of Engineers over designations for the Flood Insurance Rate map. Thereafter, DPO must complete the necessary provisions of the government's application for regular program status and guarantee that all provisions of the FEMA regulations under Chapter 60.3 are met.

Lead Agency: Development Planning Office, Coastal Management Program

Schedule: Dependent upon completion of US Army Corps of Engineers field assessments.
February 1988 to July 1988

Problem 2:

Housing and businesses located near streambeds are subject to perennial flooding with damage to exteriors, interiors and personal property.

Action: Setback regulations should be developed which limit the proximity to which houses and businesses can be located next to streambeds, floodways or coastal high hazards. The regulations should be passed by the Legislature.

Lead Agency: Department of Public Works, A&E Division
American Samoa Coastal Management Program

Schedule: July 1989 to December 1989

7. Drought

Problem

American Samoa does not have enough water storage tanks and capacity is not large enough in many villages to see people through extended periods of low water supply.

Action: Build water tanks of sufficient storage capacity to provide villages with enough water to get them through the dryest of conditions.

Background: The Department of Public Works has identified a source of funding which will enable it to add a number of tanks to the water supply system in fiscal year 1989.

Lead Agency: Department of Public Works, Water Division

Schedule: January 1989 to December 1989

A. Man-made or Technological Hazards

1. Fire

Problem 1:

Many of the fires that cause extensive damage could have been extinguished at an early stage if the fire department had been able to arrive at the scene in sufficient time. The fringes of Tutuila do not receive adequate fire coverage due to the lack of fire stations.

Alternatives: Build fire stations or substations in areas of high population and where access to the rural villages is timely.

Alternatives: Establish volunteer village fire brigades and provide them with adequate equipment to control a fire until the professional force arrives

Alternative: Seek assistance from a professional planning firm which specializes in fire protection to identify the appropriate course of action.

Action: Seek assistance from a professional planning firm which specializes in fire protection to identify the appropriate course of action.

Lead Agency: Department of Public Safety, Fire Department

Schedule: October 1987 to March 1988

Problem 2:

The Fagatogo fire station is situated in a location that retards it from answering fire calls expeditiously if traffic crowds the main road.

Alternative: Move the central fire station to a location where it can respond effectively to fire calls

Alternative: Maintain the fire station in its central location but locate fire trucks at critical sites away from the traffic congestion and at the periphery of the Bay on a daily basis.

Action: Initiate planning to move the central fire station to a location where it can respond effectively to fire calls but station fire trucks at critical sites away from the traffic congestion and at the periphery of the Bay on a daily basis

Lead Agency: Department of Public Safety, Fire Department

Schedule: September 1987 to August 1989

Problem 3:

Many homes in American Samoa are susceptible to extensive damage from fire as a result of faulty wiring, the presence of highly flamable construction materials and close proximity to other houses.

Action: Establish regulations and pass legislation mandating proper setbacks, use of flame resistant materials, professional installation and certification of wiring and use of fire detection devices

Lead Agency: Department of Public Safety, Fire Department, with Department of Public Works, A&E Division and Attorney General

Schedule: January 1988 to December 1989

Problem 4:

The refueling dock is located too close to the main wharf and the Rainmaker Hotel. A fire or an explosion threatens the safety of people and puts the hotel and all facilities at risk of partial or total destruction.

Alternative: Move the fuel dock to a location that minimizes or does not endanger people or structures.

Alternative: Construct protective perimeter walls to eliminate or reduce the spread of fire.

Background: The Port Administration must request the CIP Committee for funding. The Department of Interior and the US Army Corps of Engineers are aware of the problem and the US Congress has allocated funding to study the case.

Action: Contract a qualified firm to evaluate the risk, identify appropriate solutions and implement the action within six months after the final report to the lead agency

Lead Agency: Department of Public Works

Schedule: October 1987 to October 1988

Problem 5:

Port Administration needs a fire vessel to use in the case of any emergency. Port Administration's local budget cannot support the purchase of an additional craft to be used for emergency purposes.

Alternative: Identify alternates sources of funding to purchase a vessel.

Alternative: Identify alternative sources of vessels which could be used for the same purpose.

Alternative: Request the Department of Interior for supplementary funding.

Background: Port Administration must request CIP Committee for additional funding but prospects are poor.

Action: Conduct a study to identify alternate sources of vessels which could be used during an emergency and pass an executive order which enables the government to use the vessels in times of emergency.

Lead Agency: Port Administration

Schedule: January 1988 to October 1989

Problem 6:

The government tank farm operated by Pacific Resources, Inc. is located too close to villages and government facilities. The danger

from fire or explosion is great because of the deteriorated condition of the storage tanks and transmission system.

Alternative: Relocate the tank farm to a location that does not endanger people, structures or the environment.

Alternative: Relocate village and businesses in the immediate vicinity of tank farm.

Background: The most recent study of tank farm location indicated that costs to move the facility could run as high as 30 million dollars. Any move must be approved by and with the cooperation of the Department of Interior.

Alternative: Repair leaking tanks and lines which would cause any danger.

Alternative: Seek alternative funding from private sources to move the facilities to a proper location.

Alternative: Seek the professional advice of a firm capable of providing the right advice for a solution of the problem.

Action: Seek the professional advice of a firm capable of providing the right advice for a solution of the problem while making repairs that will diminish the possibilties of fire.

Lead Agency: Department of Public Works, Director

Schedule: October 1987

2. Oil Spills

Problem:

Minor petroleum spills are reported in Pago Pago Bay weekly. Major spills of petroleum products have the capacity of endangering wildlife and marine resources.

Action: Spill Prevention and Counter-Measure Control Plans are being required of every facility involved with the handling of petroleum products near coastal areas. The owners or operators of the facilities are required to develop plans for handling any oil spill which orginates from the business or operation.

Action: The Underground Storage Tank program will test all storage tanks for chemical or fuel leakage. If leaks

are discovered, the owners or operators will be required to repair the tanks.

Lead Agency: American Samoa Environmental Protection Agency

Schedule: December 1987 --- continuing

3. Hazardous Materials

Problem 1:

The presence of known hazardous waste is growing in American Samoa, however frequency of use and their storage is not adequately reported.

Action: An inventory will be conducted to identify the existing volume and locations of hazardous wastes in the Territory.

Lead Agency: American Samoa Environmental Protection Agency

Schedule: October 1987 to October 1988

Problem 2:

The presence of known hazardous materials is growing in American Samoa, however, the government has no plans or procedures to deal with them.

Action: An Emergency Response Commission will be established to facilitate preparation and implementation of emergency plans in dealing with hazardous material releases under the Superfund Amendments and Reauthorization Act of 1986.

Action: A Hazardous Waste Management Plan will be developed identify measures to control the use of materials.

Lead Agency: American Samoa Environmental Protection Agency

Schedule: December 1987 --- continuing

C. Agency Strategies

1. Department of Public Works, Water Division

Problem 1:

The water supply system will stop operate properly and water service will be interrupted as a result of electrical power outages during hurricanes,

Alternative: Bury all power lines underground that service the water system.

Alternative: Purchase stand-by generators to be used on pumps when electricity fails.

Alternative: Build water tanks in areas with high elevation to maintain hydrolic pressure even if electricity is cut off. Priority is to build water tanks in Manu'a.

Background: The high cost of equipment will discourage the purchase of all equipment to cover the needs of the Territory. Funds may be available in calendar year 1988-89 form DOI grant for water systems.

Action: Develop a priority list of tanks that must be supported in times of disaster and determine if lines should be buried, tanks purchased or generators installed.

Lead Agency: Department of Public Works, Water Division

Schedule: May 1988 to August 1988
Implementing period: Calendar year 1989

Problem 2:

Water supplies and watersheds become contaminated during heavy rains, storms or hurricanes from various sources.

Action: Install chlorinators on all pumps and supplies systems to eradicate bacteria and build sufficient protection from them that they are not damaged by future natural or man-made actions.

Lead Agency: Department of Public Works, Water Division

Schedule: August 1987 to December 1987

2. Department of Medical Services

Problem 1:

The communication between LBJ Tropical Medical Center and the outlying dispenaries is by telephone only. No emergency communications between facilities exist.

FEMA #8 Recommends:	Provide emergency response medical staff with battery backup communications equipment.
Background:	The medical center maintains a Disaster Preparedness Plan. The long term plan is to install radio units, with batter backup, in each district health center and the center. Communications will be possible between field medical teams, the trauma center and command post. The availability of funding will dictate the completion of the plan.
Action:	Provide emergency response medical staff with battery backuped communications equipment and operate the equipment in conformance with the emergency plan.
Lead Agency:	Department of Medical Services
Schedule:	October 1988 to March 1989

Problem 2:

The dispensaries and LBJ Medical Center are critical facilities in time of disaster. Their continued operation is important in order to treat injuries. They should be properly constructed and the staff should be able to take protective measures when warnings are issued.

FEMA #10 Recommends:	Assess the structural soundness of all dispensaries and implement a program to bring all dispensaries up to a hurricane proof standard.
FEMA #11 Recommends	Store protective shields at LBJ Tropical Medical Center and all dispensaries that will be put in place when warnings are issued.
Alternative:	Relocate the Leone and Amouli dispensaries and construct them to hurricane proof standards.
Alternative:	Purchase sheets of 1/2 inch plywood in numbers sufficient to cover windows of all dispensaries along with the means by which dispensary personnel can install them.

Alternative: Purchase sufficient sheets of plywood to cover the eastward windows of the LBJ Tropical Medical Center, but leave the westward side open for protection from the mountains.

Background: The Health Facilities Plan has long recognized the need to replace inadequate dispensaries with modern facilities. Active investigations of alternative sites have been concluded.

It would not be possible to provide temporary cover for all windows of LBJ. Covering the eastern and western sides of the building would require 240 sheets and 10 minutes per sheet per installation.

Action: The Department of Public Works will be requested to inspect all dispensaries and assess their capability to withstand hurricane force winds of at least 125 mph. Any required alterations to bring these buildings up to standard will be included in subsequent budget requests and the work will be completed as funds become available.

A sufficient number of 1/2 inch plywood sheets will be purchased to cover windows of all dispensaries along with the means by which dispensary personnel can install them. Sheets of plywood to cover only the eastward windows of the LBJ Tropical Medical Center will be purchased.

Lead Agency: Department of Medical Services

Schedule: Inspection--October 1987
Budgetting---May through September 1988
Implementation--January 1989 thru 1991

3. Port Administration

Problem:

Ta'u Harbor is not a satisfactory site for vessel berhting, loading or off-loading during periods of high wind and waves and is unsuitable for emergency disaster response.

Background: Port Administration vessels were unable to berth for several days after Hurricane Tusi. Supplies to be off-loaded could not be delivered quickly.

Action: Request the U.S. Army Corps of Engineers to suggest methods to improve the harbor.

Lead Agency: Port Administration

Schedule: September 1987

4. American Samoa Power Authority

Problem:

ASPA's system is very vulnerable to hazards, particularly hurricanes. The aged poles and transmission lines continually fail during high winds and they are particularly at risk where they are situated at the shoreline. The location of the power stations near the ocean exposes the powerhouse, equipment, oil storage tanks and warehouses to damage from salt spray, strong winds and potential tsunamis. Major damage to the electrical system would cause disruption to essential services, e.g. communications, water supply, waste water disposal and hospital operations.

Alternative: Transmission lines should be installed underground inside villages and padmount transformers should be use to service houses and other facilities.

Alternative: Power poles must be buried and firmly secured with adequate guy wire. Consideration must be given to use of only hard wood poles instead of softwood poles.

Alternative: Proper easements with adequate clearance should be legally secured with owners.

Alternative: Fuel storage facilities close to the sea should be protected from strong waves and salt air. Tanks must be fixed with adequate anchorage and fuel oil line properly buried.

Alternative: Powerhouses on the sea front must be relocated to more protected areas or adequate seawalls should be built to protect the facilities.

Background: The American Samoa Power Authority has not earned a profit in recent years and is not able to make the above changes immediately.

Action: Identify projects from above that can be implemented in future years.

5. Office of Communications

Problem:

The disaster highlighted some communications problems. Only telephone communication was available between Manu'a and Tutuila and telephone lines were lost during the hurricane. The impact of the hurricane and the need for medical help was not known until Sunday, the day after the hurricane, when the first plane arrived. Similar communications problems, if not corrected, could have significant impact if a hurricane struct Tutuila.

FEMA #8 Recommends: Provide all islands with the capability to communicate with disaster response officials in times of disaster. This capability should not be dependent on the electric power system.

Action: Identify proper equipment to be used in the event of a disaster that can be stored in a safe place and used by residents or designated officials at the time of a disaster. Purchase equipment that can be battery operated and kept charged at all times.

Lead Agency: Office of Communications, Director

Schedule: August 1988.

6. Development Planning Office

Problem:

The Territory of American Samoa has no comprehensive development scheme or plan which can provide direction for land use where it relates to hazard mitigation.

Action: The Zoning Board should initiate a rezoning program throughout all of the Territory and identify land use patterns suitable for specific activities. In particular, the Zoning Board should identify areas subject to hazards and restrict use to suitable activities.

Action: The Territorial Planning Commission should encourage the creation of plans which include hazard mitigation as an element in the overall development and protection of lands and the Territory's natural resources.

Lead Agency: Development Planning Office, Planning Division

Schedule: February 1989 to June 1990