US Army Corps of Engineers®
Honolulu District

Appendix C
Environmental Resources

Tafuna Flood Risk Management, American Samoa

Draft Integrated Feasibility Report and Environmental Assessment

January 2022

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Appendix C

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1 INTRODUCTION

This Appendix provides an administrative record of coordination on environmental compliance conducted to date as part of the Tafuna Flood Risk Management Project (Project). It further discusses any related compliance specific to the Territory of American Samoa (Territory).

2 LIST OF STATEMENT AGENCIES

A list of the agencies, organizations, and persons to whom USACE sent copies of the draft report for review is as follows:

- U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office
- American Samoa Departments of Marine and Wildlife Resources
- NOAA National Marine Fisheries Service (NMFS), Pacific Islands Regional Office
- NOAA Fisheries Pacific Islands Regional Office
- NOAA National Marine Fisheries Service (NMFS), Habitat Conservation Division. American Samoa Field Office
- U.S. Environmental Protection Agency
- American Sam Environmental Protection Agency
- America Samoa Department of Public Works
- American Samoa Department of Commerce
- American Samoa State Historic Preservation Office
- USDA Natural Resources Conservation Service (NRCS), American Samoa Field Office

3 Environmental Compliance

3.1 National Environmental Policy Act (NEPA)

NEPA (*42 USC § 4321 et seq*.) requires federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their Proposed Actions and reasonable alternatives to those actions. NEPA also established CEQ. As part of the Executive Office of the President, CEQ coordinates federal environmental efforts and is responsible for advising the president on environmental policy matters. CEQ has also promulgated regulations implementing NEPA, which are binding on all federal agencies. These regulations address the procedural provisions of NEPA and the administration of the NEPA process, including preparation of EISs.

The NEPA is applicable to all “major” federal actions affecting the quality of the human environment. A major federal action is an action with effects that may be major and which are potentially subject to federal control and responsibility. These actions may include new and continuing activities, including projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies; new or revised agency rules, regulations, plans, policies, or procedures; and legislative proposals.

3.1.1 NEPA Coordination for the Proposed Project

Six resource agencies formally accepted the USACE’s invitation (either by letter or email) to participate as cooperating agency for the proposed project, as defined under the NEPA. These included the USEPA Region 9, Environmental Review Branch, ASEPA, the Pacific Islands Regional Office (PIRO), Habitat Conservation Division of the National Marine Fisheries Service

(NMFS PIRO), the American Samoa DMWR, the American Samoa Coastal Zone Management Program (ASCMP), and the ASSHPO. Although the Pacific Islands Wildlife Office of the U.S. Fish and Wildlife Service (USFWS) did not wish to participate in the NEPA development as a Cooperating Agency, this office expressed interest in providing review and comment, subject to the context of their applicable authority, in regard to the NEPA document being developed for the proposed project.

A two-day, joint resource agency and public meeting/workshop/charette was held on July 21-22, 2020 to brief resource agency partners and the public on the proposed project and gather initial input to requirements for NEPA.

In August 2020, USACE held an introductory virtual meeting with staff of the NMFS PIRO to introduce them to the scope of the proposed project and gather initial feedback. On September 24, 2020, the NMFS PIRO received the USACE's request letter to provide location-specific information on the status and any concerns for the conservation of federally managed fisheries and designated essential fish habitat (EFH) within the study area. In addition, the USACE invited NMFS PIRO to be a cooperative agency under NEPA. On October 22, 2020, NMFS PIRO provided the USACE comments and technical assistance (via email) to assist in integrating EFH considerations within the scoping process for the proposed project. This technical assistance did not fulfill any federal responsibilities and does not constitute an EFH consultation. It is expected that EFH consultation will continue through the feasibility phase of the proposed project. NMFS PIRO is still reviewing the USACE request to be a Cooperating Agency under NEPA for the proposed project. Also see section 1.3 on the FWCA.

On November 22, 2021, resource agencies were re-engaged on the final array of alternatives developed for the proposed project, including the Tentatively Selected Plan, through a structured virtual meeting.

An integrated Environmental Assessment (EA) was drafted for this project and will be provided to all resource agencies for review and comment during a 30-day public comment period. It is expected that additional comments will be received and that some level of EFH consultation will continue after draft comments are received for the proposed project.

3.2 Endangered Species Act of 1973

Section 7 of the ESA requires each federal agency to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any threatened or endangered species or result in destruction or adverse modification of critical habitat for such species. Federal agencies are further required to consult with the appropriate federal agency, either the USFWS or NOAA-NMFS, for federal actions that "may affect" a listed species or adversely modify critical habitat. Federal agencies must use the best available scientific and commercial data when making an effect determination relating to the impact of their actions.

Pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), USACE requested technical assistance from the U.S. Fish and Wildlife Service (USFWS) on April 2, 2020 and received the following list of species listed or proposed for listing under both National Marine Fisheries Service (NMFS) and USFWS jurisdiction (**Error! Reference source not found.**) that may be present on or in the vicinity of the proposed project location, as well as confirmation that there is no designated or proposed federally designated critical habitat occurring within the immediate vicinity of the proposed study area (Reference Number:

01EPIF00-2020-SL-0253). This list has been recently been verified by the USFWS (see Chapter 4 Threatened and Endangered Species)

3.2.1 Specific Territorial Regulations for ESA

The USFWS Pacific Islands Fish and Wildlife Office and the NMFS PIRO are the federal regulatory agencies that oversee consultations for compliance with the ESA in American Samoa. The NMFS and USFWS share jurisdiction for recovery and conservation of sea turtles listed under the ESA. NMFS leads the conservation and recovery of sea turtles in the marine environment and USFWS leads the conservation and recovery of sea turtles on nesting beaches (*NOAA 2015*). A Memorandum of Understanding outlines the specific roles of each agency. The USFWS is also responsible for the management of Pacific Island Refuges, including American Samoa's National Park of American Samoa and Rose Atoll National Wildlife Refuge, among others.

The American Samoa DMWR is the territorial agency responsible for managing and preserving the marine and wildlife resources in America Samoa. American Samoa DMWR also distributes hunting regulations that control the taking of various wildlife species, including fruit bats and native birds.

Currently, there is no federally designated critical habitat in American Samoa for any species.

3.2.2 ESA Coordination for the Proposed Project

The USFWS was contacted by email on April 13, 2020 with a request for a list of threatened and endangered (T&E) species in the study area in anticipation of the planning charrette planned for the summer of 2020. On April 22, 2020 a letter from the Pacific Islands Fish and Wildlife Office, prepared under the authority of and in accordance with provisions of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 *et seq*.), as amended. was received with such list (reference number: 01EPIF00-2020-SL-0253.

The USACE continues to coordinate with the USFWS, NMFS, and the DMWR as part of the public review of this Draft IFR/EA document and will continue coordination throughout the feasibility phase.

3.3 Fish and Wildlife Coordination Act of 1934

The FWCA (16 USC 661 et seq.) requires federal agencies to coordinate with the USFWS and local state/territorial agencies when any stream or body of water is proposed to be impounded, diverted, or otherwise modified. The intent is to give fish and wildlife conservation equal consideration with other purposes of water resources development projects.

3.3.1 FWCA Coordination for the Proposed Project

The USACE coordinated with the USFWS, NMFS, and the American Samoa Department of Marine and Wildlife Resources during the initial stages of planning. Per coordination and concurrence with the USFWS Pacific Islands Fish and Wildlife Office, a Planning Aid Letter will serve to meet USACE requirement for FWCA for the proposed recommended alternative as the USFWS Pacific Islands Fish and Wildlife Office did not have significant concerns on impacts to ESA listed species and the adjacent marine environment (i.e., Pala Lagoon). Also, because

streams in American Samoa have few invasive species issues and the recommended alternative is not proposing any barriers to affect longitudinal (upstream/downstream) of aquatic organisms to adjacent aquatic habitats. Per USFWS, this draft planning aid letter would be transmitted to USACE before Dec. 25th, 2021.

Additional coordination with the USFWS, NMFS, and the DMWR will continue as part of the public review of the Draft NEPA document and will continue coordination throughout the feasibility phase.

3.4 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) (*16 USC § 1801 et seq.*) is the primary law governing fisheries management in U.S. federal waters. The MSA is intended to foster long-term biological and economic sustainability of U.S. marine fisheries through the prevention of overfishing, the rebuilding of overfished stocks, and increasing long-term economic and social benefits to ensure a safe and sustainable supply of seafood. The MSA extended U.S. jurisdiction from 12 nautical miles to 200 nautical miles and established eight regional fisheries management councils to develop Fishery Management Plans, which must comply with conservation and management standards to promote sustainable fisheries management. The Fishery Management Plan also define essential fish habitat, which is the aquatic habitat where fish spawn, breed, feed, and grow through various life stages; this habitat includes marine waters, wetlands, coral reefs, seagrasses, and rivers. The Fishery Management Plan further define habitat areas of particular concern, which are high-priority areas that are rare, particularly sensitive, or critical to overall ecosystem functions.

The Western Pacific Regional Fishery Management Council is one of eight regional fishery management councils established by Congress in 1976. Under the MSA, it has authority over fisheries seaward of state/territorial waters of Hawaii and the US Pacific Islands. The Western Pacific Regional Fishery Management Council creates and amends management plans for fisheries seaward of state/territorial waters in the US Pacific Islands. The WP Western Pacific Regional Fishery Management Council's Fishery Ecosystem Plans are place-based and utilize an ecosystem approach. An overall Pacific Pelagic Fishery Ecosystem Plan was created because of the migratory nature of the pelagic species. Both the American Samoa Archipelago and Pelagic Fishery Ecosystem Plans were approved in 2009 and codified in 2010 (WPRFMC 2009). These Fishery Ecosystem Plans outlines ecosystem approaches to management of fisheries and are amended as necessary.

In 2000, American Samoa began a Community-Based Fisheries Management Program that assists residents in managing negative impacts on their marine resources (*ASCMP 2011*). In this program, residents keep watch on tourists and other residents in the marine environment and locally enforce the rules to prevent harmful activities.

Marine Conservation Plans are also required by the MSA (Section 204(4)) detailing the use of funds collected by the Secretary of Commerce pursuant to fishery agreements (e.g., Pacific Insular Area fishery agreement, quota transfer agreement, etc.). These Marine Conservation Plans are intended to be consistent with the fishery ecosystem plans, identify conservation and management objectives, and prioritize planned marine conservation projects. The Marine Conservation Plans for American Samoa is developed by the Governor and applicable for three years (reference).

3.4.1 Specific Territorial Regulations for MSA

The U.S. has exclusive fishery management authority over all fishery resources within the U.S. Exclusive Economic Zone, which extends from the seaward boundary of American Samoa to a distance of 200 nautical miles from the baseline from which the breadth of the territorial sea is measured (Figure). However, this authority is delegated to the American Samoa DMWR Fisheries Division for the implementation of fisheries management within waters up to three miles from the coastline of American Samoa (*WPRFMC 2009*). The NMFS PIRO manages fisheries outside of the three-mile offshore boundary around American Samoa (*WPRFMC 2009*). Management plans to protect trophic structure and biodiversity and increase key coral reef fish species are priorities within and outside of existing protected areas. (*WPRFMC 2009*).

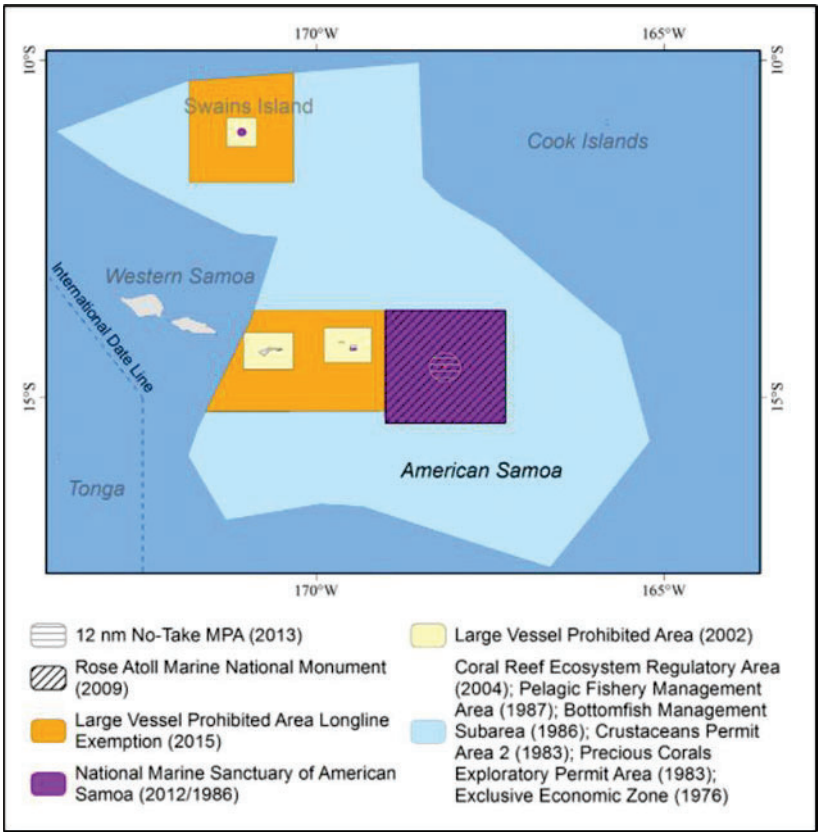


Figure 1: Protected, permitted, and regulated marine areas in American Samoa (https://www.wpcouncil.org/fisheries/american-samoa-archipelago)

The NMFS PIRO is the federal regulatory agency responsible for implementing the MSA, including the EFH provision (Section 305(b)(2) as described by 50 CFR 600.920). The marine water column from the surface to a depth of 1,000 m from shoreline to the outer boundary of the Exclusive Economic Zone (5,150 kilometers/200 nautical miles/230 miles), and the seafloor from the shoreline out to a depth of 400 m around the American Samoa Archipelago were designated as EFH. As such, the water column and bottom and all surrounding waters and submerged lands around Tutuila, including Pala Lagoon are designated as EFH and support various life stages for the management unit species identified under the Western Pacific Fishery Management Council's American Samoa Archipelago and Pacific Pelagic Fishery Ecosystem Plans. The management unit species and life stages found in these waters include eggs, larvae,

juveniles, and adults of Bottom-fish and Pelagic MUS. Specific types of habitat considered as EFH include coral reef, patch reefs, hard substrate, artificial substrate, seagrass beds, soft substrate, mangrove, lagoon, estuarine, surge zone, deep-slope terraces and pelagic/open ocean.

NMFS Pacific Island Regional Office also oversees consultations for compliance with the ESA and other statutory mandates. Compliance with the EFH provisions of the MSA can also be achieved through the pursuance of the Fish and Wildlife Coordination Act (FWCA, 16 U.S.C. 661-666c). See section 1.3 of this chapter.

3.4.2 MSA Coordination for the Proposed Project

Initial comments from the NMFS PIRO on EFH were received and technical coordination continues. The proposed project is expected to have a less than significant effect on EFH; however, some level of EFH consultation maybe conducted during the remainder of the feasibility phase to address any comments received on the draft NEPA document.

3.5 Marine Mammal Protection Act

All marine mammals are protected under the Marine Mammal Protection Act (MMPA) (*16 USC § 1361 et seq*.), which prohibits takes of all marine mammals in the U.S. (including territorial seas) with few exceptions. Permits for scientific research on marine mammals and permits to enhance the survival or recovery of a species, issued under Section 104 of the MMPA are two such exceptions. For T&E marine mammals, any activities that could affect ESA-listed species must be consistent with the ESA as well.

3.5.1 Specific Territorial Regulations for MMPA

All marine mammals, including humpback whales, are protected by federal law through the MMPA, and locally through the government of American Samoa. In 2003, American Samoa declared all its territorial seas to be a whale (and sea turtle) sanctuary (USDOC 2021 and all marine mammal species are protected from commercial and recreational hunting within the three mile limit of American Samoa territorial waters by virtue of EO No. 005-2003 (*American Samoa Government 2002*; *DMWR 2006*). This action complimented federal and local regulations, including the ESA, that prohibit any harassment or take of marine mammals (and sea turtles).

3.5.2 MMPA Coordination for the Proposed Project

16 USC 1362 defines “take” as “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” No take or harassment of marine mammals are anticipated through the proposed project. The Pala Lagoon is not a known haul out, breeding, or forging location for marine mammals.

3.6 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (*16 USC § 703-712*) was enacted to ensure protection of migratory bird resources that are shared among the U.S., Canada, Mexico, Japan, and Russia. The MBTA makes it unlawful to “pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for

transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product".

The responsibilities of federal agencies to protect migratory birds are set forth in EO 13186. USFWS is the lead agency for migratory birds. The USFWS issues permits for takes of migratory birds for activities such as scientific research, education, and depredation control, but does not issue permits for incidental take of migratory birds.
The MBTA does not apply to non-native species introduced to the U.S. or its territories by mean of intentional or unintentional human assistance.

3.6.1 Migratory Bird Treaty Act Coordination for the Proposed Project

No take or harassment of migratory birds is anticipated through the proposed action as the proposed project is located in very disturbed habitat and non-native species predominate. however, compliance with the MBTA would be adhered to during the construction phase to prevent incidental take of any native bird species (e.g., nests, etc.)

3.7 Clean Water Act of 1972

The CWA (*33 USC § 1251 et seq*.) establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and regulating quality standards for surface waters. The CWA defines waters of the U.S. to include all interstate waters, lakes, rivers, streams, territorial seas, tributaries to navigable waters, interstate wetlands, wetlands that could affect interstate or foreign commerce, and wetlands adjacent to other waters of the U.S (WoUS). The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, without a permit. Jurisdictional WoUS (i.e., Taumata and Leaveave Streams) are within the proposed project footprint. The Nu'uuli Pal Lagoon, although outside of the direct project footprint, is within the proposed action area and contains jurisdictional waters, including mangrove wetlands.

Under Sections 303 and 305 of the CWA, states and territories must review all "existing and readily available" state surface water quality data to compare against their water quality standards and determine whether waterbodies will be classified as higher quality (Category 1 or 2) or lower quality (Categories 3, 4, or 5). A water pollution reduction plan, or total maximum daily load, may be required for waterbodies that are classified as lower quality. The total maximum daily load defines the upper threshold of a given pollutant that a waterbody can contain and still meet water quality standards.

Regulations and policies that protect water quality and are being considered as part of the proposed project include CWA Sections 401 and 402. Section 401 of the CWA ensures that discharge into waters of the U.S. do not violate state, territorial, or tribal water quality standards. States, territories, and authorized tribes where the discharge originates are generally responsible for issuing Water Quality Certifications (WQCs). In accordance with CWA Section 401, the American Samoa Environmental Protection (ASEPS) Agency administers the Territory's Water Quality Certification Program. The objective of the program is to ensure that any Federally permitted activity will not adversely impact the existing uses, designated uses, and applicable water quality criteria of the receiving State waters. Section 401 Water Quality Certification will be requested from the ASEPA prior to construction of the project.

In accordance with CWA Section 401, the American Samoa Environmental Protection (ASEPA) Agency administers the Territory's Water Quality Certification Program. The objective of the program is to ensure that any Federally permitted activity will not adversely impact the existing uses, designated uses, and applicable water quality criteria of the receiving State waters. Section 401 Water Quality Certification will be requested from the ASEPA prior to construction of the project.

Section 402 of the CWA (33 U.S.C. § 1342(a)) requires that a discharge of any pollutant or combination of pollutants to surface waters that are deemed waters of the United States, such as storm water from point or nonpoint sources, be regulated through the NPDES permitting program. Section 402(a) provides that the permit-issuing authority may issue an NPDES permit that authorizes the discharge of any pollutant into navigable waters of the United States, upon the condition that such discharge meets all applicable requirements of the CWA and such other conditions as the permitting authority determines necessary to carry out the provisions of the CWA. As part of this program, general NPDES permits are required to regulate storm water discharges associated with deployment or construction activities that disturb one or more acres of land EPA has not authorized the territory of American Samoa to issue NPDES permits and therefore EPA Region 9 is the permit-issuing agency for American Samoa. In accordance with CWA Section 402, the US Environmental Protection (USEPA) Agency administers the Territory's Water Quality Certification Program. The objective of the program is to ensure that any Federally permitted activity will not adversely impact the existing uses, designated uses, and applicable water quality criteria of the receiving State waters. Section 402 Water Quality Certification will be requested from the USEPA prior to construction of the project.

Section 404 of the CWA, administered by the USACE, established a program to regulate the discharge of dredged or fill material into waters of the U.S. Although the USACE does not process and issue permits for its own activities, it conducts an internal assessment to ensure that all requirements of Section 404 are met by applying all applicable substantive legal requirements, including application of the Section 404(b)(1) Guidelines, 33 CFR 336.1(a). Under the Section 404(b)(1) Guidelines, an analysis of practicable alternatives is the primary tool used to determine whether a proposed discharge is prohibited. The Section 404(b)(1) Guidelines prohibit discharges of dredged or fill material into waters of the U.S. if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem (including wetlands), as long as the alternative does not have other significant adverse environmental impacts (40 C.F.R. 230.10(a)). An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of overall project purpose (40 C.F.R. 230.10(a)(2)).

The Section 404(b)(1) guidelines follow a sequential approach to project planning that considers mitigation measures only after the project proponent shows no practicable alternatives are available to achieve the overall project purpose with less environmental impacts. Once it is determined that no practicable alternatives are available, the guidelines then require that appropriate and practicable steps be taken to minimize potential adverse effects on the aquatic ecosystem (40 C.F.R. 230.10(d)). Such steps may include actions controlling discharge location, material to be discharged, the fate of material after discharge or method of dispersion, and actions related to technology, plant and animal populations, or human use (40 C.F.R. 230.70-230.77). Beyond the requirement for demonstrating that no practicable alternatives to the proposed discharge exist, the Section 404(b)(1) Guidelines also require USACE to compile findings related to the environmental impacts of discharge of dredged or fill material. The USACE must make findings concerning the anticipated changes caused by the discharge to the physical and chemical substrate and to the biological and human use characteristics of the

discharge site. These guidelines also indicate that the level of effort associated with the preparation of the alternatives analysis be commensurate with the significance of the impact and/or discharge activity (40 C.F.R. 230.6(b)).

A draft 404()(1) analysis for the proposed project is included herein as Attachment 1 to this Environmental Appendix.

3.7.1 Specific Territorial Regulations for CWA

The protection of water quality of surface waters in American Samoa is implemented by the ASEPA through the ASCMP. The ASCMP promotes the management of natural resources in coastal areas through environmental review of land use activities, land use planning, restoration activities, and education and outreach. Locally, the government of American Samoa employs an interagency Project Notification and Review System process, administered the American Samoa Department of Commerce (American Samoa DOC 2015). The Project Notification and Review System process considers public health, safety, and environmental impacts (including impacts to water quality) as part of the review process for proposed development projects. The ASEPA sits on the board of the Project Notification and Review System, providing review of environmental impacts, including impacts to water quality. The ASEPA is the territorial agency responsible for 401 Water Quality Certifications in the Proposed Action Area. Issuance of a Water Quality Certification demonstrates compliance with Section 401.

The Territory's inland drinking waters are assigned to a class, 1 (drinking water), or 2 (not drinking water). For water that is not classified as drinking water, water quality standards are assigned based on the beneficial uses that are to be protected, including aquatic life or swimming (Tuitele et al. 2014).

The Territory's 303(d) and 305(b) integrated water quality report (Tuitele et al. 2014) describes water quality conditions for waters in American Samoa. The report describes that a total of 230.6 miles of American Samoa's 257.5 miles of surface waters were assessed for water quality conditions between 2003 and 2013. Of these 230.6 miles, 210.1 miles were found to be impaired. Total Maximum Daily Loads (TMDLs) have not yet been developed for any of these impaired waters. TMDLs are a regulatory tool used for impaired waterbodies and describe a maximum amount of a pollutant that a waterbody can receive while still meeting water quality standards. TMDLs must be developed for all waterbodies on a state or territory's 303(d) list. Contaminants found in these impaired waters include bacteria, total nitrogen, total phosphorus, dissolved oxygen, and turbidity. Surface water quality in American Samoa is most impacted by land use changes impacting hydrology and streamside vegetation, watershed development causing erosion and increased turbidity, and nutrient and bacterial pollution from poorly constructed human and pig waste disposal systems (*Tuitele et al. 2014*).

There are no streams with special designations and no wild and scenic rivers in American Samoa (*National Wild and Scenic Rivers System 2015*).

3.7.2 CWA Coordination for the Proposed Project

Both the USEPA and American Samoa Environmental Protection Agency has been fully engaged on the proposed project from the initial feasibility stage. The American Samoa Environmental Protection Agency, through the Project Review and Notification System, determines the need for any land use or water quality permits that need to be obtained for any proposed project to ensure that environmental concerns, including water quality, are given

appropriate consideration in the land use decision-making process. As previously stated, a conditional letter of concurrence for Federal Consistency from the American Samoa Department of Commerce was received on December 6, 2021.

The Proposed Action of implementing the Tentatively Selected Plan encompasses both project construction and operations. With respect to the Section 401 permit, USACE would be responsible for compliance during construction while the American Samoa Department of Public Works would need to comply separately with Section 401 for O&M. The 404(b)(1) analysis would need to demonstrate that both construction and O&M comply Section 404. So long as the non-federal sponsor, the American Samoa Department of Public Works (ASDPW) conducts O&M operations within the scope of activities characterized in the environmental assessment, it would comply with Section 404.

3.8 Coastal Zone Management Act of 1972

Congress enacted the Coastal Zone Management Act (CZMA) (*16 USC § 1451 et seq*.) to protect the coastal environment from growing demands associated with residential, recreational, commercial and industrial uses (such as, state and federal offshore oil and gas development). Coastal states with an approved Coastal Zone Management Plan, which defines permissible land and water use within a state or territory's coastal zone, can review federal actions (such as deployment/construction and operation of a proposed project action) for federal consistency. Federal consistency is the requirement that a proposed action likely to affect any land/water use or natural resources of the coastal zone be consistent with the enforceable policies of a state or territory's program. The CZMA requires NOAA to conduct periodic evaluations of the performance of states and territories with federally approved coastal management programs.

3.8.1 CZMA Coordination for the Proposed Project

The ASCMP is the federally approved coastal management program for the Territory of American Samoa, responsible for the management of approximately 77 square mile coastal zone and 126 miles of coastline that the seven islands that make up the Territory.

In American Samoa, the CZMA is implemented through the ASCMP, which was approved in 1980 and is administered by the American Samoa Department of Commerce under its Resource Management Division. The ASCMP has extensive responsibilities under the CZMA, which provides the primary authority for program and has been developed under a unique approach that incorporates both western and traditional systems of management.

One of the ASCMP'S main functions (under the auspices of the Department of Commerce) is to conduct the environmental review process for all land-use activities in American Samoa through the Project Notification and Review System. As the chair of the Project Notification and Review System Board, the American Samoa Department of Commerce is the lead agency for the networked coastal program in American Samoa, which includes eight different American Samoa government agencies that share responsibility as members of the Project Notification and Review System Board. These include the American Samoa Environmental Protection Agency, American Samoa Historic Preservation Office, American Samoa Power Authority, Department of Health, DMWR, Department of Parks and Recreation, and DPW. The Project Notification and Review System Board consists of agency directors, or their designees, and meets in a public setting twice monthly to review major land-use permit applications.

3.8.2 CZMA Coordination for the Proposed Project

On December 6, 2021, a conditional letter of concurrence for Federal Consistency Determination from the American Samoa Department of Commerce was received. A draft Consistency Determination analysis is included herein as Attachment 2 of this Environmental Appendix.

3.9 Executive Order 11198 (as amended by Executive Order 13690) Flood Plain Management

EO 11988 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Furthermore, federal agencies must either avoid funding or permitting critical facilities in the 500-year floodplain or must provide protection to mitigate the flood risk to those facilities. Critical facilities are those facilities for which even a small risk of flooding is too great and include public safety infrastructure (*FEMA 2016*). In accomplishing this objective, "each agency provides leadership and takes action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities" for the following actions:

- Acquiring, managing, and disposing of federal lands and facilities
- Providing federally undertaken, financed, or assisted construction and improvements
- Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities

The National Flood Insurance Program (NFIP) is a federal program managed by the FEMA that allows property owners in participating communities to purchase flood insurance with rates established through the National Flood Insurance Rate Maps.

3.9.1 Executive Order 11198 Coordination for the Proposed Project

EO 11988 (Floodplain Management; May 24, 1977) requires a Federal agency, when taking an action, to avoid short- and long-term adverse effects associated with the occupancy and the modification of a floodplain. The agency must avoid direct and indirect support of floodplain development whenever floodplain siting is involved. In addition, the agency must minimize potential harm to or in the floodplain and explain why the action is proposed. Additional floodplain management guidelines for Executive Order 11988 were provided in 1978 by the Water Resources Council and these have recently been revised as part of Executive Order 13690, signed on January 30, 2015, which amends Executive Order 11988. It should be noted, however, that determination of the proposed flood wall heights is selected based on economic optimization of the NED Plan, not the Federal FRM standard released in Executive Order 13690.

An eight-step process is used to ensure compliance with EO 11988; this process involves public review, consideration of practicable alternatives, identification of impacts and measures to minimize those impacts, and presentation of the findings. The NEPA compliance process involves essentially the same basic decision-making process to meet its objectives. Therefore, where possible, the eight step decision-making process has been integrated into the analysis in this IFR/EA, as listed below.

Step 1: Determine whether the proposed action is in the base floodplain. *As described throughout the draft IFR/EA for this study, the proposed project is located within the base floodplain of the Nu'uuli Pala watershed on the Tafuna-Leone Plain on the island of Tutuila in American Samoa.*

Step 2: Provide early public review of any plans or proposals for action in the base floodplain. *Several opportunities in the form of email communications and virtual meetings were provided for public and agency review of the proposed project, as described in the draft IFR.*

Step 3: If the action is in the base floodplain, determine whether there is a practicable alternative to the action. *As the project is intended to provide FRM, there is no practicable alternative to siting the project features in the base floodplain. A variety of FRM measures and alternatives were evaluated, as discussed in the draft IFR.*

Step 4: Identify beneficial and adverse impacts caused by the proposed action and any expected losses of natural and beneficial floodplain values. *The Nu'uuli Pala Watershed is already developed and impaired, and the proposed action is not expected to induce direct or indirect land use development on the lands immediately adjacent to Taumata Stream. Beneficial and adverse impacts associated with the recommended project are identified in the draft IFR/EA.*
Step 5: Determine viable methods to minimize any adverse impacts of the action and methods to restore and preserve the natural and beneficial values. *Potentially adverse impacts are expected to be avoided or minimized through implementation of appropriate mitigation measures, as described in the draft IFR/EA.*

Step 6: Reevaluate the proposed action based on the information generated in Steps 4 and 5. *An iterative plan formulation process was completed, as described throughout the draft IFR/EA.*

Step 7: Prepare a Statement of Findings and advise the general public if the proposed action will be located in the floodplain. *Multiple opportunities have been provided for public and agency review of the proposed project. In addition, the draft IIFR/EA is being made available for public review.*

Step 8: Implement the action after completing the seven evaluation steps. *The project will be implemented after construction of the study is approved to move forward and all pre-construction permits are obtained.*

The American Samoa Hazard Mitigation Plan provides American Samoa with a comprehensive mitigation strategy for prioritizing projects, programs, and activities that will save lives and reduce losses from the impacts of natural disasters. This plan defines responsibilities and analyzes local capacities and capabilities to manage mitigation projects. It also fulfills the Federal Emergency Management Agency's requirement for a mitigation planning process that first, ensures federal assistance to the people of American Samoa following future significant disasters and second, allows the American Samoa government to compete for federal mitigation project assistance annually. This Mitigation Plan defines risks and vulnerability in a systematic manner and analyzes the vulnerability of critical structures with respect to mapped known natural hazard areas. It also provides a framework for informed decision-making regarding prioritization of mitigation projects that will insure both the protection of life and property and cost-effective use of taxpayers' funds

USACE guidance requires the non-federal sponsor to prepare a Floodplain Management Plan designed to reduce the impacts of future flooding in the project area. The primary focus of the Floodplain Management Plan is to address the potential measures, practices, and policies that will reduce impacts of future residual flooding, help preserve levels of protection provided by the USACE project, preserve and enhance natural floodplain values, and reduce the risk of future flood damages to structures within the post-project floodplain and internal drainage issues related to USACE levee/floodwall projects. To fulfill this requirement for the Tafuna FRM project, elements of the American Samoa Multi-Hazard Pre-Disaster Mitigation Plan along with information in this feasibility study would need to be used to create the Flood Plain Management Plan.

3.10 Executive Order 11990-Protection of Wetlands

The purpose of EO 11990 is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." To meet these objectives, federal agencies are required, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The EO applies to the following:

- Acquisition, management, and disposition of federal lands and facilities construction and improvement projects that are undertaken, financed, or assisted by federal agencies
- Federal activities and programs affecting land use, including, but not limited to, water and related land resources planning, regulation, and licensing activities.

The procedures require the determination of whether or not the proposed project would be in, or would affect, wetlands. If so, a wetlands assessment must be prepared that describes the alternatives considered. The procedures include a requirement for public review of assessments. The evaluation process follows the same eight steps as for EO 11988, Floodplain Management. As with EO 11988, this eight step process can be addressed as part of the NEPA compliance process if an EA or EIS is developed.

3.10.1 Specific Regulatory Considerations for EO 11990

The PNRS process as described above considers impacts to wetlands as part of the review process for proposed development projects. Furthermore, the ASCMP promotes the management of wetlands through environmental review of land use activities. The ASCMP manages the Community Based Wetlands Management Program, a grassroots resource management approach whereby villages can participate in managing their local wetlands (*American Samoa DOC 2015*).

The following government agencies are also involved in local wetland management and regulation in American Samoa: National Parks Service; Consolidated Farm Service Agency; Natural Resource Conservation Service; NOAA; USFWS; USEPA; State DMWR; Department of Parks and Recreation; DPW; Economic Development Planning Office; village leaders and councils; and the Zoning Board (*USGS 1996*).

3.10.2 Wetlands Coordination for the Proposed Project

Taumata Stream would be considered WoUS and is within the footprint of the Tentatively Selected Plan (TSP), but indirect water quality impacts to downstream jurisdictional mangrove wetlands in the Pala Lagoon are possible. Pala Lagoon is not within the direct project footprint, but within the larger potential impact area due to indirect effects from proposed project activities.

On December 6, 2021, a conditional letter of concurrence for Federal Consistency from the American Samoa Department of Commerce was received. Also see Draft Consistency Determination included as Attachment 2.

3.11 National Historic Preservation Act of 1966

The goal of the NHPA (54 USC 306101) is to empower federal agencies to act as responsible stewards of cultural resources when agency actions affect historic properties. The NHPA established the Advisory Council on Historic Preservation, an independent federal agency that promotes the preservation, enhancement, and productive use of our nation's historic resources, and advises the President and Congress on national historic preservation policy. The NHPA also authorizes the Secretary of the Interior to expand and maintain a National Register of Historic Places composed of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture.

Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. In carrying out their responsibilities under Section 106, the NHPA requires that federal agencies consult with federally recognized Indian tribes and Native Hawaiian Organizations that attach traditional religious and cultural significance to eligible or listed historic properties that could potentially be affected by the agency's actions. The intent of the consultation is to identify historic properties potentially affected by the undertaking and to seek ways to avoid, minimize, or mitigate any adverse effects on those properties.

The NHPA details a four-step process for Section 106 consultation that requires each federal agency to: 1) initiate a review process to evaluate any proposed action, 2) identify historic properties that could be affected by the proposed federal, or federally licensed, permitted or funded, action, 3) assess whether the action has the potential to affect properties that are listed in or are eligible for listing in the National Register of Historic Places, and 4) resolve the adverse effects.

3.11.1 NHPA Coordination for the Proposed Project

A records and literature search to develop a baseline understanding of known historic properties and traditional cultural properties within the area of potential effect to assess the general effects is ongoing. Research to date on previous archaeological work conducted in and near the area where the Tentatively Selected Plan would be implemented has identified an important archaeological site of concern, a traditional village site (Shapiro and Cleghorn 1994). The proposed Project would most likely produce an adverse effect to this archaeological site, but uncertainties in the project final design make the extent and nature of this impact difficult to determine.

Because it is unlikely that the USACE study team will be able to complete the identification and finding of effect in accordance with Section 106 of the NHPA during the feasibility study, a Programmatic Agreement will need to be negotiated and executed with the American Samoa Historic Preservation Office for the USACE to fulfill the requirements of the NHPA Section 106 requirements for the proposed project.

The PA would articulate a process for addressing the adverse effects to this important archaeological site, possibly including (1) additional verification survey and mapping (the original work was done in the 1990s before Global Positioning System technology was

available), (2) Data Recovery, and eventually (3) archaeological monitoring. There is also a concern for the potential for sites elsewhere along this section of Taumata Stream. The original work by Shapiro and Cleghorn was primarily in support of Sewer line work and did not survey the entire stream area. So possibly additional survey work is needed. The Programmatic Agreement approach is generally preferred for these types of situations.

The ASHPO considers the area where the Tentatively Selected Plan would be implemented along Taumata Stream as “high risk" to archaeological sites and has agreed to move forward with a PA for the TSP.

A draft version of the PA (reviewed by the ASHPO) is included as Attachment 3 of this Environmental Appendix. Coordination with the ASHPO is ongoing and a final PA will be included in the final feasibility report.

4 Clean Water Act and Coastal Zone Management Act Documentation

In American Samoa, federal consistency determinations for CWA, CZMA, etc. for any project to be implemented in the Territory are administered by the American Samoa Department of Commerce (ASDOC). The ASDOC effectively functioning as an umbrella agency for networked environmental resource protection in the Territory to ensure that environmental concerns, including water quality, wetlands protection, and coastal zone management, are given appropriate consideration in the land use decision-making process.

One of the ASCMP’s main functions (under the administration of the ASDOC) is to conduct the environmental review process for all land-use activities to be conducted in the Territory through the Project Notification and Review System (PNRS). As the chair of the PNRS Board, the ASDOC is the lead agency, which includes eight (8) different American Samoa government (ASG) agencies that share responsibility as members of the PNRS Board. These include the American Samoa Environmental Protection Agency (ASEPA), American Samoa Historic Preservation Office (ASSHPO), American Samoa Power Authority (ASPA), the Department of Health, Department of Marine and Wildlife Resources (DMWR), Department of Parks and Recreation, and Department of Public Works (ASDPW). The PNRS Board consists of agency directors, or their designees, and meets in a public setting twice monthly to review major land-use permit applications.

4.1 Clean Water Act

Both the USEPA and ASEPA has been fully engaged on the proposed project from the initial feasibility stage. The ASEPA, through its board membership on the PRNS, determines the need for any water quality permits that need to be obtained for any land use permit being brought before the PRNS Board. A letter of concurrence for Federal Consistency from the American Samoa Department of Commerce was received on December 6, 2021 (see Figure x). This letter states that the recommended plan will comply with approved ASCMP policies and will be conducted in a manner consistent with the program. Concurrence is conditioned on the terms of the project’s land use permit, which will be obtained if the project is approved to the preliminary design and construction phase.

At this time, the recommended plan does not anticipate discharges of dredged or fill material to Waters of the U.S.(WoUS); therefore, a water quality certification (WOC) pursuant to section

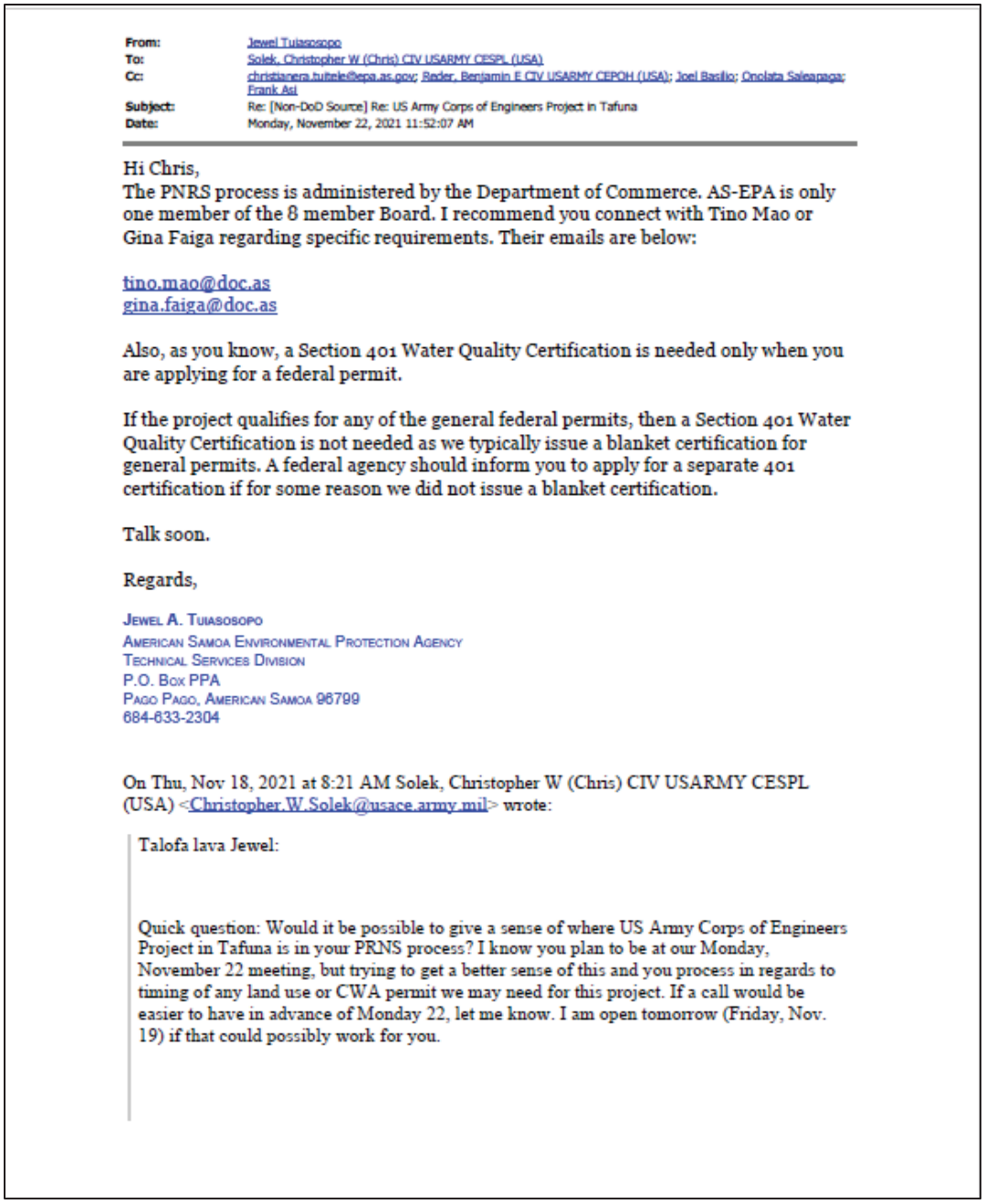
401 or 402 of the CWA would not be required. However, should design changes trigger a need for a WOC as a condition of the project's land use permit when issued, all terms and conditions of the WQC, once issued, would be implemented.

The Proposed Action of implementing the recommended plan encompasses both project construction and operations. With respect to the Section 401 permit, the Corps would be responsible for compliance during construction while the non-Federal sponsor, the ASDPW would need to comply separately with Section 401 for O&M. At this time, a 404(b)(1) analysis would need to demonstrate that both construction and O&M comply Section 404. So long as the non-federal sponsor conducts O&M operations within the scope of activities characterized in the environmental assessment, it would comply with Section 404.

4.1.1 Draft 404(b)(1) evaluation

A draft 404 (b)(1) analysis for the project is included as Attachment 1.

Figure 2. Email Coordination with the ASEPA on Water Quality Certification



From: Jewel Tuiasosopo
To: Solek, Christopher W (Chris) CIV USARMY CESPL (USA)
Cc: christianera.tutrele@epa.as.gov; Reder, Benjamin E CIV USARMY CEPOH (USA); Joel Basilio; Onolata Saleapaga; Frank Asi
Subject: Re: [Non-DoD Source] Re: US Army Corps of Engineers Project in Tafuna
Date: Monday, November 22, 2021 11:52:07 AM

Hi Chris,
The PNRS process is administered by the Department of Commerce. AS-EPA is only one member of the 8 member Board. I recommend you connect with Tino Mao or Gina Faiga regarding specific requirements. Their emails are below:

tino.mao@doc.as
gina.faiga@doc.as

Also, as you know, a Section 401 Water Quality Certification is needed only when you are applying for a federal permit.

If the project qualifies for any of the general federal permits, then a Section 401 Water Quality Certification is not needed as we typically issue a blanket certification for general permits. A federal agency should inform you to apply for a separate 401 certification if for some reason we did not issue a blanket certification.

Talk soon.

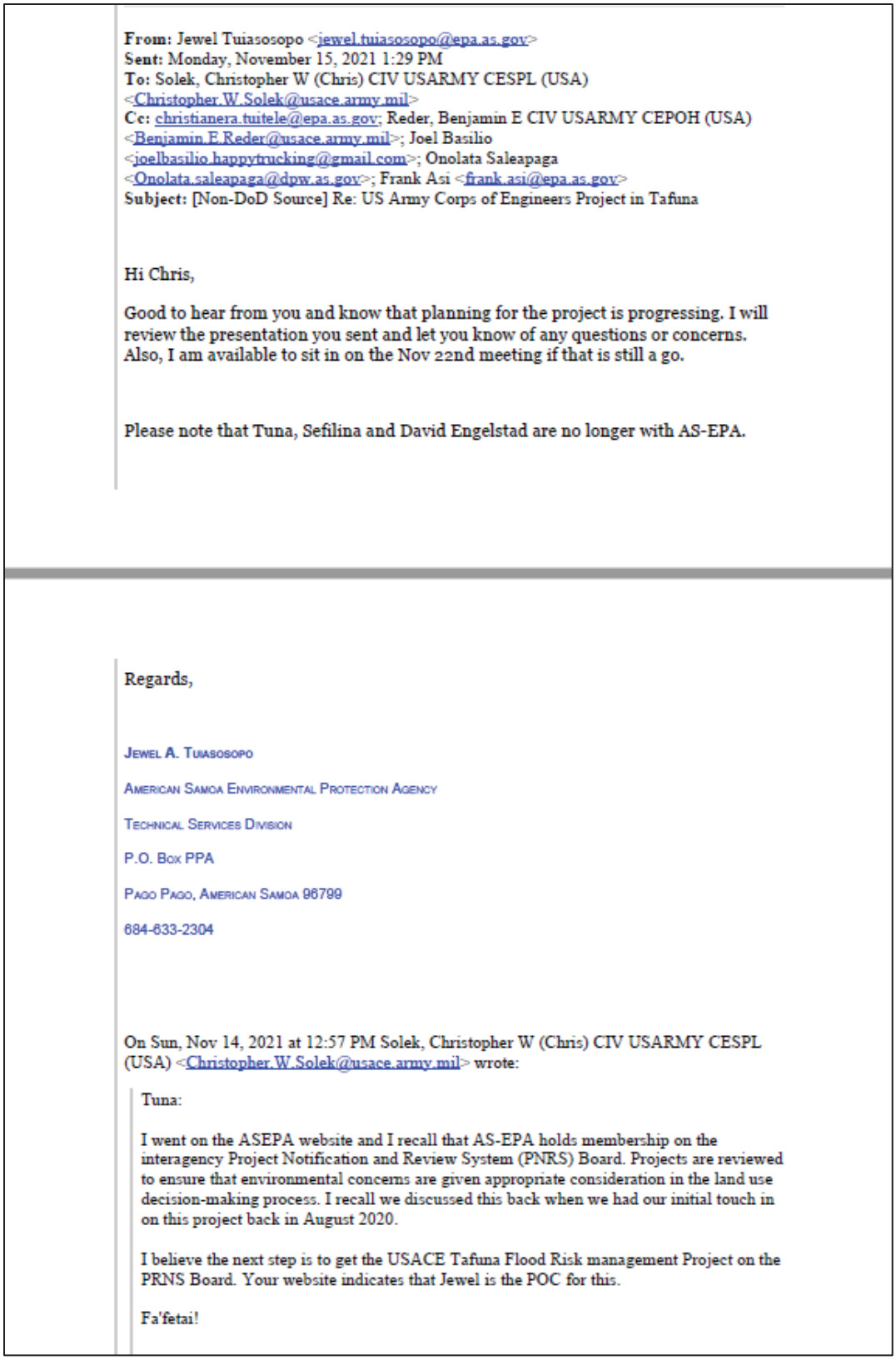
Regards,

JEWEL A. TUIASOSOPO
AMERICAN SAMOA ENVIRONMENTAL PROTECTION AGENCY
TECHNICAL SERVICES DIVISION
P.O. BOX PPA
PAGO PAGO, AMERICAN SAMOA 96799
684-633-2304

On Thu, Nov 18, 2021 at 8:21 AM Solek, Christopher W (Chris) CIV USARMY CESPL (USA) <Christopher.W.Solek@usace.army.mil> wrote:

> Talofa lava Jewel:
>
> Quick question: Would it be possible to give a sense of where US Army Corps of Engineers Project in Tafuna is in your PRNS process? I know you plan to be at our Monday, November 22 meeting, but trying to get a better sense of this and you process in regards to timing of any land use or CWA permit we may need for this project. If a call would be easier to have in advance of Monday 22, let me know. I am open tomorrow (Friday, Nov. 19) if that could possibly work for you.

Figure 2 (con't). Email Coordination with the ASEPA on Water Quality Certification



From: Jewel Tuiasosopo <jewel.tuiasosopo@epa.as.gov>
Sent: Monday, November 15, 2021 1:29 PM
To: Solek, Christopher W (Chris) CIV USARMY CESPL (USA) <Christopher.W.Solek@usace.army.mil>
Cc: christianera.tuitele@epa.as.gov; Reder, Benjamin E CIV USARMY CEPOH (USA) <Benjamin.E.Reder@usace.army.mil>; Joel Basilio <joelbasilio.happytrucking@gmail.com>; Onolata Saleapaga <Onolata.saleapaga@dpw.as.gov>; Frank Asi <frank.asi@epa.as.gov>
Subject: [Non-DoD Source] Re: US Army Corps of Engineers Project in Tafuna

Hi Chris,

Good to hear from you and know that planning for the project is progressing. I will review the presentation you sent and let you know of any questions or concerns. Also, I am available to sit in on the Nov 22nd meeting if that is still a go.

Please note that Tuna, Sefilina and David Engelstad are no longer with AS-EPA.

Regards,

JEWEL A. TUIASOSOPO

AMERICAN SAMOA ENVIRONMENTAL PROTECTION AGENCY

TECHNICAL SERVICES DIVISION

P.O. BOX PPA

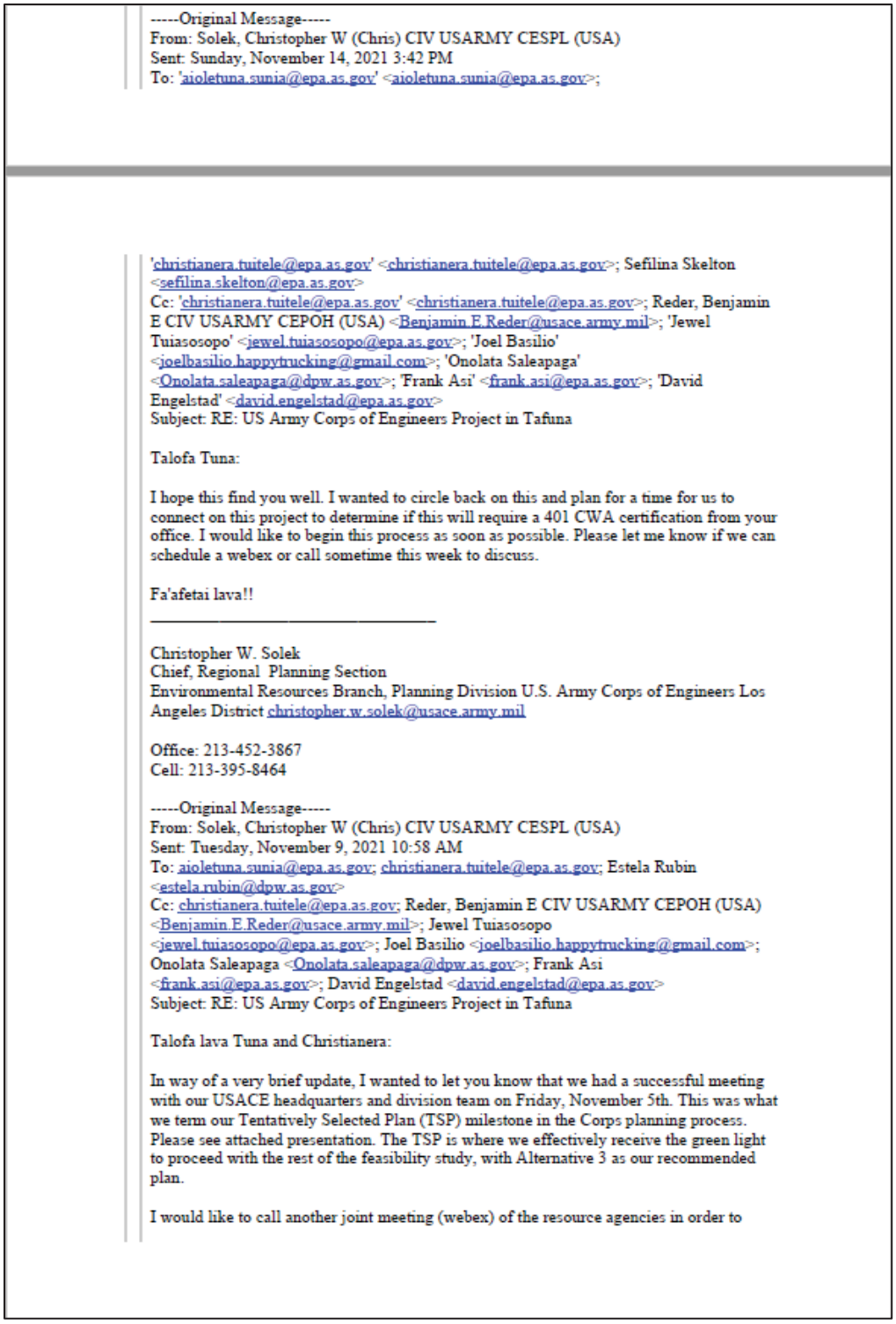
PAGO PAGO, AMERICAN SAMOA 96799

684-633-2304

On Sun, Nov 14, 2021 at 12:57 PM Solek, Christopher W (Chris) CIV USARMY CESPL (USA) <Christopher.W.Solek@usace.army.mil> wrote:

> Tuna:
>
> I went on the ASEPA website and I recall that AS-EPA holds membership on the interagency Project Notification and Review System (PNRS) Board. Projects are reviewed to ensure that environmental concerns are given appropriate consideration in the land use decision-making process. I recall we discussed this back when we had our initial touch in on this project back in August 2020.
>
> I believe the next step is to get the USACE Tafuna Flood Risk management Project on the PRNS Board. Your website indicates that Jewel is the POC for this.
>
> Fa'fetai!

Figure 2 (con't). Email Coordination with the ASEPA on Water Quality Certification



-----Original Message-----
From: Solek, Christopher W (Chris) CIV USARMY CESPL (USA)
Sent: Sunday, November 14, 2021 3:42 PM
To: 'aioletuna.sunia@epa.as.gov' <aioletuna.sunia@epa.as.gov>;

'christianera.tuitele@epa.as.gov' <christianera.tuitele@epa.as.gov>; Sefilina Skelton <sefilina.skelton@epa.as.gov>
Cc: 'christianera.tuitele@epa.as.gov' <christianera.tuitele@epa.as.gov>; Reder, Benjamin E CIV USARMY CEPOH (USA) <Benjamin.E.Reder@usace.army.mil>; 'Jewel Tuiasosopo' <jewel.tuiasosopo@epa.as.gov>; 'Joel Basilio' <joelbasilio.happytrucking@gmail.com>; 'Onolata Saleapaga' <Onolata.saleapaga@dpw.as.gov>; 'Frank Asi' <frank.asi@epa.as.gov>; 'David Engelstad' <david.engelstad@epa.as.gov>
Subject: RE: US Army Corps of Engineers Project in Tafuna

Talofa Tuna:

I hope this find you well. I wanted to circle back on this and plan for a time for us to connect on this project to determine if this will require a 401 CWA certification from your office. I would like to begin this process as soon as possible. Please let me know if we can schedule a webex or call sometime this week to discuss.

Fa'afetai lava!!

Christopher W. Solek
Chief, Regional Planning Section
Environmental Resources Branch, Planning Division U.S. Army Corps of Engineers Los Angeles District christopher.w.solek@usace.army.mil

Office: 213-452-3867
Cell: 213-395-8464

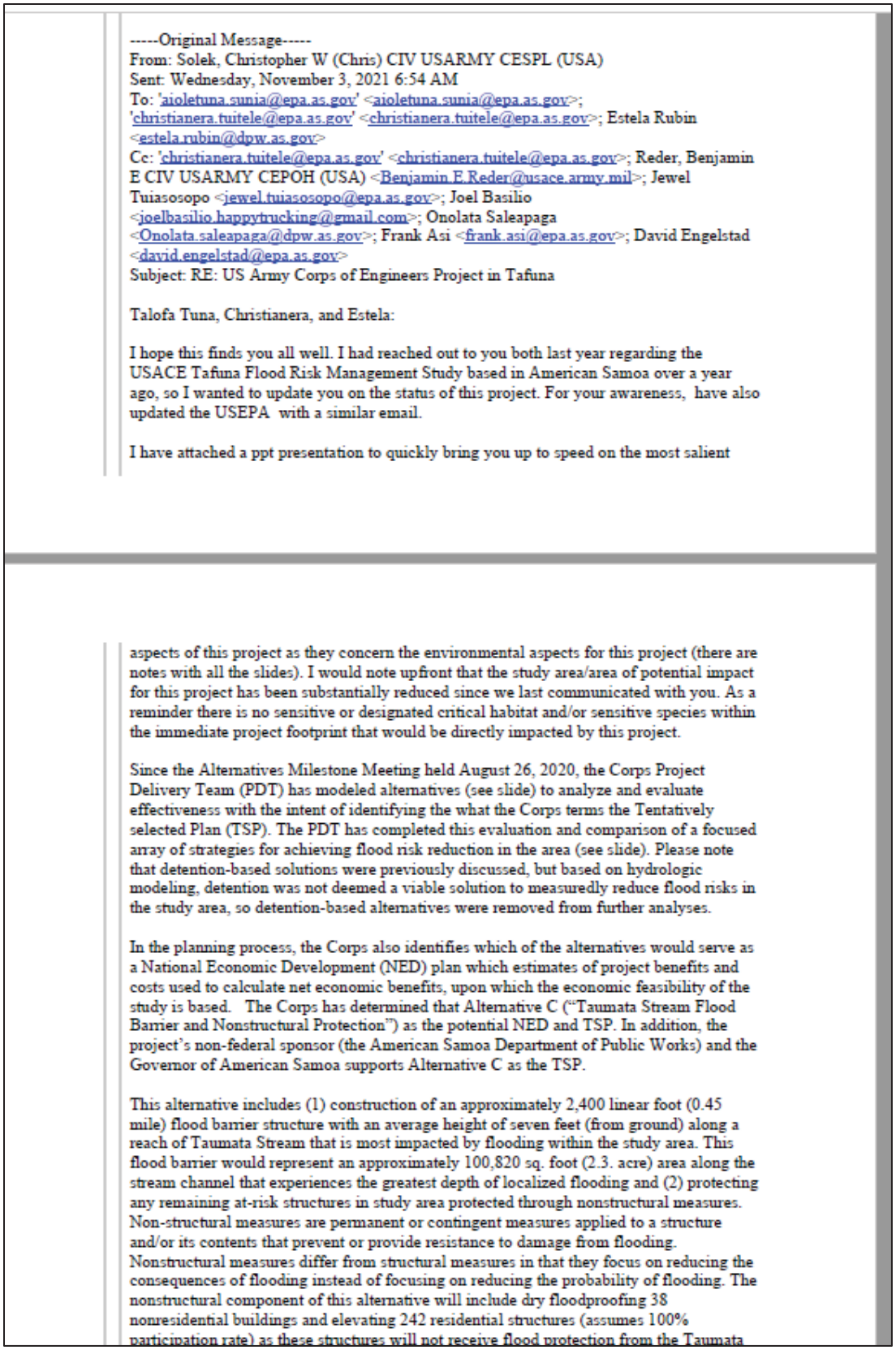
-----Original Message-----
From: Solek, Christopher W (Chris) CIV USARMY CESPL (USA)
Sent: Tuesday, November 9, 2021 10:58 AM
To: aioletuna.sunia@epa.as.gov; christianera.tuitele@epa.as.gov; Estela Rubin <estela.rubin@dpw.as.gov>
Cc: christianera.tuitele@epa.as.gov; Reder, Benjamin E CIV USARMY CEPOH (USA) <Benjamin.E.Reder@usace.army.mil>; Jewel Tuiasosopo <jewel.tuiasosopo@epa.as.gov>; Joel Basilio <joelbasilio.happytrucking@gmail.com>; Onolata Saleapaga <Onolata.saleapaga@dpw.as.gov>; Frank Asi <frank.asi@epa.as.gov>; David Engelstad <david.engelstad@epa.as.gov>
Subject: RE: US Army Corps of Engineers Project in Tafuna

Talofa lava Tuna and Christianera:

In way of a very brief update, I wanted to let you know that we had a successful meeting with our USACE headquarters and division team on Friday, November 5th. This was what we term our Tentatively Selected Plan (TSP) milestone in the Corps planning process. Please see attached presentation. The TSP is where we effectively receive the green light to proceed with the rest of the feasibility study, with Alternative 3 as our recommended plan.

I would like to call another joint meeting (webex) of the resource agencies in order to

Figure 2 (con't). Email Coordination with the ASEPA on Water Quality Certification



-----Original Message-----
From: Solek, Christopher W (Chris) CIV USARMY CESPL (USA)
Sent: Wednesday, November 3, 2021 6:54 AM
To: 'aioletuna.sunia@epa.as.gov' <aioletuna.sunia@epa.as.gov>; 'christianera.tuitele@epa.as.gov' <christianera.tuitele@epa.as.gov>; Estela Rubin <estela.rubin@dpw.as.gov>
Cc: 'christianera.tuitele@epa.as.gov' <christianera.tuitele@epa.as.gov>; Reder, Benjamin E CIV USARMY CEPOH (USA) <Benjamin.E.Reder@usace.army.mil>; Jewel Tuiasosopo <jewel.tuiasosopo@epa.as.gov>; Joel Basilio <joelbasilio.happytrucking@gmail.com>; Onolata Saleapaga <Onolata.saleapaga@dpw.as.gov>; Frank Asi <frank.asi@epa.as.gov>; David Engelstad <david.engelstad@epa.as.gov>
Subject: RE: US Army Corps of Engineers Project in Tafuna

Talofa Tuna, Christianera, and Estela:

I hope this finds you all well. I had reached out to you both last year regarding the USACE Tafuna Flood Risk Management Study based in American Samoa over a year ago, so I wanted to update you on the status of this project. For your awareness, have also updated the USEPA with a similar email.

I have attached a ppt presentation to quickly bring you up to speed on the most salient aspects of this project as they concern the environmental aspects for this project (there are notes with all the slides). I would note upfront that the study area/area of potential impact for this project has been substantially reduced since we last communicated with you. As a reminder there is no sensitive or designated critical habitat and/or sensitive species within the immediate project footprint that would be directly impacted by this project.

Since the Alternatives Milestone Meeting held August 26, 2020, the Corps Project Delivery Team (PDT) has modeled alternatives (see slide) to analyze and evaluate effectiveness with the intent of identifying the what the Corps terms the Tentatively selected Plan (TSP). The PDT has completed this evaluation and comparison of a focused array of strategies for achieving flood risk reduction in the area (see slide). Please note that detention-based solutions were previously discussed, but based on hydrologic modeling, detention was not deemed a viable solution to measuredly reduce flood risks in the study area, so detention-based alternatives were removed from further analyses.

In the planning process, the Corps also identifies which of the alternatives would serve as a National Economic Development (NED) plan which estimates of project benefits and costs used to calculate net economic benefits, upon which the economic feasibility of the study is based. The Corps has determined that Alternative C ("Taumata Stream Flood Barrier and Nonstructural Protection") as the potential NED and TSP. In addition, the project's non-federal sponsor (the American Samoa Department of Public Works) and the Governor of American Samoa supports Alternative C as the TSP.

This alternative includes (1) construction of an approximately 2,400 linear foot (0.45 mile) flood barrier structure with an average height of seven feet (from ground) along a reach of Taumata Stream that is most impacted by flooding within the study area. This flood barrier would represent an approximately 100,820 sq. foot (2.3. acre) area along the stream channel that experiences the greatest depth of localized flooding and (2) protecting any remaining at-risk structures in study area protected through nonstructural measures. Non-structural measures are permanent or contingent measures applied to a structure and/or its contents that prevent or provide resistance to damage from flooding. Nonstructural measures differ from structural measures in that they focus on reducing the consequences of flooding instead of focusing on reducing the probability of flooding. The nonstructural component of this alternative will include dry floodproofing 38 nonresidential buildings and elevating 242 residential structures (assumes 100% participation rate) as these structures will not receive flood protection from the Taumata

Figure 2 (con't). Email Coordination with the ASEPA on Water Quality Certification

the process of preparing an Environmental Assessment (EA) for this study which will be integrated into the project feasibility report. Per NEPA, your agency will be provided the opportunity to comment on the draft EA once it is produced.

Thank you in advance and let me know if you have any questions at this time. I will be in touch soon.

Fa'afetai lava!

Christopher W. Solek
Chief, Regional Planning Section
Environmental Resources Branch, Planning Division U.S. Army Corps of Engineers Los Angeles District christopher.w.solek@usace.army.mil

Office: 213-452-3867
Cell: 213-395-8464

-----Original Message-----
From: Solek, Christopher W CIV USARMY CESPL (USA)
Sent: Wednesday, April 8, 2020 11:57 AM
To: aioletuna.sunia@epa.as.gov; christianera.tuitele@epa.as.gov
Cc: christianera.tuitele@epa.as.gov
Subject: RE: US Army Corps of Engineers Project in Tafuna

Christianera and Aioletuna:

I hope this finds you both well. I wanted to circle back on my earlier request. I wanted to make your office aware of the US Army Corps of Engineers Tafuna Flood Risk Management and potential impacts on streams and waterways in the Tafuna Plain. I can provide you much more information on this effort, but for now, I wanted to reach out and make you aware of this project so we can coordinate with you as appropriate.

Look forward to hearing back from you.

Fa'afetai lava!

Christopher W. Solek, Ph.D.
Chief, Regional Planning Section
Planning Division, Environmental Resources Branch Los Angeles District, U.S. Army Corps of Engineers christopher.w.solek@usace.army.mil

Office: 213-452-3867
Government Mobile: 213-395-8464

-----Original Message-----
From: Solek, Christopher W CIV USARMY CESPL (USA)
Sent: Thursday, April 2, 2020 10:23 PM

Figure 2 (con't). Email Coordination with the ASEPA on Water Quality Certification

To: aioletuna.sunia@epa.as.gov
Cc: christianera.tuitele@epa.as.gov
Subject: US Army Corps of Engineers Project in Tafuna

Talofa lava:

I am part of a US Army Corp of Engineers project team in the very early stages of conducting a flood risk management study on Tutuila in American Samoa. USACE has previously completed work within the watershed consisting of both Planning Assistance to States authorities in 1994 as well as a Floodplain Management Services study in 2015. It is anticipated that these studies will serve as the basis for the development of recommendations and identification of Federal interest for this current study.

We are working in the area of Tafuna. Our local partner agency is the AS Dept. of Public Works, working with Faleosina Voigt (Director) and her staff. One of the local flooding "hot spots" is located along Fagaima Road near Cocoland. This could be an area of focus for this project, but this is still not determined.

I wanted to make your office aware of this study due to potential impacts on streams and waterways. I can provide you much more information on this effort, but for now, I wanted to reach out and make you aware of this project so we can coordinate with you as appropriate.

If it would be easier to arrange a phone call at any point, please let me know.

Faamolemole ta'u mai ia te au pe iai sau fesili. Fa'afetai tele lava!

Christopher W. Solek, Ph.D.
Chief, Regional Planning Section
Planning Division, Environmental Resources Branch Los Angeles District, U.S. Army Corps of Engineers christopher.w.solek@usace.army.mil

Office: 213-452-3867
Government Mobile: 213-395-8464

4.2 Coastal Zone Management Act (CZMA)

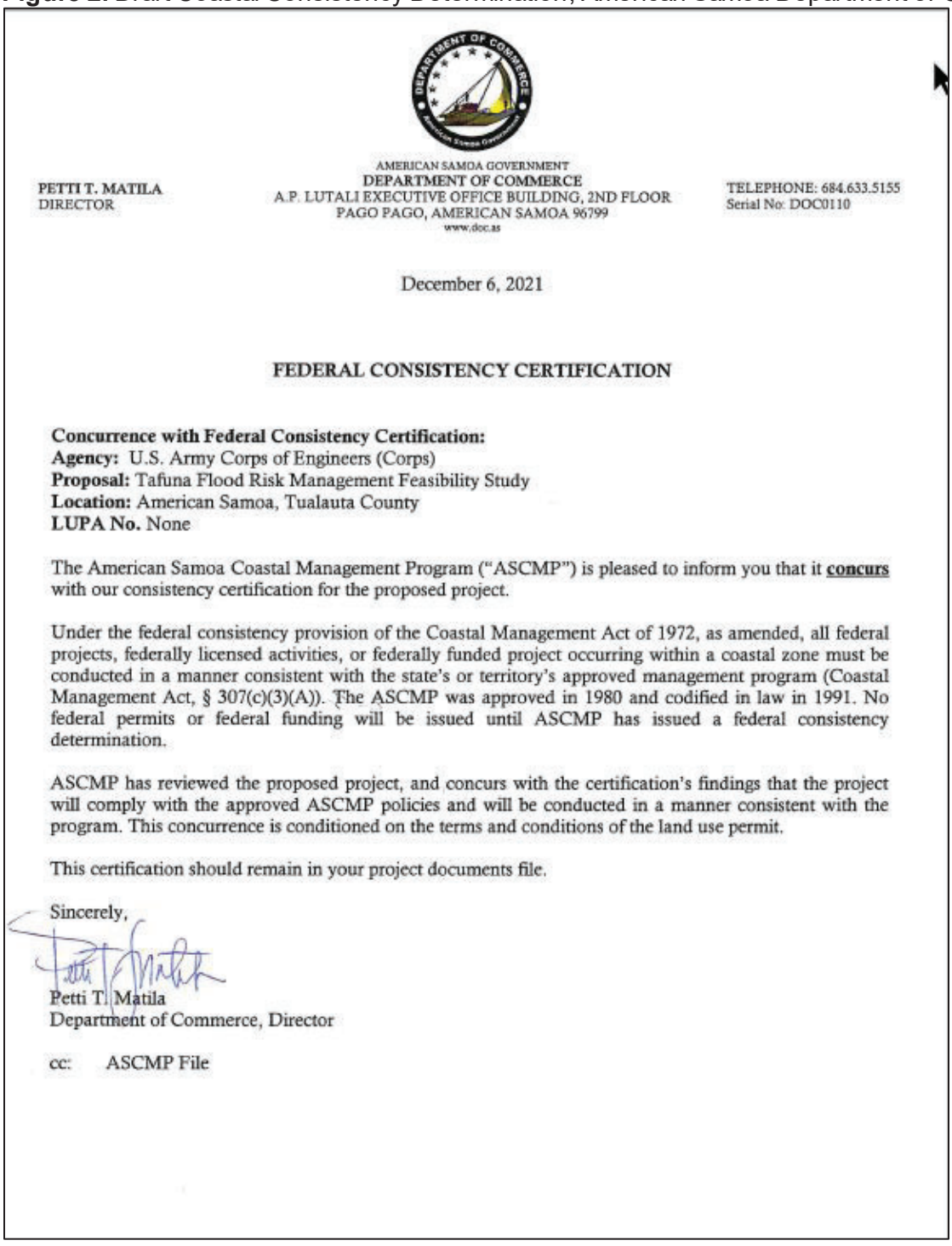
A draft federal consistency determination is attached. The American Samoa Coastal Management Program (ASCMP) is the federally approved coastal management program for the Territory. The CZMA is implemented through the ASCMP and provides the primary authority for program that has been developed under a unique approach that incorporates both western and traditional systems of management.

To date, provisional concurrence on federal consistency from the ASDOC has been received contingent upon the conditions of project's land use permit (see CWA section; Figure 2).).

4.2.1 Draft Coastal Zone Management Act Consistency Determination

See Attachment 2 for a draft Consistency Determination. Figure 3 contains email communications and coordination on coastal consistency to date.

Figure 2. Draft Coastal Consistency Determination, American Samoa Department of Commerce



AMERICAN SAMOA GOVERNMENT
DEPARTMENT OF COMMERCE
A.P. LUTALI EXECUTIVE OFFICE BUILDING, 2ND FLOOR
PAGO PAGO, AMERICAN SAMOA 96799
www.doc.as

PETTI T. MATILA
DIRECTOR

TELEPHONE: 684.633.5155
Serial No: DOC0110

December 6, 2021

FEDERAL CONSISTENCY CERTIFICATION

Concurrence with Federal Consistency Certification:
Agency: U.S. Army Corps of Engineers (Corps)
Proposal: Tafuna Flood Risk Management Feasibility Study
Location: American Samoa, Tualauta County
LUPA No. None

The American Samoa Coastal Management Program ("ASCMP") is pleased to inform you that it **concurs** with our consistency certification for the proposed project.

Under the federal consistency provision of the Coastal Management Act of 1972, as amended, all federal projects, federally licensed activities, or federally funded project occurring within a coastal zone must be conducted in a manner consistent with the state's or territory's approved management program (Coastal Management Act, § 307(c)(3)(A)). The ASCMP was approved in 1980 and codified in law in 1991. No federal permits or federal funding will be issued until ASCMP has issued a federal consistency determination.

ASCMP has reviewed the proposed project, and concurs with the certification's findings that the project will comply with the approved ASCMP policies and will be conducted in a manner consistent with the program. This concurrence is conditioned on the terms and conditions of the land use permit.

This certification should remain in your project documents file.

Sincerely,

Petti T. Matila
Department of Commerce, Director

cc: ASCMP File

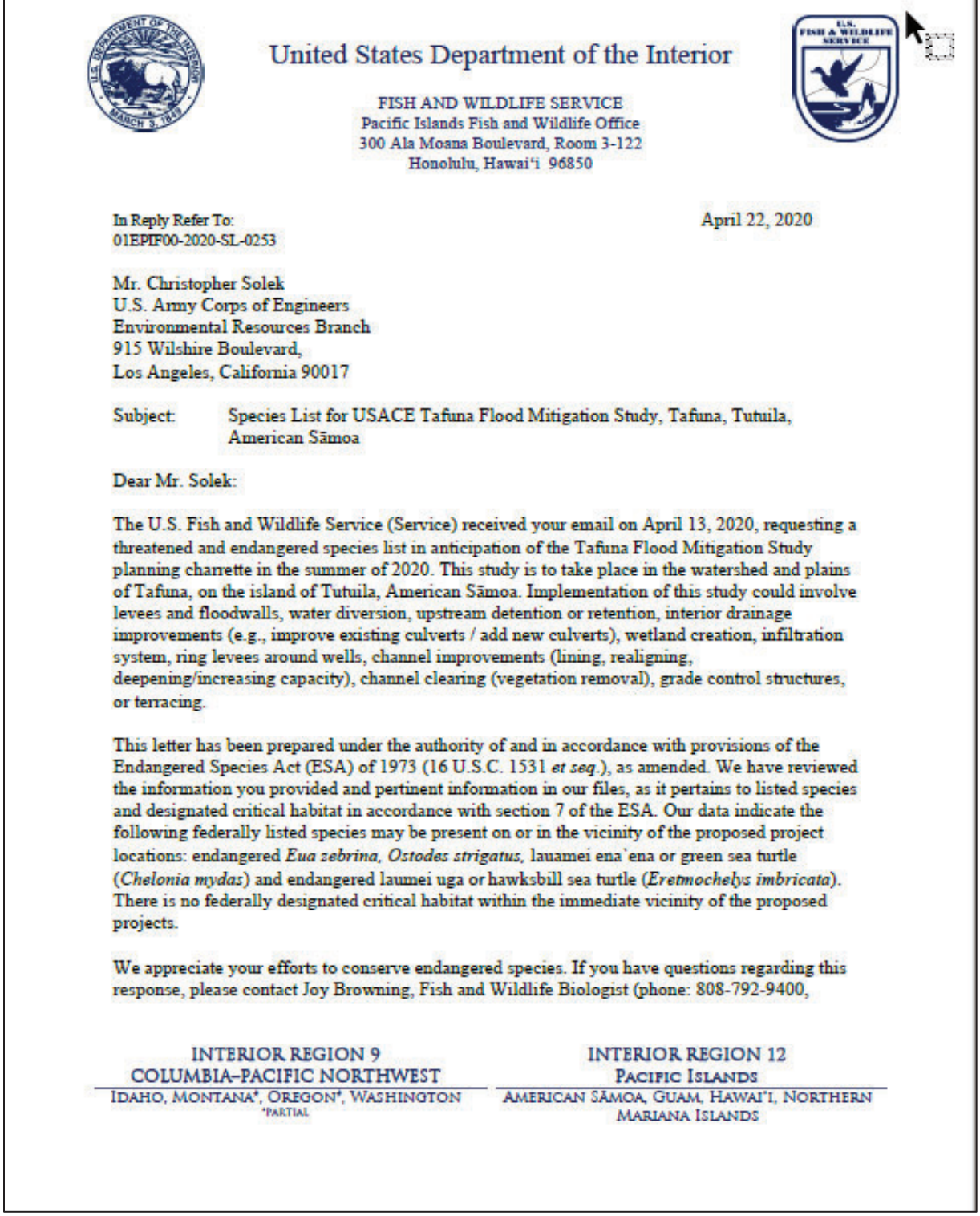
5 Endangered Species Act Documentation

The USFWS Pacific Islands Fish and Wildlife Office (USFWS) and the National Marine Fisheries Service-Pacific Islands Regional Office (NMFS) are the federal regulatory agencies that oversee compliance with the ESA in American Samoa. The NMFS and USFWS have shared jurisdiction for recovery and conservation of sea turtles listed under the ESA. NMFS leads the conservation and recovery of sea turtles in the marine environment and USFWS leads the conservation and recovery of sea turtles on nesting beaches (*NOAA 2015*).

The USFWS was contacted by email on April 13, 2020 with a request for a list of threatened and endangered (T&E) species in the proposed project area in anticipation of the planning charrette planned for the summer of 2020. On April 22, 2020 a letter from the Pacific Islands Fish and Wildlife Office, prepared under the authority of and in accordance with provisions of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 *et seq*.), as amended was received with such list (reference number: 01EPIF00-2020-SL-0253; Figure 4).

The USACE continues to coordinate with the USFWS, NMFS, and the DMWR as part of the public review of the Draft NEPA document and will continue coordination throughout the feasibility phase.

Figure 4. ESA species list received from the USFWS Pacific Islands Fish and Wildlife Office



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

In Reply Refer To:
01EPIF00-2020-SL-0253

April 22, 2020

Mr. Christopher Solek
U.S. Army Corps of Engineers
Environmental Resources Branch
915 Wilshire Boulevard,
Los Angeles, California 90017

Subject: Species List for USACE Tafuna Flood Mitigation Study, Tafuna, Tutuila, American Sāmoa

Dear Mr. Solek:

The U.S. Fish and Wildlife Service (Service) received your email on April 13, 2020, requesting a threatened and endangered species list in anticipation of the Tafuna Flood Mitigation Study planning charrette in the summer of 2020. This study is to take place in the watershed and plains of Tafuna, on the island of Tutuila, American Sāmoa. Implementation of this study could involve levees and floodwalls, water diversion, upstream detention or retention, interior drainage improvements (e.g., improve existing culverts / add new culverts), wetland creation, infiltration system, ring levees around wells, channel improvements (lining, realigning, deepening/increasing capacity), channel clearing (vegetation removal), grade control structures, or terracing.

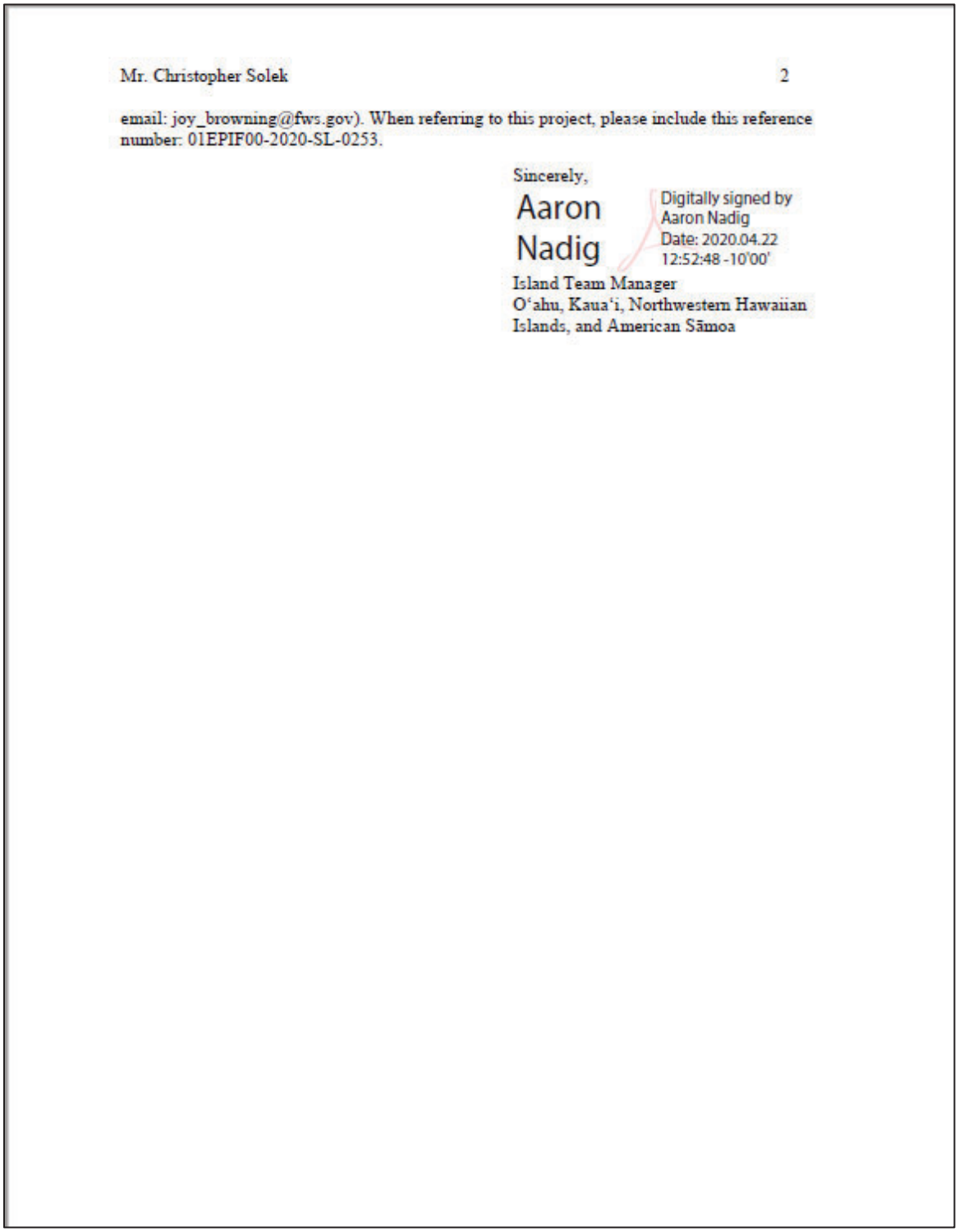
This letter has been prepared under the authority of and in accordance with provisions of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 *et seq.*), as amended. We have reviewed the information you provided and pertinent information in our files, as it pertains to listed species and designated critical habitat in accordance with section 7 of the ESA. Our data indicate the following federally listed species may be present on or in the vicinity of the proposed project locations: endangered *Eua zebrina, Ostodes strigatus,* lauamei ena`ena or green sea turtle (*Chelonia mydas*) and endangered laumei uga or hawksbill sea turtle (*Eretmochelys imbricata*). There is no federally designated critical habitat within the immediate vicinity of the proposed projects.

We appreciate your efforts to conserve endangered species. If you have questions regarding this response, please contact Joy Browning, Fish and Wildlife Biologist (phone: 808-792-9400,

INTERIOR REGION 9
COLUMBIA-PACIFIC NORTHWEST
IDAHO, MONTANA*, OREGON*, WASHINGTON
*PARTIAL

INTERIOR REGION 12
PACIFIC ISLANDS
AMERICAN SAMOA, GUAM, HAWAI'I, NORTHERN MARIANA ISLANDS

Figure 3 (con't). ESA species list received from the USFWS Pacific Islands Fish and Wildlife Office



Mr. Christopher Solek 2

email: joy_browning@fws.gov). When referring to this project, please include this reference number: 01EPIF00-2020-SL-0253.

Sincerely,

Aaron Nadig

Digitally signed by Aaron Nadig
Date: 2020.04.22 12:52:48 -10'00'

Island Team Manager
O'ahu, Kaua'i, Northwestern Hawaiian Islands, and American Sāmoa

5.1 U.S. Fish and Wildlife Concurrence

There are no concerns from the USFWS on impacts to ESA species or any federally designated critical habitat from the activities associated with the recommended plan from either USFWS or the DMWR. Although four Federally listed species (two species of sea turtles and two species of land snails) may be present on or within the vicinity of the proposed project action, analyses indicated effects would be less than significant (seen Chapter 4 of Main Report).

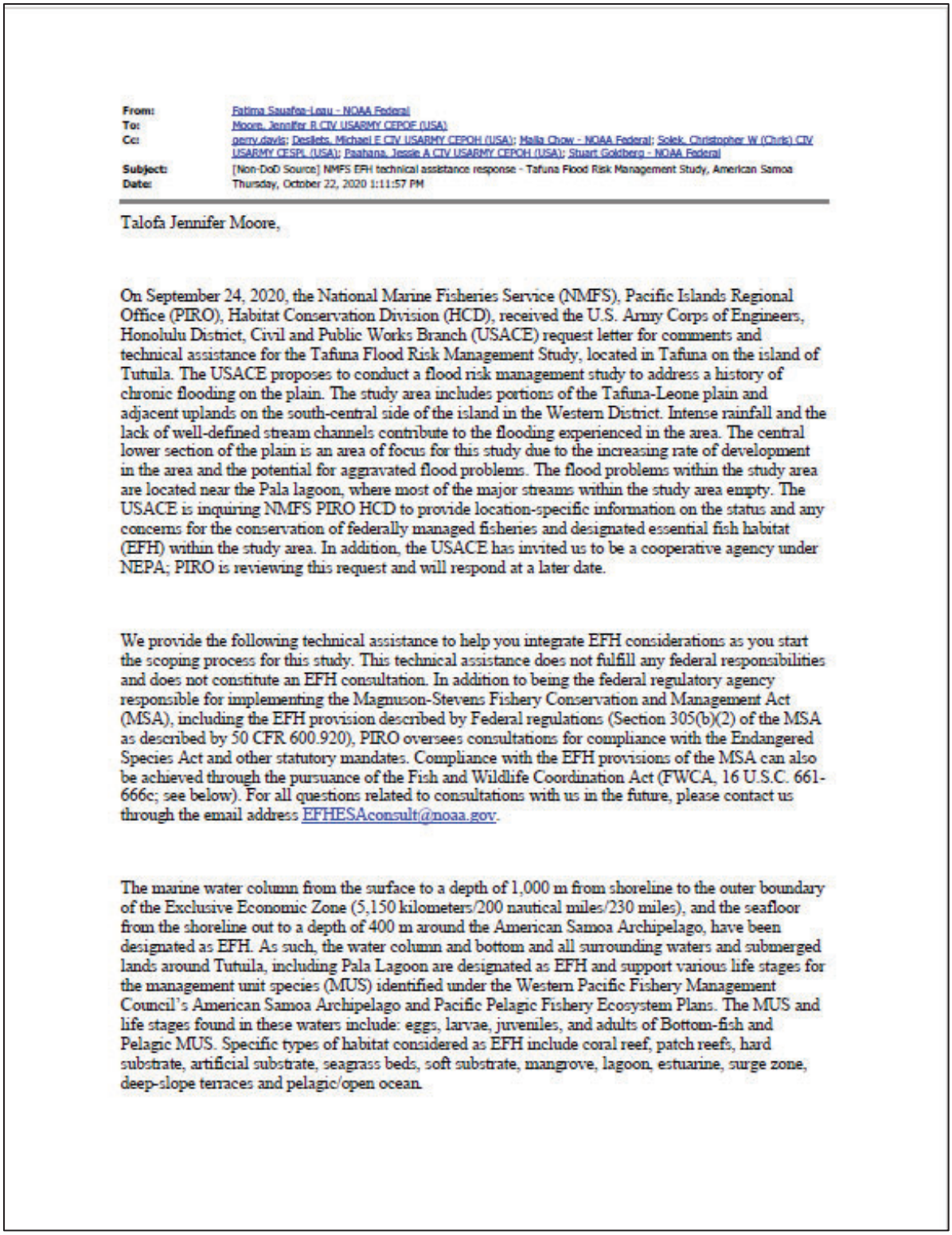
The USACE continues to coordinate with the USFWS and the DMWR as part of the public review of the Draft NEPA document and will continue coordination throughout the feasibility phase.

5.2 National Marine Fisheries Concurrence

The Pacific Island Regional Office of the NMFS (NMFS) is the federal regulatory agency responsible for implementing the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including the Essential Fish Habitat (EFH) provision (Section 305(b)(2) as described by 50 CFR 600.920). The water column and bottom and all surrounding waters and submerged lands around Tutuila, including Pala Lagoon are designated as EFH and support various life stages for the management unit species (MUS) identified under the Western Pacific Fishery Management Council's American Samoa Archipelago and Pacific Pelagic Fishery Ecosystem Plans. NMFS also oversees consultations for compliance with the ESA and other statutory mandates. Compliance with the EFH provisions of the MSA will be addressed via the Fish and Wildlife Coordination Act (FWCA, 16 U.S.C. 661-666c).

Per 16 USC 1855(b) and 50 CFR Subpart K, a proposed action that may adversely affect EFH will require some level of consultation with the NMFS. A effects determination is presented in the Draft Consistency Determination (see Attachment 2).

NMFS, in an email dated October 22, 2020, provided some initial technical assistance to help USACE integrate EFH considerations in the early scoping process for this study (Figure 5 and 6). This technical assistance does not fulfill any federal responsibilities and does not constitute an EFH consultation. In addition to being the federal regulatory agency responsible for implementing the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including the EFH provision described by Federal regulations (Section 305(b)(2) of the MSA as described by 50 CFR 600.920). Technical coordination with the NMFS office on EFH continues. The proposed project is expected to have a less than significant effect on EFH with mitigation (minimization measures); however, some level of EFH consultation maybe conducted during the remainder of the feasibility phase to address any comments received from the NMFS on the draft NEPA document.



From: Fatima Sauafea-Leau - NOAA Federal
To: Moore, Jennifer R CIV USARMY CEPOF (USA)
Cc: perry.davis; Desilets, Michael E CIV USARMY CEPOH (USA); Malia Chow - NOAA Federal; Solek, Christopher W (Chris) CIV USARMY CESPK (USA); Paahana, Jessie A CIV USARMY CEPOH (USA); Stuart Goldberg - NOAA Federal
Subject: [Non-DoD Source] NMFS EFH technical assistance response - Tafuna Flood Risk Management Study, American Samoa
Date: Thursday, October 22, 2020 1:11:57 PM

Talofa Jennifer Moore,

On September 24, 2020, the National Marine Fisheries Service (NMFS), Pacific Islands Regional Office (PIRO), Habitat Conservation Division (HCD), received the U.S. Army Corps of Engineers, Honolulu District, Civil and Public Works Branch (USACE) request letter for comments and technical assistance for the Tafuna Flood Risk Management Study, located in Tafuna on the island of Tutuila. The USACE proposes to conduct a flood risk management study to address a history of chronic flooding on the plain. The study area includes portions of the Tafuna-Leone plain and adjacent uplands on the south-central side of the island in the Western District. Intense rainfall and the lack of well-defined stream channels contribute to the flooding experienced in the area. The central lower section of the plain is an area of focus for this study due to the increasing rate of development in the area and the potential for aggravated flood problems. The flood problems within the study area are located near the Pala lagoon, where most of the major streams within the study area empty. The USACE is inquiring NMFS PIRO HCD to provide location-specific information on the status and any concerns for the conservation of federally managed fisheries and designated essential fish habitat (EFH) within the study area. In addition, the USACE has invited us to be a cooperative agency under NEPA; PIRO is reviewing this request and will respond at a later date.

We provide the following technical assistance to help you integrate EFH considerations as you start the scoping process for this study. This technical assistance does not fulfill any federal responsibilities and does not constitute an EFH consultation. In addition to being the federal regulatory agency responsible for implementing the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including the EFH provision described by Federal regulations (Section 305(b)(2) of the MSA as described by 50 CFR 600.920), PIRO oversees consultations for compliance with the Endangered Species Act and other statutory mandates. Compliance with the EFH provisions of the MSA can also be achieved through the pursuance of the Fish and Wildlife Coordination Act (FWCA, 16 U.S.C. 661-666c; see below). For all questions related to consultations with us in the future, please contact us through the email address EFHESAconsult@noaa.gov.

The marine water column from the surface to a depth of 1,000 m from shoreline to the outer boundary of the Exclusive Economic Zone (5,150 kilometers/200 nautical miles/230 miles), and the seafloor from the shoreline out to a depth of 400 m around the American Samoa Archipelago, have been designated as EFH. As such, the water column and bottom and all surrounding waters and submerged lands around Tutuila, including Pala Lagoon are designated as EFH and support various life stages for the management unit species (MUS) identified under the Western Pacific Fishery Management Council's American Samoa Archipelago and Pacific Pelagic Fishery Ecosystem Plans. The MUS and life stages found in these waters include: eggs, larvae, juveniles, and adults of Bottom-fish and Pelagic MUS. Specific types of habitat considered as EFH include coral reef, patch reefs, hard substrate, artificial substrate, seagrass beds, soft substrate, mangrove, lagoon, estuarine, surge zone, deep-slope terraces and pelagic/open ocean.

Figure 5 (con't). Initial email communication with the NMFS on EFH consultation

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act mandates that wildlife, including fish, receive equal consideration and be coordinated with other aspects of water resource development. This is accomplished through consultation with NMFS, the U.S. Fish and Wildlife Service (USFWS), and appropriate state agencies whenever any body of water is proposed to be modified in any way, and a Federal permit or license is required. These agencies determine the possible harm to fish and wildlife resources, the measures needed to both prevent the damage to and loss of these resources, and the measures needed to develop and improve the resources, in connection with water resource development. NMFS, the USFWS, and state agencies submit comments to Federal licensing and permitting agencies on the potential harm to living marine resources caused by the proposed water development project., and recommendations to prevent harm in all, the FWCA compliance process includes the following four steps: consultation (notice of initiation); reporting (e.g. field surveys and summary reports) and recommendations to protect, mitigate, and restore natural resources; Action agency consideration of recommendations; and Action agency implementation of recommendations.

General Guidance

Flood management strategies involving hard engineering techniques typically are more disruptive to ecological processes, often increase the rate of water flow and sediments into marine system and are more likely to require the mitigation of adverse effects to EFH. Soft engineering strategies such as afforestation, wetland restoration, installation of detention basins, stream restoration or floodplain zoning are typically less likely to result in adverse effects and often have beneficial effects on estuarine and watershed systems.

Habitat Resource Assessments and Modelling

Quantitative marine assessments and sediment plume modeling activities are recommended for any projects that emerge from the study where the overall rate or volume of water entering the marine environment is expected to increase spatially or temporarily. In addition to detailed surveys of hard-bottom habitat, corals, seagrass, and mangroves within the Pala lagoon, we recommend that the USACE develop predictive modelling analyses for water transport, sedimentation and discharge rates, and changes in coastal oceanographic processes in order for NMFS to adequately assess the resource condition baseline associated with any specific project activities. Climate change and sea level rise also should be included in modelling analyses where applicable.

NMFS recommends that the USACE conduct modelling to predict how proposed projects will influence sediment transport, water motion, and other coastal processes before finalizing priorities from the study. Sediment transport and water current modelling would improve the accuracy of where potential survey transects are laid. Specifically, if there is high probability that sediment deposition will occur over sensitive and hard-to-replace hard-bottom habitat, corals, seagrass, and mangroves, these should be priority survey areas. Completing these modelling efforts prior to finalizing the study would help reduce uncertainty and better inform potential EFH offset determinations.

NMFS also recommends that hard-bottom EFH, coral, seagrass, and mangrove communities are sufficiently sampled during quantitative benthic marine surveys. Prioritize surveys at areas, where models predict deposition, and principle benthic organisms are present to reduce uncertainty and

Figure 5 (con't). Initial email communication with the NMFS on EFH consultation

inform potential EFH minimization strategies and offset determinations. NMFS is happy to continue coordinating during this process.

Water Quality Monitoring

Robust water quality monitoring (e.g., turbidity, sedimentation rates, nutrients, dissolved oxygen, etc.) may be needed to assess conditions before (i.e. baseline), during, and after certain project activities. These activities should be informed by the sediment modelling and daily tide and current velocity predictions. Special attention may be needed to collect turbidity and sedimentation rate information at areas where there are habitat forming EFH resources, including corals, seagrass, and mangroves. For other criteria needed for projects that emerge from this study, NMFS would defer to the American Samoa 401 Water Quality Certification (WQC) authority, and suggests to utilize the American Samoa Erosion and Sediment Control Field Guide to help meet water quality standards and pollution control requirements (Blockedhttps://www.epa.as.gov/sites/default/files/documents/surface/191011_ESC_fieldguide_19090-WEB.pdf). Completing the water quality monitoring planning effort and including it as part of project prioritization would help reduce uncertainty and better inform EFH conservation recommendations and any potential offset determinations.

Climate Change and Sea Level Rise

Predicted changes in precipitation patterns, ocean conditions and other factor associated with climate change should be integrated into each phase of the study and prioritization process. A description of how these are integrated into engineering and design plans is recommended.

Cumulative Effects

NMFS recommends that the USACE develops a cumulative effects analysis for potential adverse effects to EFH over time from any projects resulting from these scoping exercises, specifically those that include long-term repair, maintenance, and monitoring activities.

NMFS appreciates the opportunity to provide technical assistance during the scoping phase of this study. We are committed to providing continued cooperation and subject matter technical expertise that result in beneficial outcomes for NOAA trust resources and sufficiently comply with relevant mandates, while achieving the project goals effectively and expeditiously. Please contact Fatima Sauafea-Le'au at fatima.sauafea-leau@noaa.gov if you should have any questions or request further technical assistance.

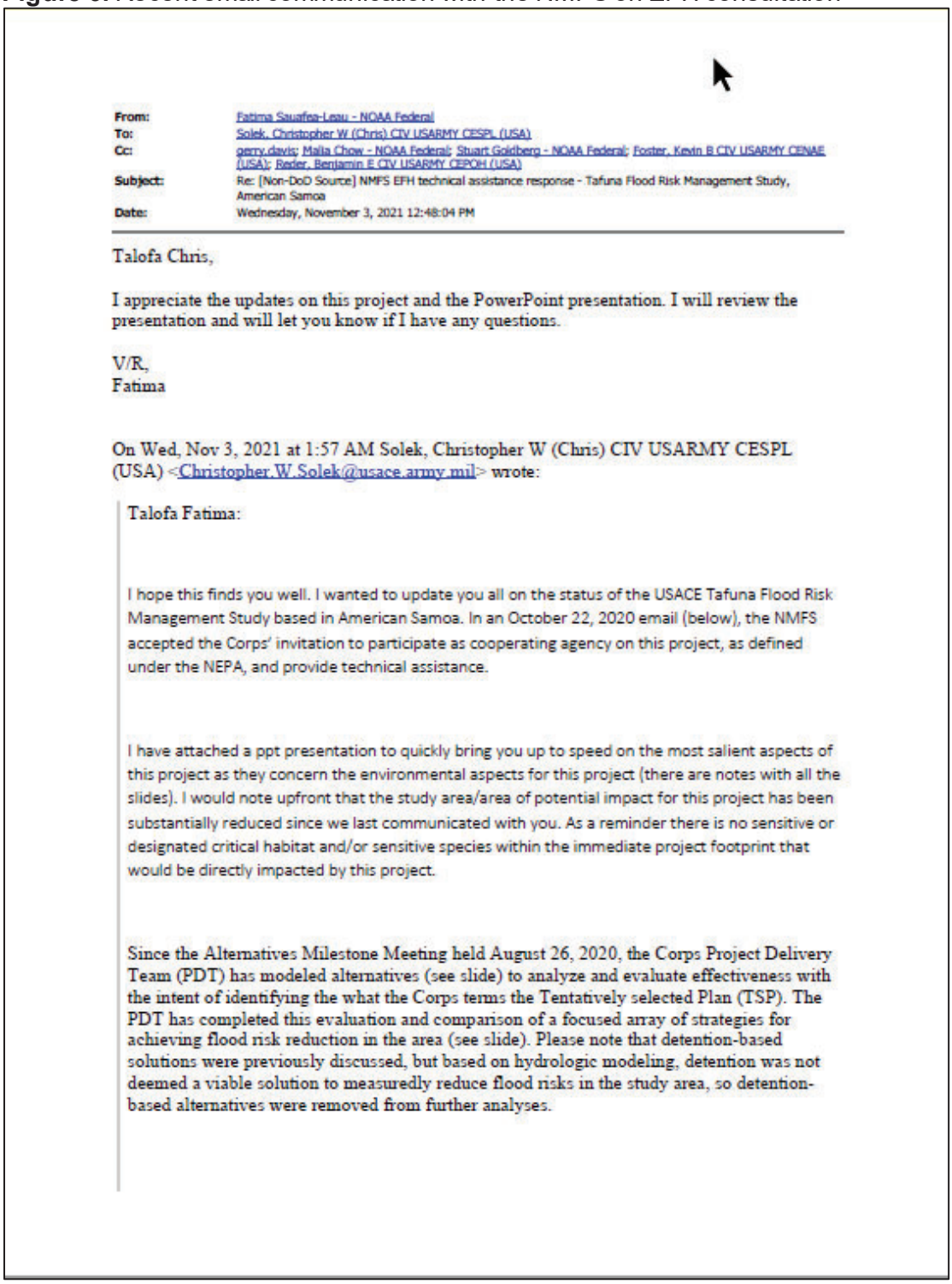
Thank you,

Fatima

--

Fatima Sauafea-Le'au
NOAA Fisheries - PIRO
Habitat Conservation Division
American Samoa Field Office
Pago Plaza Building
Suite 201
Pago Pago, American Samoa 96799
Office: (684) 633-5326
Fax: (684) 633-1400

Figure 6. Recent email communication with the NMFS on EFH consultation



From: Fatima Sauafea-Leau - NOAA Federal
To: Solek, Christopher W (Chris) CIV USARMY CESPL (USA)
Cc: gerry.davis; Malia Chow - NOAA Federal; Stuart Goldberg - NOAA Federal; Foster, Kevin B CIV USARMY CENAE (USA); Reder, Benjamin E CIV USARMY CEPOH (USA)
Subject: Re: [Non-DoD Source] NMFS EFH technical assistance response - Tafuna Flood Risk Management Study, American Samoa
Date: Wednesday, November 3, 2021 12:48:04 PM

Talofa Chris,

I appreciate the updates on this project and the PowerPoint presentation. I will review the presentation and will let you know if I have any questions.

V/R,
Fatima

On Wed, Nov 3, 2021 at 1:57 AM Solek, Christopher W (Chris) CIV USARMY CESPL (USA) <Christopher.W.Solek@usace.army.mil> wrote:

> Talofa Fatima:
>
> I hope this finds you well. I wanted to update you all on the status of the USACE Tafuna Flood Risk Management Study based in American Samoa. In an October 22, 2020 email (below), the NMFS accepted the Corps' invitation to participate as cooperating agency on this project, as defined under the NEPA, and provide technical assistance.
>
> I have attached a ppt presentation to quickly bring you up to speed on the most salient aspects of this project as they concern the environmental aspects for this project (there are notes with all the slides). I would note upfront that the study area/area of potential impact for this project has been substantially reduced since we last communicated with you. As a reminder there is no sensitive or designated critical habitat and/or sensitive species within the immediate project footprint that would be directly impacted by this project.
>
> Since the Alternatives Milestone Meeting held August 26, 2020, the Corps Project Delivery Team (PDT) has modeled alternatives (see slide) to analyze and evaluate effectiveness with the intent of identifying the what the Corps terms the Tentatively selected Plan (TSP). The PDT has completed this evaluation and comparison of a focused array of strategies for achieving flood risk reduction in the area (see slide). Please note that detention-based solutions were previously discussed, but based on hydrologic modeling, detention was not deemed a viable solution to measuredly reduce flood risks in the study area, so detention-based alternatives were removed from further analyses.

6 Fish and Wildlife Coordination Act Documentation

6.1 U.S. Fish and Wildlife Concurrence

The USACE coordinated with the USFWS, NMFS, and the DMWR during the initial stages of planning. Per coordination and concurrence with the USFWS Pacific Islands Fish and Wildlife Office (PIFWO), a Planning Aid letter will serve to meet USACE requirement for FWCA for the proposed recommended alternative as the USFWS PIFWO did not have significant concerns on impacts to ESA listed species and the adjacent marine environment (i.e., Pala Lagoon). Also, because streams in American Samoa have few invasive species issues and the recommended alternative is not proposing any barriers to affect longitudinal (upstream/downstream) of aquatic organisms to adjacent aquatic habitats. See attached draft Planning Aid Report (Attachment 4). Also see Figure 7 for additional communications.

Additional coordination with the USFWS, NMFS, and the DMWR will continue as part of the public review of the Draft NEPA document and will continue coordination throughout the feasibility phase.

Figure 6. Email communications on from Dr. Dan Polhemus on FWCA concurrence

From: Polhemus, Dan <dan_polhemus@fws.gov>
Sent: Tuesday, November 9, 2021 3:57 PM
To: Solek, Christopher W (Chris) CIV USARMY CESPL (USA) <Christopher.W.Solek@usace.army.mil>; Raynal, Jeremy M <jeremy_raynal@fws.gov>; Montgomery, Anthony <tony_montgomery@fws.gov>
Cc: Reder, Benjamin E CIV USARMY CEPOH (USA) <Benjamin.E.Reder@usace.army.mil>
Subject: [Non-DoD Source] RE: USACE Tafuna FRM check-in

Chris -

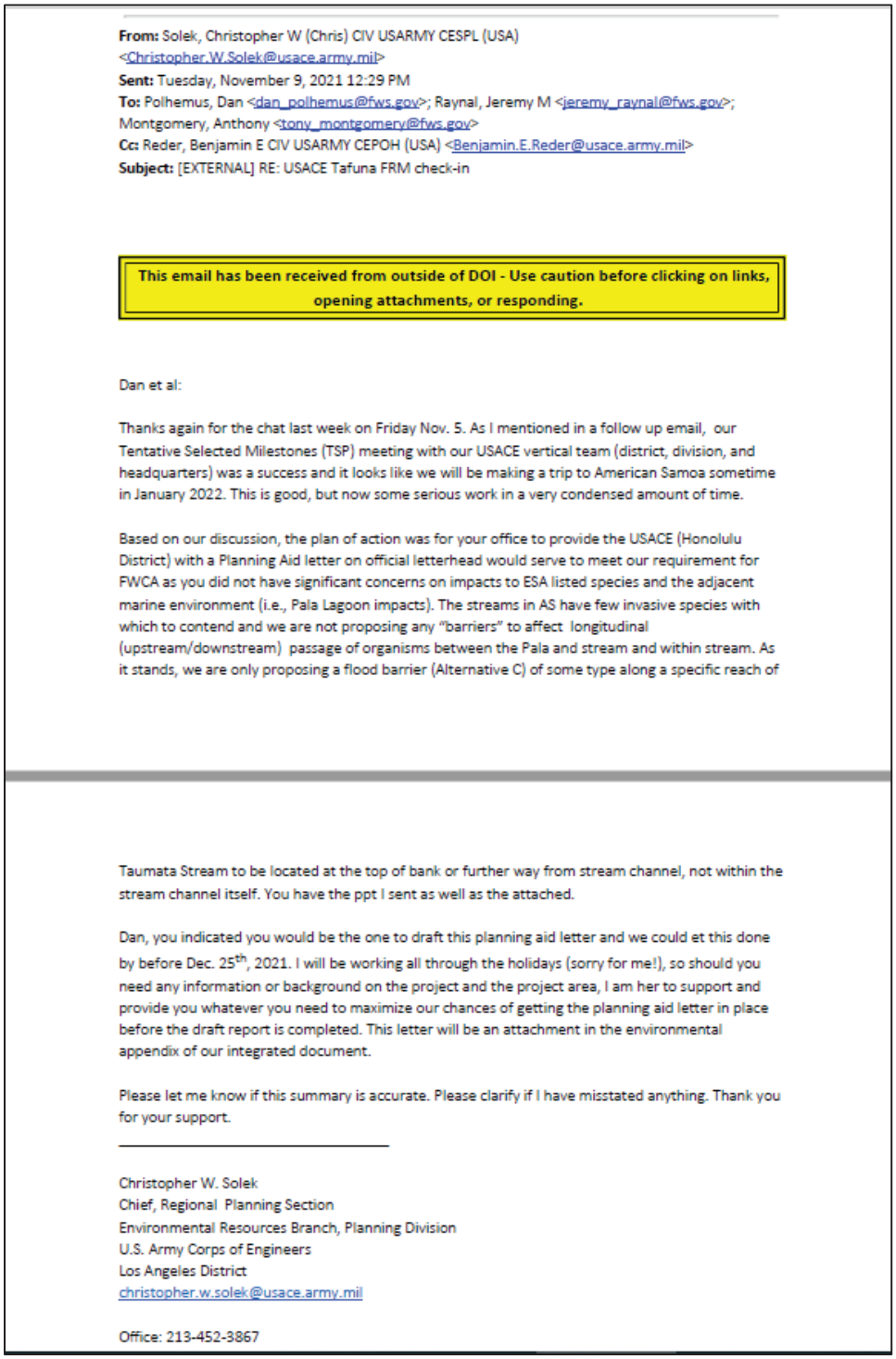
Your summary of our meeting and its outcomes and consensus conclusions is accurate.

I should be able to provide a PAL to your office by the end of December, since I will also be working over much of the holiday period.

- Dan Polhemus

Dr. Dan A. Polhemus
Pacific Islands Fish and Wildlife Office
U. S. Fish and Wildlife Service
Honolulu, HI 96850 USA

Figure 6 (con't). Email communications on from Dr. Dan Polhemus on FWCA concurrence



From: Solek, Christopher W (Chris) CIV USARMY CESPL (USA) <Christopher.W.Solek@usace.army.mil>
Sent: Tuesday, November 9, 2021 12:29 PM
To: Polhemus, Dan <dan_polhemus@fws.gov>; Raynal, Jeremy M <jeremy_raynal@fws.gov>; Montgomery, Anthony <tony_montgomery@fws.gov>
Cc: Reder, Benjamin E CIV USARMY CEPOH (USA) <Benjamin.E.Reder@usace.army.mil>
Subject: [EXTERNAL] RE: USACE Tafuna FRM check-in

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Dan et al:

Thanks again for the chat last week on Friday Nov. 5. As I mentioned in a follow up email, our Tentative Selected Milestones (TSP) meeting with our USACE vertical team (district, division, and headquarters) was a success and it looks like we will be making a trip to American Samoa sometime in January 2022. This is good, but now some serious work in a very condensed amount of time.

Based on our discussion, the plan of action was for your office to provide the USACE (Honolulu District) with a Planning Aid letter on official letterhead would serve to meet our requirement for FWCA as you did not have significant concerns on impacts to ESA listed species and the adjacent marine environment (i.e., Pala Lagoon impacts). The streams in AS have few invasive species with which to contend and we are not proposing any "barriers" to affect longitudinal (upstream/downstream) passage of organisms between the Pala and stream and within stream. As it stands, we are only proposing a flood barrier (Alternative C) of some type along a specific reach of

Taumata Stream to be located at the top of bank or further way from stream channel, not within the stream channel itself. You have the ppt I sent as well as the attached.

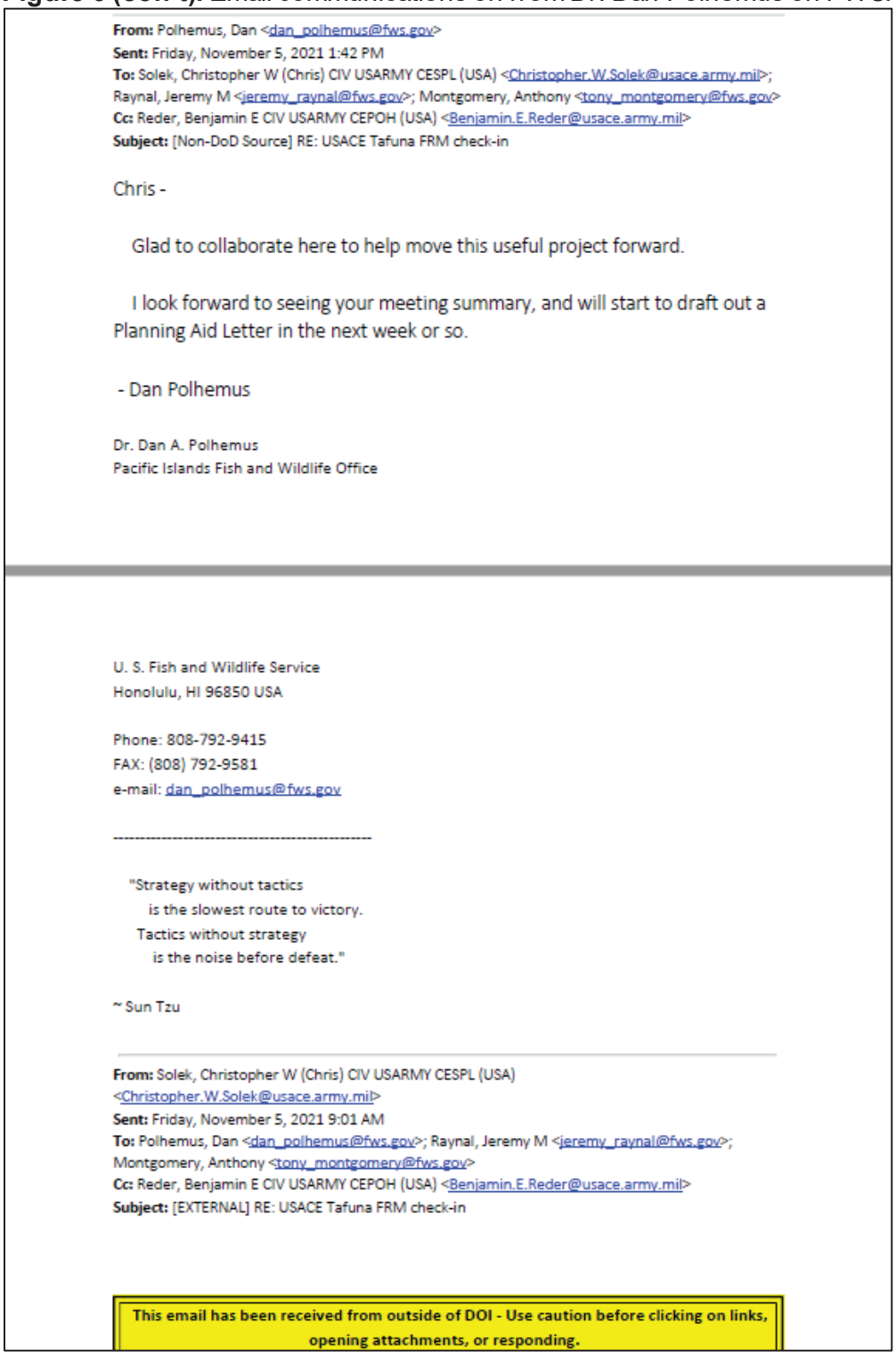
Dan, you indicated you would be the one to draft this planning aid letter and we could et this done by before Dec. 25th, 2021. I will be working all through the holidays (sorry for me!), so should you need any information or background on the project and the project area, I am her to support and provide you whatever you need to maximize our chances of getting the planning aid letter in place before the draft report is completed. This letter will be an attachment in the environmental appendix of our integrated document.

Please let me know if this summary is accurate. Please clarify if I have misstated anything. Thank you for your support.

Christopher W. Solek
Chief, Regional Planning Section
Environmental Resources Branch, Planning Division
U.S. Army Corps of Engineers
Los Angeles District
christopher.w.solek@usace.army.mil

Office: 213-452-3867

Figure 6 (con't). Email communications on from Dr. Dan Polhemus on FWCA concurrence



From: Polhemus, Dan <dan_polhemus@fws.gov>
Sent: Friday, November 5, 2021 1:42 PM
To: Solek, Christopher W (Chris) CIV USARMY CESPL (USA) <Christopher.W.Solek@usace.army.mil>; Raynal, Jeremy M <jeremy_raynal@fws.gov>; Montgomery, Anthony <tony_montgomery@fws.gov>
Cc: Reder, Benjamin E CIV USARMY CEPOH (USA) <Benjamin.E.Reder@usace.army.mil>
Subject: [Non-DoD Source] RE: USACE Tafuna FRM check-in

Chris -

Glad to collaborate here to help move this useful project forward.

I look forward to seeing your meeting summary, and will start to draft out a Planning Aid Letter in the next week or so.

- Dan Polhemus

Dr. Dan A. Polhemus
Pacific Islands Fish and Wildlife Office

U. S. Fish and Wildlife Service
Honolulu, HI 96850 USA

Phone: 808-792-9415
FAX: (808) 792-9581
e-mail: dan_polhemus@fws.gov

"Strategy without tactics
is the slowest route to victory.
Tactics without strategy
is the noise before defeat."

~ Sun Tzu

From: Solek, Christopher W (Chris) CIV USARMY CESPL (USA) <Christopher.W.Solek@usace.army.mil>
Sent: Friday, November 5, 2021 9:01 AM
To: Polhemus, Dan <dan_polhemus@fws.gov>; Raynal, Jeremy M <jeremy_raynal@fws.gov>; Montgomery, Anthony <tony_montgomery@fws.gov>
Cc: Reder, Benjamin E CIV USARMY CEPOH (USA) <Benjamin.E.Reder@usace.army.mil>
Subject: [EXTERNAL] RE: USACE Tafuna FRM check-in

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Figure 6 (con't). Email communications on from Dr. Dan Polhemus on FWCA concurrence

From: Solek, Christopher W (Chris) CIV USARMY CESPL (USA) <Christopher.W.Solek@usace.army.mil>
Sent: Friday, November 5, 2021 9:01 AM
To: Polhemus, Dan <dan_polhemus@fws.gov>; Raynal, Jeremy M <jeremy_raynal@fws.gov>; Montgomery, Anthony <tony_montgomery@fws.gov>
Cc: Reder, Benjamin E CIV USARMY CEPOH (USA) <Benjamin.E.Reder@usace.army.mil>
Subject: [EXTERNAL] RE: USACE Tafuna FRM check-in

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Dan, Tony, and Jeremy:

Thank you again for you time today. I will summarize our meeting in a follow up email to make sure I captured our actions items accurately. Stay tuned for this by early next week.

Christopher W. Solek
Chief, Regional Planning Section
Environmental Resources Branch, Planning Division
U.S. Army Corps of Engineers
Los Angeles District

christopher.w.solek@usace.army.mil

Office: 213-452-3867
Cell: 213-395-8464

-----Original Appointment-----
From: Solek, Christopher W (Chris) CIV USARMY CESPL (USA)
Sent: Thursday, November 4, 2021 3:30 PM
To: Solek, Christopher W (Chris) CIV USARMY CESPL (USA); Polhemus, Dan; Raynal, Jeremy M; Montgomery, Anthony; Reder, Benjamin E CIV USARMY CEPOH (USA)
Subject: USACE Tafuna FRM check-in
When: Friday, November 5, 2021 11:00 AM-11:30 AM (UTC-08:00) Pacific Time (US & Canada).
Where: https://usace1.webex.com/meet/christopher.w.solek

Sorry, this is the PST time. 8 am HST. The project PM Ben Reder will be joining us.

Figure 6 (con't). Email communications on from Dr. Dan Polhemus on FWCA concurrence

From: Polhemus, Dan
To: Solek, Christopher W (Chris) CIV USARMY CESPL (USA)
Cc: Montgomery, Anthony
Subject: [Non-DoD Source] RE: USACE Tafuna Flood Risk Management Project - coordination call
Date: Thursday, November 4, 2021 1:17:18 PM

Chris -

Yes, it sounds like we are in accord.

You can definitely report in your TSP meeting tomorrow that you have engaged our office in regard to FWCA, that we have undertaken productive and collegial early coordination, and now that the alternatives have been refined, we are discussing next steps. I think you can also confidently report that at this time my program does not see any show stoppers here in regard to the preferred alternatives.

Meeting from 8-9 tomorrow (= 11-12 in LA) works fine for me. Please just send out an invite with a link to whatever video conference software you are using there.

- Dan Polhemus

Dr. Dan A. Polhemus
Pacific Islands Fish and Wildlife Office
U. S. Fish and Wildlife Service
Honolulu, HI 96850 USA

Phone: 808-792-9415
FAX: (808) 792-9581
e-mail: dan_polhemus@fws.gov

7

Draft Finding of No Significant Impact

FINDING OF NO SIGNIFICANT IMPACT
for the proposed
Tafuna Flood Risk Management Project

Tutuila Island, Tualauta County, Territory of American Samoa

The U.S. Army Corps of Engineers, Honolulu District (USACE) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Environmental Assessment (EA) dated January 14, 2022 addresses the proposed project action (USACE Project) to alter drainage ways within the Tafuna Plain area of Tutuila Island, Tualauta County, American Samoa, in order to reduce flood risk and flood related damages. Flooding experienced in the Tafuna area results from intense rainfall and a lack of well-defined stream channels. Typically, the streams are incapable of supporting small flood events such as a 10% (10-year) annual exceedance probability (AEP) flow. Flooding is exacerbated due to encroaching development onto the flood plain areas, obstructions such as thick vegetation, and constrictions at bridges and culverts.

The EA, incorporated herein by reference, evaluated five (5) alternatives in detail, including the No Action Alternative, synonymous with no Federal action, and analyzed as the Future Without Project (FWOP) condition for comparison with the four (4)action alternatives, including the Proposed Action. The Proposed Action is the recommended plan and includes:

- Construction of a seven (7) foot flood barrier (floodwall or levee) along approximately 2,400-foot (0.45 miles) of the Taumata Stream that experiences the greatest depth of localized flooding. This flood barrier would require an approximately 100,820 sq. foot (2.3. acre) area along the upper banks of the Taumata stream channel.

- Protecting any remaining at-risk structures that would not receive flood protection from the constructed flood barrier through non-structural measures, including the dry floodproofing of 38 nonresidential buildings and elevation 242 residential structures. These measures focus on reducing the consequences of flooding instead of focusing on reducing the probability of flooding and are intended to prevent or provide resistance to structures from flood damage.

- No bridge improvements are proposed as part of the plan.

- Interior drainage requirements, geotechnical, and structural design issues will need to be considered as the design is further developed.

- The materials of the flood barrier structure will be confirmed post-TSP with the USACE Geotechnical Engineer.

- Although the recommended plan is both the Tentatively Selected Plan (TSP) and National Economic Development (NED) Plan, a comprehensive benefits and sensitivity analysis of the TSP and refinement of construction cost estimates is still needed.

- Verification of utility impacts, private property constraints, and any potentially need to be relocated due to floodwall are also required.

Potential effects were evaluated for all alternatives proposed, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table S-1:

Table S-1: Summary of Potential Effects of the Recommended Plan

	Significant adverse effect	Insignificant effects due to mitigation	Insignificant effects	Resource unaffected by action
Aesthetics	☐	☐	☒	☐
Air quality	☐	☐	☒	☐
Aquatic resources/wetlands/hydrology	☐	☒	☐	☐
Fish and wildlife habitat	☐	☐	☒	☐
Threatened/Endangered species	☐	☐	☒	☒
Historic properties/cultural resources	☐	☒	☐	☐
Hazardous, toxic & radioactive waste	☐	☐	☒	☐
Land use	☐	☐	☒	☐
Noise levels	☐	☒	☐	☐
Traffic	☐	☒	☒	☐
Environmental justice	☐	☐	☒	☐
Geological Hazards	☐	☐	☐	☒
Water quality	☐	☒	☐	☐
Climate change	☐	☐	☒	☐

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan, which include best management practices (BMPs) as detailed in Chapter 4 in the EA.

The USACE published a public notice on January 14, 2022 which remained open to February 15, 0222 soliciting public input.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the USACE determined that the Proposed Action will have insignificant effects on federally listed species or their designated critical habitat.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined there would be a significant effects to historic properties from the recommended plan without mitigation. The SHPO concurred with this determination and a Programmatic Agreement (PA) has been negotiated and executed with the American Samoa Historic Preservation Office to fulfill the requirements of the NHPA Section 106 requirements for the recommended plan.

Discharge of dredged or fill material would occur within waters of the United States. Therefore, a Clean Water Act Section 404 permit and a water quality certification pursuant to section 401

of the Clean Water Act were required from the American Samoa Environmental Protection Agency.

The USACE has determined that a general conformity determination is not required for the Proposed Action. The Proposed Action complies with the requirements of Section 176(c) of the Clean Air Act.

In accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, the USACE has determined that Environmental Justice Communities would not be subject to disproportionately high and adverse human health or environmental effects because of the Proposed Action. Therefore, the Proposed Action complies with this Executive Order.

No wetlands are located within the proposed project area. Therefore, the Proposed Action complies with Executive Order 11990, Protection of Wetlands.
The Proposed Action would not modify the existing floodplain or flow conveyance capacity of the Taumata Stream Channel. The Proposed Action would not modify Taumata Stream or change the 100-year floodplain. Therefore, the Proposed Action complies with Executive Order 11988, Floodplain Management.

All applicable laws, executive orders, regulations, and local government plans were considered in the evaluation of the Proposed Action. It is my determination that implementation of the Proposed Action would not cause significant adverse effects upon the quality of the human environment. Based on effects disclosed in the EA and the findings above, it is my decision to grant permission for the Proposed Action, with incorporation of the BMPs.

Date

Chief, Engineering Division
US Army Corps of Engineers
Honolulu District

8 References

To be inserted for final report

Tafuna, American Samoa
Flood Risk Management Study

Draft 404(b)(1) Analysis

U.S. Army Corps of Engineers
Honolulu District

1. INTRODUCTION

The U.S. Army Corps of Engineers, Honolulu District (Corps), and the American Samoa Government, represented by the American Samoa Department of Public Works, propose to implement flood risk management (FRM) measures (both structural and non-structural) to reduce the risk of flooding to commercial, residential, and public infrastructure within the Tafuna area on the island of Tutuila in the U.S. Territory of American Samoa. The Study Area is the Vaitele-Taumata Stream sub-drainage located within the Nu'uuli Pala watershed along the southern coast of the island of Tutuila. The location within the Vaitele-Taumata Stream sub-drainage where flood risk management measures are proposed to be implemented is referred to as the Project Area (i.e., the proposed Action Area).

The Corps has prepared a Draft Integrated Feasibility Report (IFR) and Environmental Assessment for the Tafuna Flood Risk Management Feasibility Study (Study). This Study identifies, evaluates, and discloses all impacts that would result from the implementation of potential flood risk management measures for critical areas most prone to flooding within the proposed Action Area. The IFR identifies flood hazards and analyses a series of potential alternatives, including the "No Action" alternative, to address flood risk management in the proposed Action Area.

This document presents the USACE 404(b)(1) evaluation for the Study.

CLEAN WATER ACT SECTION 404(B)(1) REGULATORY BACKGROUND

Under section 404 of the Clean Water Act (CWA), the USACE regulates discharges of two particular types of pollutants known as dredged or fill material into navigable waters (33 United States Code (U.S.C) § 1344). Navigable waters, defined as waters of the United States or WoUS (33 U.S.C. § 1362(7)) include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds (33 Code of Federal Regulations (CFR) Part 328.3(a)).

A permit from USACE is required prior to discharging dredged or fill material into WoUS. Section 404(b)(1) provides that the USACE must issue such permits through the application of Section 404(b)(1) Guidelines (33 C.F.R.336.1(a)) developed by the United States Environmental Protection Agency (USEPA). These guidelines establish various criteria to be considered by the USACE in evaluating permit applications, one of which calls for evaluation of alternatives to the proposed discharge. For proposed actions to be undertaken by the USACE (such as the Tafuna, American Samoa Flood Risk Management Project), the USACE does not process and issue itself a permit but authorizes its own discharges of dredged or fill material by applying all applicable substantive legal requirements, including application of the Section 404(b)(1) Guidelines, in the National Environmental Policy Act (NEPA) document prepared for the action.

Under the Section 404(b)(1) Guidelines, an analysis of practicable alternatives is the primary tool used to determine whether a proposed discharge is prohibited. The Section 404(b)(1) Guidelines prohibit discharges of dredged or fill material into WoUS if

a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem, including wetlands, as long as the alternative does not have other significant adverse environmental impacts (40 C.F.R. 230.10(a)). An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of overall project purpose (40 C.F.R. 230.10(a)(2)). The Section 404(b)(1) Guidelines follow a sequential approach to project planning that considers mitigation measures only after the project proponent shows no practicable alternatives are available to achieve the overall project purpose with less environmental impacts. Once it is determined that no practicable alternatives are available, the guidelines then require that appropriate and practicable steps be taken to minimize potential adverse effects on the aquatic ecosystem (40 C.F.R. 230.10(d)). Such steps may include actions controlling discharge location, material to be discharged, the fate of material after discharge or method of dispersion, and actions related to technology, plant and animal populations, or human use (40 C.F.R. 230.70-230.77).

Beyond the requirement for demonstrating that no practicable alternatives to the proposed discharge exist, the Section 404(b)(1) Guidelines also require the Corps to compile findings related to the environmental impacts of discharge of dredged or fill material. The Corps must make findings concerning the anticipated changes caused by the discharge to the physical and chemical substrate and to the biological and human use characteristics of the discharge site.

These guidelines also indicate that the level of effort associated with the preparation of the alternatives analysis be commensurate with the significance of the impact and/or discharge activity (40 C.F.R. 230.6(b)).

2. BASIC AND OVERALL PROJECT PURPOSE

Basic Project Purpose

The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed project, and is used by the Corps to determine whether a project is water dependent. The Section 404(b)(1) Guidelines state that if an activity associated with the discharge proposed for a special aquatic site does not require access or proximity to, or siting within, the special aquatic site in question to fulfill its basic purpose, the activity is not water dependent.

For the Study, the Basic Project Purpose is to implement flood risk minimization measures within the proposed Action Area, specifically along waterways which meet the minimum flow velocity of 800 cfs requirement (Engineer Regulation (ER)1165-2-21), The activity is water dependent.

Overall Project Purpose

The overall project purpose serves as the basis for the Corps' section 404(b)(1) alternatives analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the goals and accounts for logistical considerations for the project, and which allows a reasonable range of alternatives to be analyzed. It is critical that the overall project purpose be defined to provide for a meaningful evaluation of alternatives. It should not be so narrowly defined as to give undue deference to the preferred alternative, thereby unreasonably limiting the consideration of alternatives. Conversely, it should not be so broadly defined as to render the evaluation unreasonable and meaningless.

For the Study, the Overall Project Purpose is to identify flood hazards within the Study Area and develop potential flood-risk management measures (both structural and non-structural) to reduce the effects of flooding within the proposed Action Area.

3. JURISDICTIONAL DETERMINATION

The Study Area is located within the Nu'uuli Pala watershed along the southern coast of the island of Tutuila and includes the largest sub-drainage within the Nu'uuli Pala watershed, the Vaitele-Taumata Stream drainage that lies near the center of the larger watershed. The Vaitele-Taumata Stream drainage includes Mapusagatuai, Leaveave, and Puna Streams that drain the southwest slopes of Tuasivitasi Ridge, located on the northwest side of the watershed. The Nu'uuli Pala watershed drains the most populous area of the island, including the village of Nu'uuli, and parts of Tafuna, Faleniu, Malaeimi, and Mesepa among other areas.

The proposed Action Area (where flood risk improvements would be implemented) is located within the lower alluvial coastal plain section of the Vaitele-Taumata sub-drainage where streams are generally characterized by lack of defined channels and overland sheet flow due to relatively flat topographic elevations, heavy vegetative growth, and development encroachments. Waterways within this drainage would be considered WoUS.

Most streams with the proposed Action Area have been altered by human activities, and the streamside (riparian) vegetation is comprised of species associated with both wetlands and upland habitats, but tends to be dominated by non-native, weedy vegetation. In most cases, the terminal and lower reaches of streams have been partially cleared of riparian growth, particularly where the stream flows through a village (USACE 1981). None of the streams within the proposed project area are considered perennial and only flow after rain events.

All streams comprising the Vaitele-Taumata drainage flow to the Nu'uuli Pala Lagoon, a shallow estuarine body of water (embayment) and the only large, enclosed lagoon on Tutuila[1].

[1] Embayments, by definition, are bodies of water subject to tidal action and bounded by headlands which restrict the exchange of water with the open ocean. A bay or lagoon is an embayment if the ratio of the volume of water (cubic

The lagoon connects to the Pacific Ocean at a shallow, narrow opening across a fringing coral reef at its southeast corner. The lagoon is bordered by mangroves on its northern side. The Nu'uuli Pala Lagoon has been designated by the American Samoa Coastal Management Plan Rules as a special management area. Therefore, the Environmental Quality Commission (EQC) of the American Samoa Government has also classified the Nu'uuli Pala Lagoon as a special embayment. The Nu'uuli Pala Lagoon would be considered a WoUS, as well as containing jurisdictional mangrove wetlands (Wight 2016)

4. ALTERNATIVES CONSIDERED

In 2020, the USACE, in coordination with the non-Federal Sponsor, initiated the feasibility phase of the project to evaluate a series of potential alternatives to address flood risk management in the proposed Action Area. Through the plan formulation process, alternatives, each comprised of a set of one or more management measures functioning together, were developed in consideration of the study area problems, opportunities objectives, and constraints, as well as an evaluation of potential environmental impacts. The Corps has prepared a Draft Integrated Feasibility Report (IFR) and Environmental Assessment (EA) for the Study to identify, evaluate, and disclose all impacts that would result from the implementation of potential flood risk management measures for critical areas most prone to flooding within the proposed Action Area

Per the 404(b)(1) Guidelines, alternatives analysis required by the National Environmental Policy Act (NEPA) will generally suffice as the alternatives analysis under the 404(b)(1) Guidelines. On occasion, NEPA documents may address a broader range of alternatives than required to be considered under Guidelines or may not have considered the alternatives in sufficient detail to respond to the requirements of these Guidelines. In the latter case, it may be necessary to supplement these NEPA documents with this additional information.

The nature of the proposed action would require work within WoUS or would involve placement of dredged or fill material to WoUS from project activities. Furthermore, the range of alternatives carried forward under NEPA overlap with the range of alternatives to be considered under the Guidelines. Thus, the range of NEPA alternatives are sufficient for evaluation under the Guidelines.

4.1 Feasibility Phase Alternatives

As described in the IFR/EA, a total of 18 measures (9 structural and 9 non-structural) were evaluated during the feasibility phase.

Structural Measures

- Improve existing roadways, bridges, and culverts: actions directed at improving conveyance within the study area.

feet) to the cross-sectional area (square feet) at the entrance is more than 700, when determined at mean lower low water.

- Detention Basins (surface and sub-surface): Create surface and/or subsurface temporary storage facilities to collect flood flows during larger storm events; operate to control storm flow.
- Diversion / Bypass Structures*: Create diversion structures (weirs, etc.) to divert high flows to less densely populated areas.
- Infiltration System*: Construct shallow excavations lined with fabric and filled with stone to create underground reservoirs for stormwater runoff.
- Flood Barrier: Construct levees, berms, and floodwalls to reduce flood risk.
- Ring Walls or Berms*: Construct small ring wall or berm around the exterior of a single structure or small group of structures.
- Grade Control Structure*: Install concrete or boulder filled trenches at changes in slope to control bed erosion.
- Channel Improvements: Install lining, realign, widen, or deepen stream channels to increase flow capacities.
- Channel Vegetation Clearing: Remove native and non-native vegetation from the river channel to increase channel conveyance.

Nonstructural Measures

- Floodplain Zoning: Place restrictions on land usage in the areas surrounding a river by preventing or limiting development within flood zones. In addition, specific building standards and construction materials may be required to reduce potential flood damages.
- Flood Warning Systems/Evacuation Routes: Alert the community or key officials of imminent hazardous flooding conditions.
- Property Buyouts or Relocations*: Acquire lands and structures either by purchase or through the powers of eminent domain.
- Flood Proofing: Seal structures from water damage by waterproofing walls and floors and installing floodgates at entry points.
- Elevating Structures: Lift the building from its foundation and raise it above the flood level.
- Flood Warning System and Evacuation Routes: Provide accurate information to allow individuals and decision-makers to make informed decisions about whether to take emergency action (e.g., evacuation) during a flood event, and document a plan identifying evacuation routes and temporary refuge facilities.
- Debris and Trash Removal: Remove debris and trash from the river channel to increase channel conveyance.
- Vegetation Management: Remove native or non-native vegetation from the river channel to increase channel conveyance.

(* indicates measures not carried forward to focused array of alternatives)

A screening process was then used, based on planning criteria, to eliminate those measures that would not be carried forward for consideration in alternative plan development. One (1) structural and four (4) non-structural measures were eliminated from further consideration as

these did not meet one or more of the planning criteria (i.e., meets one or more of the study objectives, avoids constraints, esp. land tenure consideration and real estate requirements).

Four (4) structural measures were screened out and not carried forward:

- Ring walls/berms: did not directly meet study objectives. These features would help to protect groundwater wells but were deemed an ineffective solution because flood water seeps underground and circumvents above-ground features.

- Diversion/bypass structure: did not meet study objectives. There was no obvious location within, or proximate to, the proposed Action Area that could receive diverted water. In addition, the lack of defined stream channels within the proposed Action Area made this measure technically challenging to implement.

- Infiltration system; did not meet study objectives. As a stand-alone measure, an infiltration system is more appropriate to facilitate groundwater recharge and would not serve as an effective flood risk management measure.

- Grade control structures: did not meet study objectives. This measure would not be effective given the relatively planar, shallow stream channels within the proposed Action Area.

- Detention basins: Several "pilot" locations for detention basin placement were explored. However, results of hydrologic modeling revealed that detention basin would not be effective in reducing the effects of flooding in the proposed Action Area. There were also significant water quality concerns related to impacts to groundwater wells on the Tafuna Plain. Soils in the study area tend to be highly permeable and any water detained could eventually seep to groundwater and pose a potential health/safety issue. In addition, there was a significant concern in the ability to secure sufficient real estate/property for placement of these detention basins.

One (1) non-structural measure was screened out and not carried forward:

- Buyouts and relocation of structures were screened out from further consideration because they are not feasible or implementable measures due to the communal land ownership system in American Samoa. Parcel data does not exist in American Samoa, making buyout or relocation analysis problematic. It is likely more realistic and practical to elevate or flood proof structures within the floodplain.

In terms of the nonstructural measures identified, it was assumed that one or more of the eight (8) remaining non-structural measures could be incorporated into alternative plan carried forward. However, for purpose of determining federal interest for the Study, the project team only considered dry flood proofing (for non-residential structures) and elevating (residential structures) in its analyses.

4.3 Alternatives Analysis

The 404(b)(1) Guidelines prohibit the discharge of dredged or fill material into WoUS if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. 40 C.F.R. 230.10(a). To be "practicable," an alternative must be "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. 230.10(a)(2).

Five (5) alternatives , including the no-action alternative (Alternative A), were evaluated during the feasibility phase. The four (4) action alternatives include:

- Alternative B: Channel Conveyance Improvements
- Alternative B1: Channel Conveyance Improvements and Flood Barriers
- Alternative C: Taumata Flood Barrier and Nonstructural Improvements
- Alternative D: Nonstructural Improvements

Alternative B: Channel Conveyance Improvements

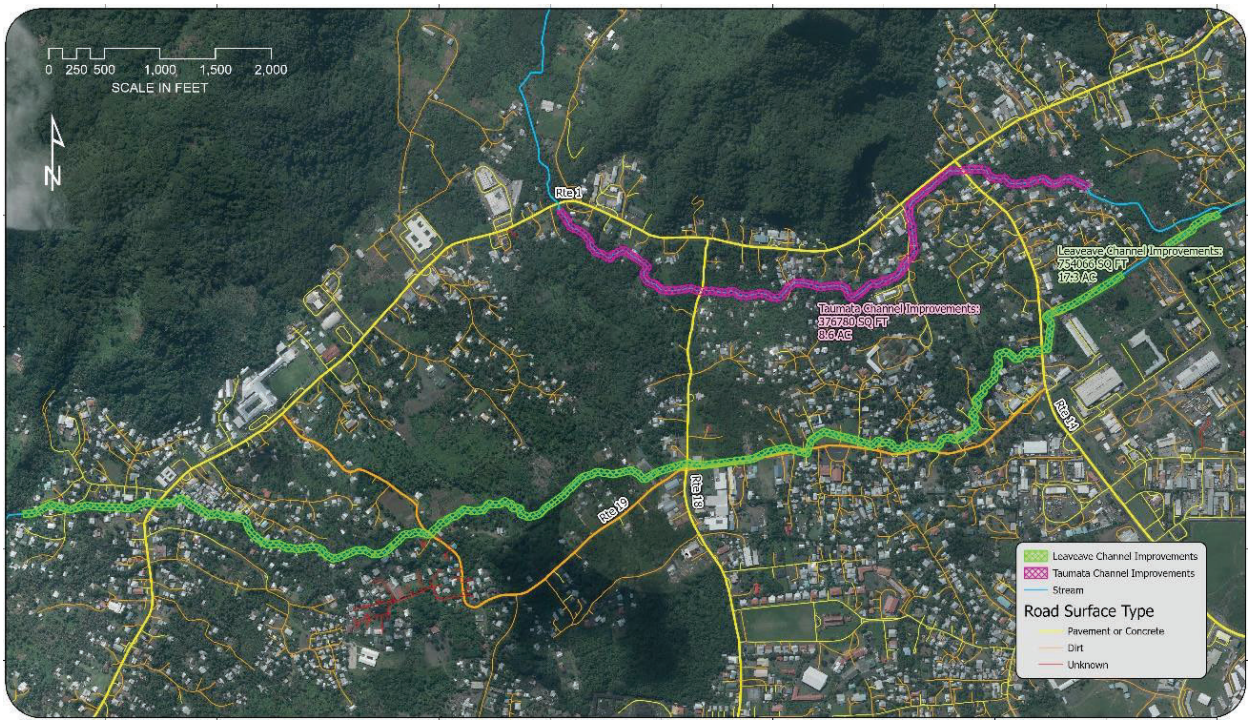


Figure 1. Alternative B Channel Conveyance Improvements

Alternative B includes 6,340 feet of channel conveyance improvements on the Taumata Stream and 13,120 feet of channel conveyance on the Leaveave Stream. This alternative would require the removal of instream and riparian vegetation and excavation of sediment from within the stream channels to create a uniform channel with a varying bottom width of 5 to 20 feet and 2:1 side slope.

The minimum estimated real estate requirements for Alternative B are:

- Leaveave Channel Improvements: 17.3 acres of channel improvement easements (perpetual)
- Taumata Channel Improvements: 8.6 aces of channel improvement easements (perpetual)
- Staging, access, construction: 11.2 acres of temporary work area easements (two years)

A modeled comparison of the floodplain for the 4% annual chance of exceedance (AEP) between Alternative B and the Future Without Project Condition (FWOPC) found very little flood risk management benefits by improving channel conveyance. The floodplain of the FWOPC and Alternative B are nearly identical.

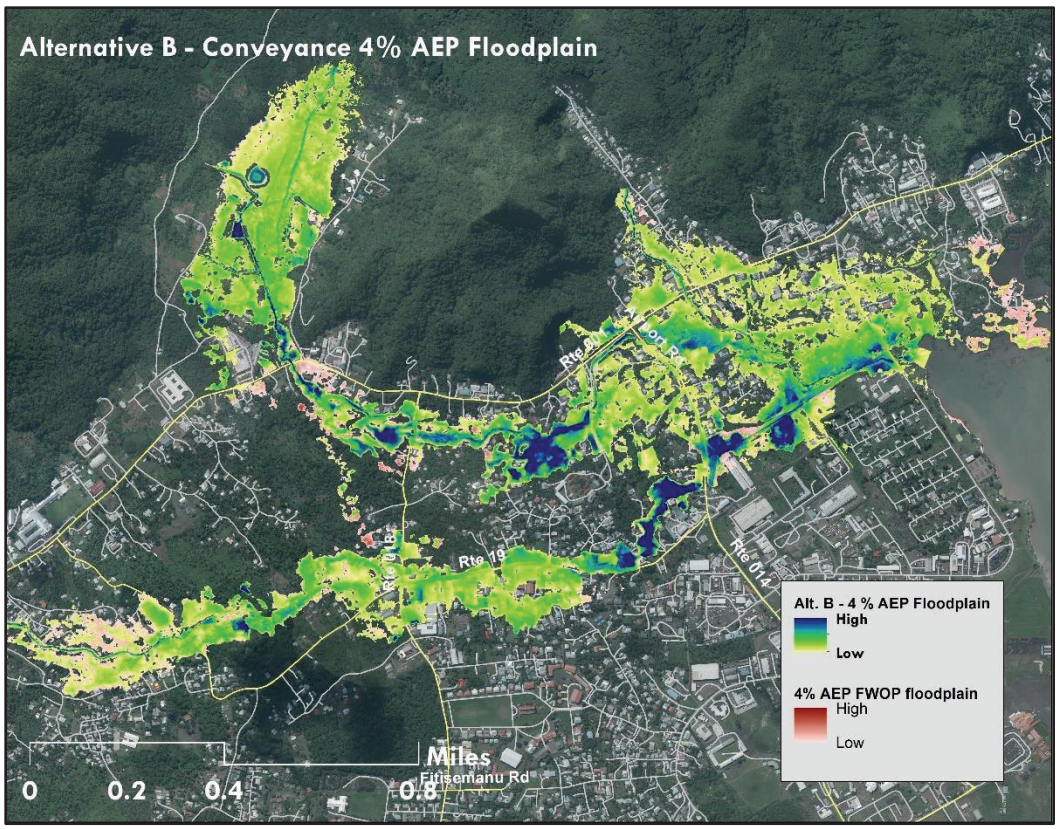


Figure 2: Alternative B FWOP and with-project floodplain comparison

Alternative B1: Channel Conveyance Improvements and Flood Barriers

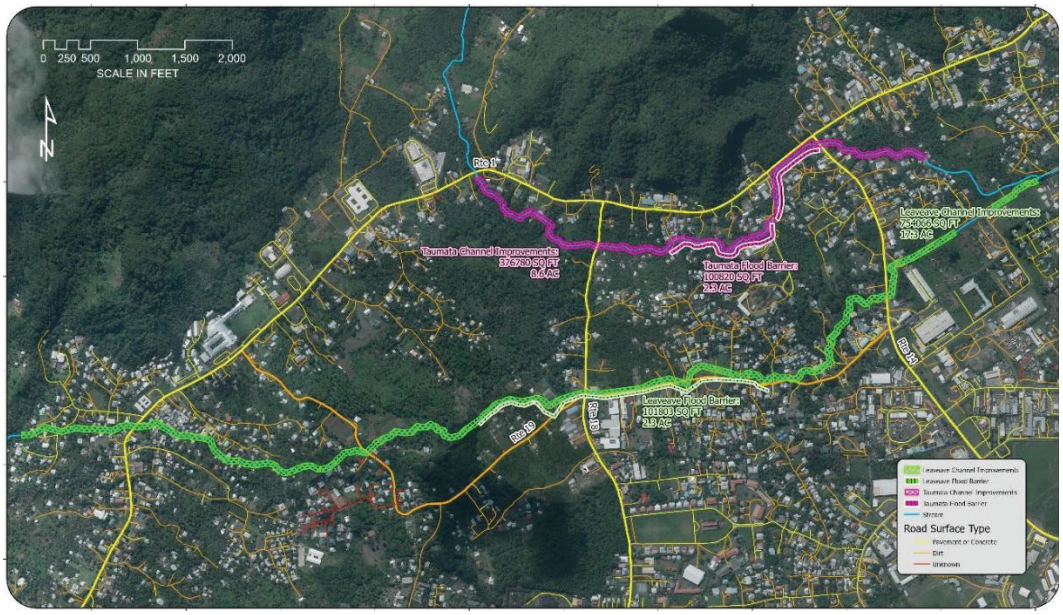


Figure 3. Alternative B1 channel conveyance improvements and flood barriers

Alternative B1 includes the same conveyance improvements as described in Alternative B. In addition, Alternative B1 includes construction of approximately 2,400 linear feet of flood barrier with an average height of seven (7) feet (from ground elevation) on the Taumata Stream, and approximately 3,400 linear feet of flood barrier with an average height of five feet (5) (from ground elevation) on the Leaveave Stream.

The minimum estimated real estate requirements for Alternative B are:

- Leaveave Channel Improvements: 17.3 acres of channel improvement easements (perpetual)
- Leaveave Flood Barrier: 2.3 acres of flood protection levee easements (perpetual)
- Taumata Channel Improvements: 8.6 aces of channel improvement easements (perpetual)
- Taumata Flood Barrier: 2.3 acres of flood protection levee easements (perpetual)
- Staging, access, construction: 14.4 acres of temporary work area easements (two years)

A modeled comparison of the floodplain for the 4% annual chance of exceedance (AEP) between Alternative B_1 and the Future Without Project Condition (FWOPC) found that Alternative B_1 is more effective at reducing flood risk, specifically in areas adjacent to where the flood barriers would be placed. The flood barriers are expected to provide flood risk management for structures located along the right bank of Leaveave and Taumata Streams.

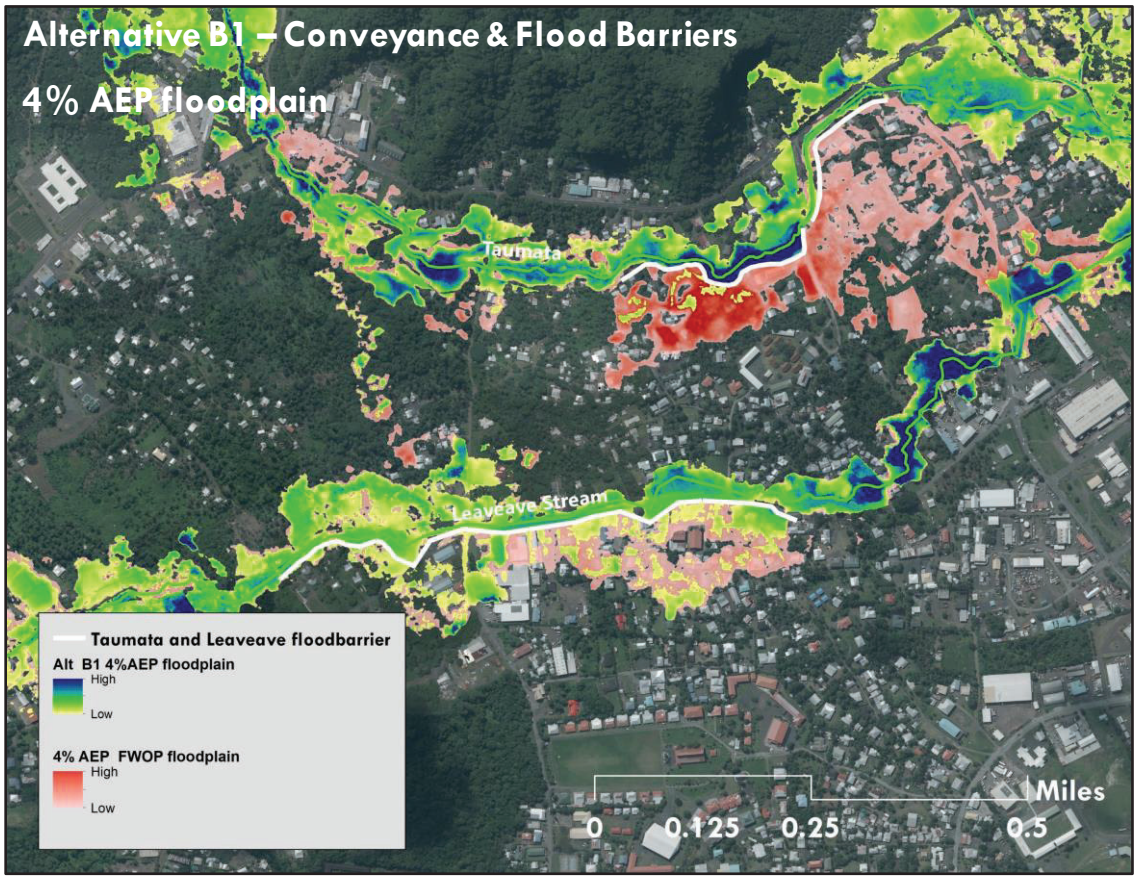


Figure 4: Alternative B1 FWOP and with-project floodplain comparison

Alternative C: Taumata Flood Barrier and Nonstructural Improvements

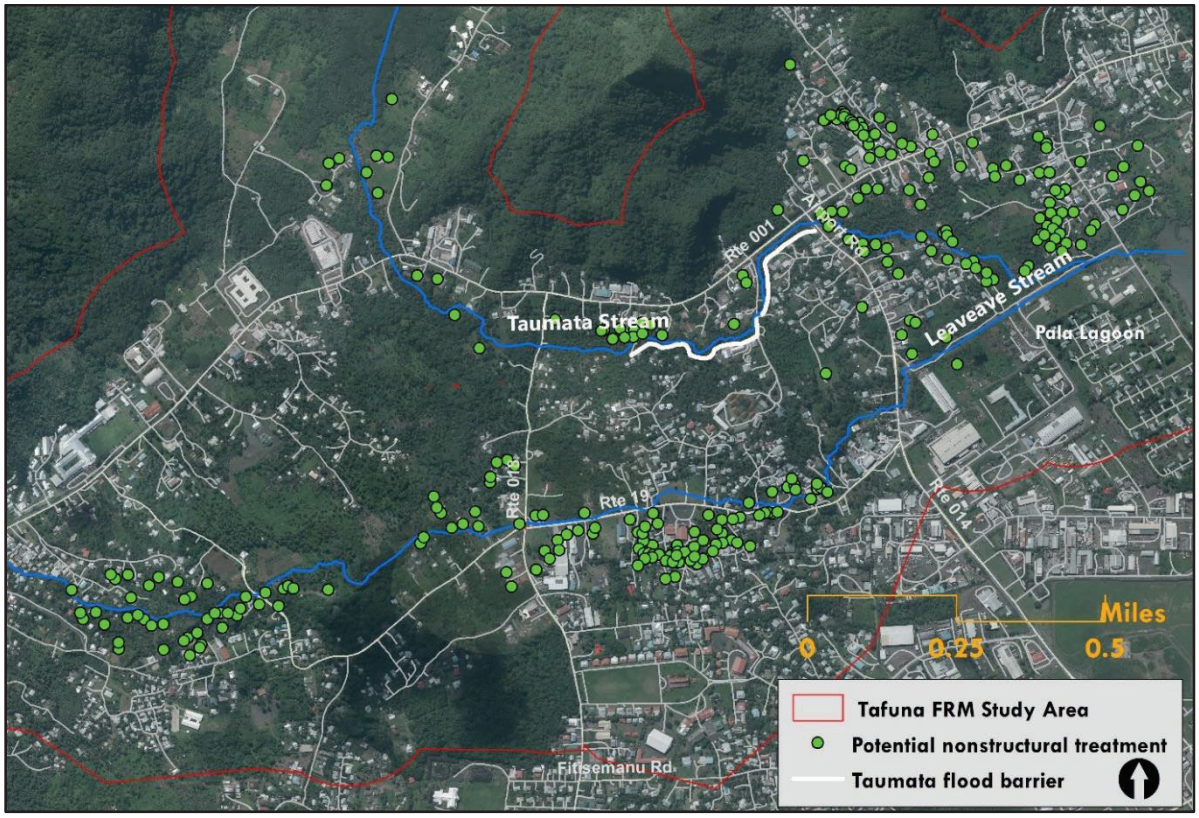


Figure 5. Alternative C: Taumata flood barrier and nonstructural improvements

Alternative C includes the construction of approximately 2,400 linear feet of flood barrier with an average height of seven (7) feet (from ground) on the Taumata Stream. The non-structural component of this alternative will include the dry floodproofing 38 non-residential structures and elevating 242 residential structures (assumes 100% participation rate) as these structures will not receive flood protection from the Taumata Stream flood barrier.

The minimum estimated real estate requirements for Alternative C are as follows:

- Taumata Flood Barrier: 2.3 acres of flood protection levee easements (perpetual)
- Staging, access, construction: 1.8 acres of temporary work area easements (two years)

The following non-structural measures are voluntary:

- Floodproofing: 38 structures, Right of Entry agreements and Floodproofing agreements
- Elevating: 242 residences, Right of Entry agreements and Floodproofing agreements

Figure provides an illustration of the structures that will receive anticipated benefit from the construction of the Taumata flood barrier (labeled with white points) and the 280 candidate

structures for either dry flood proofing (non-residential structures) or elevating (residential structures) represented by the orange points.

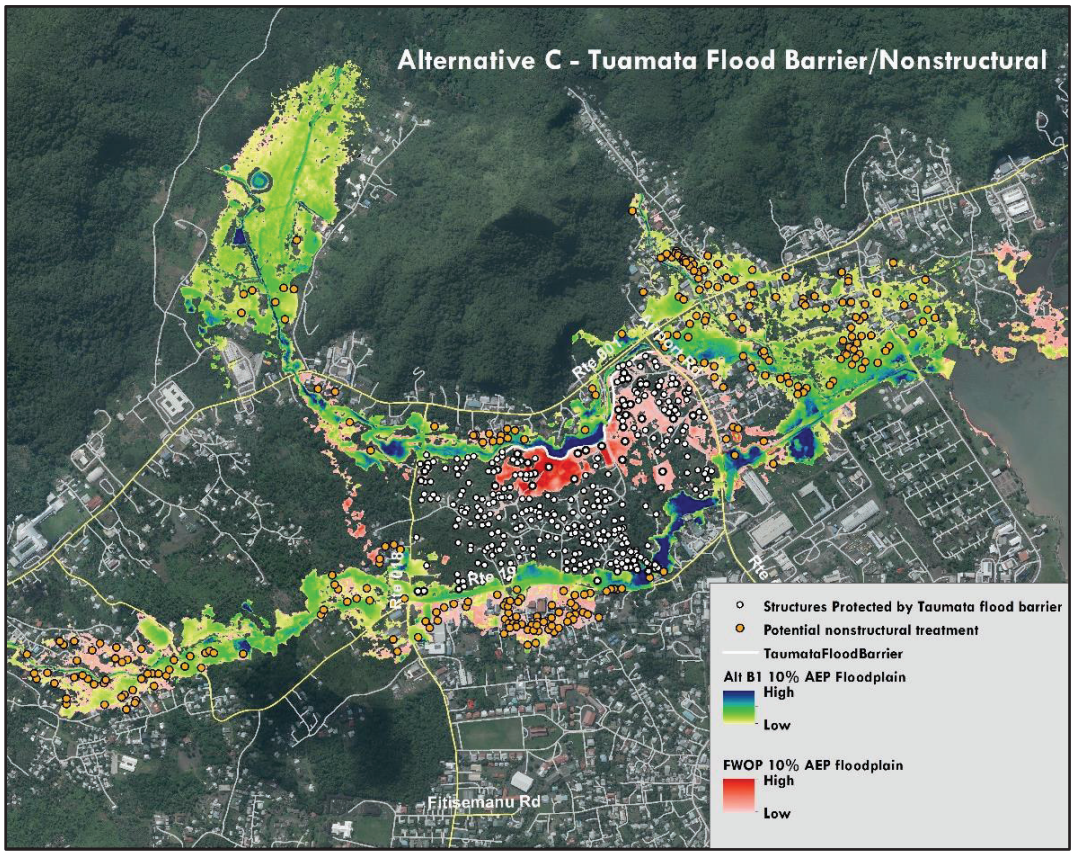


Figure 6: Alternative C candidate structures for nonstructural improvements

Alternative D: Nonstructural Improvements

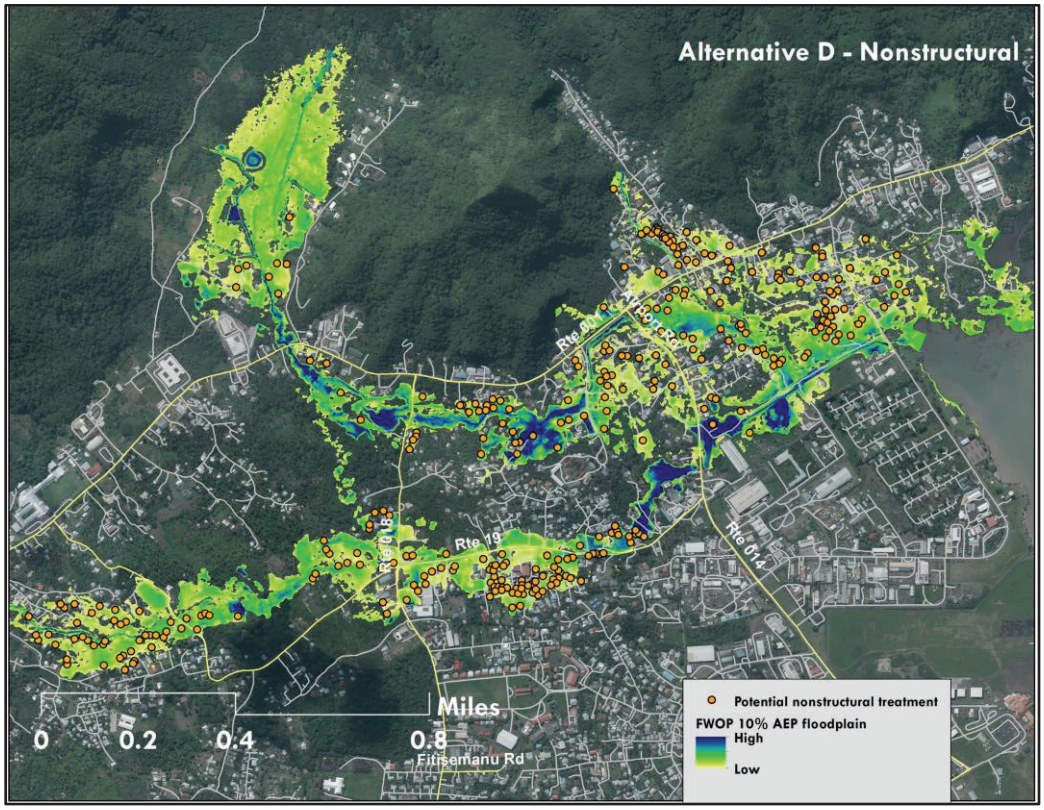


Figure 7. Alternative D Nonstructural Improvements

Alternative D includes only nonstructural measures (no structural flood risk management measures). Preliminary benefit-cost analysis evaluations show that nonstructural measures affecting 312 structures can provide flood risk management benefits comparable to a structural improvement plan. At the current state of the feasibility study, dry floodproofing 40 non-residential structures and elevating 272 residential structures is assumed to be the most effective nonstructural solution given the frequency and depth of flooding.

The minimum estimated real estate requirements for Alternative D are:

- Staging: 0.5 acres of temporary work area easements (two years)

The following non-structural measures are voluntary:

- Floodproofing: 40 structures, Right of Entry agreements and Floodproofing agreements
- Elevating: 272 residences, Right of Entry agreements and Floodproofing agreements

Alternative B, B_1, C, and D are all considered complete and efficient plans.
However, Alternative B less effectively addresses flood risk management problems compared to other structural alternatives with minimal reduction of annual damages and significant residual damages under the future with-project condition compared to other structural alternatives. A

significant amount of residual flooding/damages still occurs even with the project in place, and the chance of flooding in any given year, as represented by AEP, is not significantly reduced as compared to the without-project condition (e.g., there is still a 20% AEP floodplain with Alternative B in place, indicating flooding from a 20% AEP event or smaller). In addition, there are some acceptability concerns, particularly regarding in-stream improvements which may have negative environmental impacts and be less acceptable in terms of compatibility with existing environmental compliance regulations. Finally, Alternative B is less efficient at reducing flood risk compared to other alternatives, with fewer net benefits compared to Alternative B_1, C, and D.

Alternative B_1 is less efficient than Alternative B because of the addition flood barriers along both Leaveave and Taumata Streams. In addition, this plan is less acceptable due to the instream improvements noted above, as well as that the construction of a flood barrier along Leaveave a major thoroughfare. There would also be relatively high amounts of private property impacts associated with construction of the flood barrier. This plan has a positive benefit to cost ratio, however, for the reasons noted above the project team screened out Alternative B1 from further analysis.

Alternative C is less efficient compared to Alternatives B and B1 due to the inclusion of nonstructural components of the plan. Despite being less cost efficient, this plan has the highest net benefits compared to others. This plan reduces damages by approximately 76% with fewer residual damages compared to other structural alternatives and has higher net economic development benefits compared to other structural alternatives as well. As a result of this analysis, Alternative C was carried forward for further evaluation.

Alternative D is a complete plan and effective. However, it is the least efficient at addressing the flood risk management problems. Significant residual flooding/damages still exists with the project in place and the chance of flooding in any given year (i.e., AEP) is not significantly reduced as compared to the without-project condition (e.g., there is still a 20% AEP floodplain with Alternative D in place, indicating flooding from a 20% AEP event or smaller). Structures would be protected (either dry floodproofed or elevated); however, residual flooding of the roads and within the community would still exist. This plan has a positive benefit to cost ratio and was carried forward for further evaluation.

Only Alternative C, the recommended plan, is carried forward for evaluation in this 404(b)(1) evaluation. Alternative C (Taumata Stream Flood Barrier and Non-structural) was identified as the alternative that would be practicable with respect to real estate consideration, costs, and logistics. Based on the above, the Reconstruct with New Grouted Stone Alternative is tentatively identified as Least Environmentally Damaging Practicable Alternative (LEDPA) and is carried forward for analysis in this 404(b)(1) evaluation. No other alternatives are carried forward for analysis.

Tentatively Selected Plan: Alternative C (Taumata Stream Flood Barrier and Non-structural)

Alternative C: Taumata Flood Barrier and Non-Structural Protection was selected as the Tentatively Selected Plan (TSP). Project features include:

1. Flood Barrier: 2,400 linear feet (average 7 feet height)
2. Construction Area/Access: 24-feet wide alongside project features
3. Staging Area: 0.5 acres
4. Non-Structural: floodproofing 38 structures, elevating 242 structures

Nonstructural flood risk management measures are techniques for reducing accountable flood damage to existing structures within a floodplain. These techniques consist of treatments to dry-proof, wet-proof, or elevate structures. Dry floodproofing consists of constructing or installing features designed to allow flood waters to reach a structure but diminish the flood threat by preventing flood waters from entering a structure (e.g., attaching watertight sealants on basement windows of residential property). Wetproofing consists of constructing or installing features designed to allow water to flow in and out of a structure but prevent the contact of water to essential utilities or mechanicals of the structure (e.g., filling a basement or elevating or protecting the HVAC system). Elevations involve raising the lowest finished floor of a building to a height that is above the flood level (e.g., raising a home).

Existing Structures in the proposed Construction Area

Structures and improvements in the Study area include residential structures, businesses, government buildings, and gravesites. Project features are not anticipated to affect these structures.

Permanent Construction Footprint

A permanent flood protection levee easement totaling approximately 2.3 acres (100,820 square feet) is required for the construction of the flood barrier along Taumata Stream. The barrier would extend along the upper right (south) bank of Taumata Stream (looking downstream).

It is yet to be determined whether a levee, floodwall and/or combination will be constructed based on site conditions. An average 7-foot-high flood barrier was simulated in the hydraulic modeling for the analysis of the TSP. Generally, the levee design would include a 12' top width and 3:1 side slope, refer to Figure 22. It is assumed that material would need to be imported for construction of a levee. The design will be further refined post-TSP in consultation with a geotechnical engineer. See Appendix D (Civil Engineering) for more information.

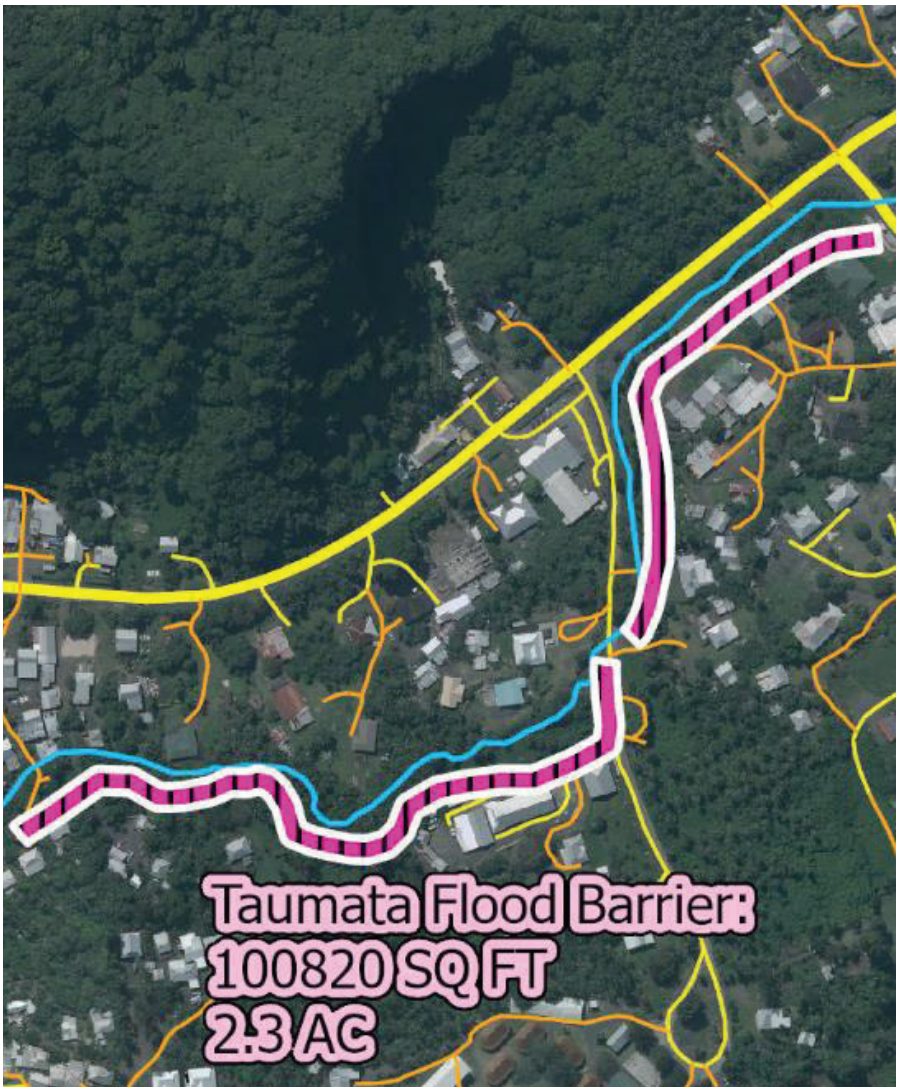


Figure 9. Flood Barrier Construction Area (pink area)

Temporary Construction Footprint

The minimum real estate required for construction and staging, including access, is a temporary work area/construction footprint (TCF) totaling approximately 1.8 acres. Construction and access to the flood barrier would require approximately 1.3 acres and staging would require 0.5 acres. Additionally, construction is planned within a 24-foot-wide corridor alongside the structural project features. The temporary work area easement is estimated to be required for two (2) years during project construction.

Staging areas must be established for the use and distribution of materials and equipment that will be used to construct the proposed Project. A 0.5-acre staging area has been identified and is located at the American Samoa Department of Public Works facility near the eastern end of the Leaveave Stream (Figure 10). This location is less than one (1) mile from the proposed project site area.

The staging area generally contains contractor trailers, parking, fencing, and storage of equipment and materials. The staging area is estimated to accommodate construction for both planned structural features as well as equipment and supplies needed for non-structural floodproofing and elevating structures. The staging area is generally flat and within close proximity (less than one mile) to the proposed project features.

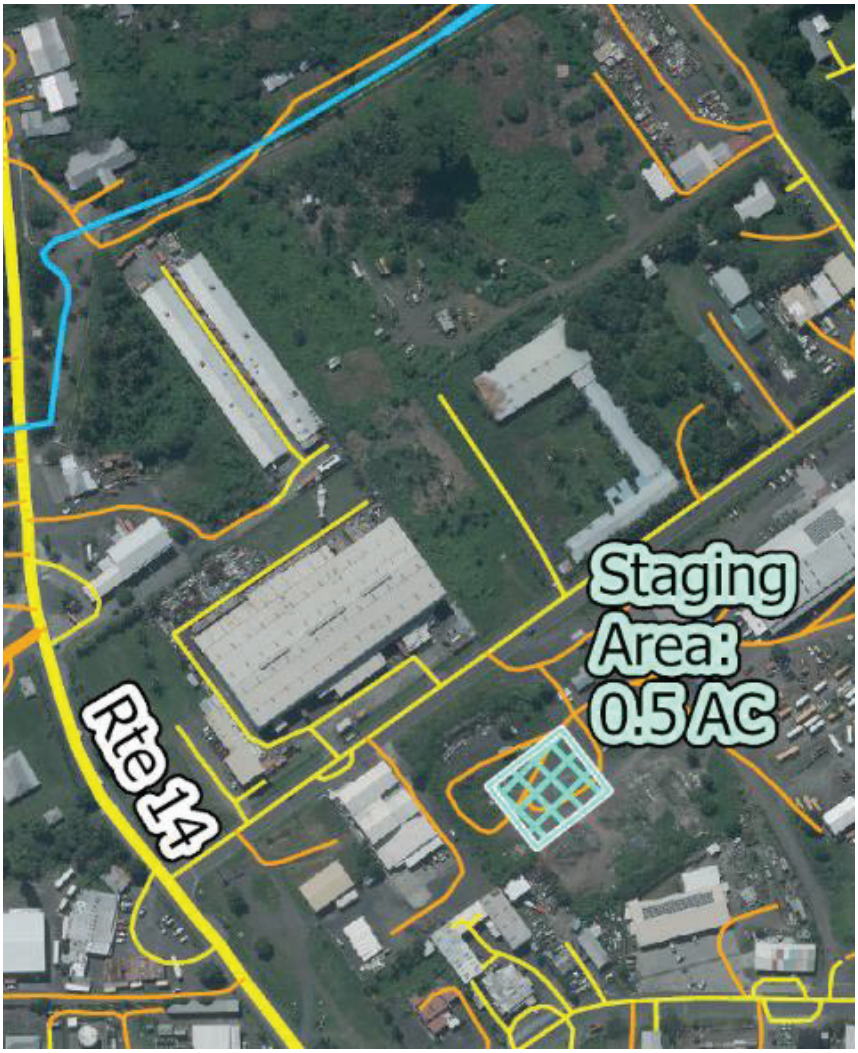


Figure 10. Project Detail Map 2 (Staging Area)

All vegetation within the TCF will be removed in order to facilitate construction and provide enough room for construction equipment to operate. Vegetation will be removed prior to construction. Clearing and grubbing will result in discharge of bulldozer sidecast and temporary stockpiling of biomass. Any material stored in the staging area would be covered to reduce the loss of material due to erosion and avoid impacts to the adjacent environment. The staging area would be restored upon construction completion.

Construction Site Equipment and Access

Required equipment to construct this alternative could include, but is not limited to, the use of a dozer(s), an excavator(s), pile driver, and font/end loader. This equipment would be stored the staging area described above.

The project areas can be accessed from the major and local public roads. It is anticipated that personnel, equipment, and imported materials would access project construction along public roadways parallel to the streams. The existing roads will be used as haul routes, where necessary, within the project areas. Temporary haul roads will be built on site as necessary for levee and/or floodwall construction. These temporary access roads will be determined by the awarded construction contractor(s) based upon their own means and methods and within pre-determined work limits. Access points identified adjoining construction areas outside of the public roadway will be included in the TCF as project features are refined. After site preparation and vegetation removal activities, it is anticipated that construction of the flood barrier would occur. Construction is anticipated for two (2) years. Construction damages to the roads will repaired or replaced upon construction completion.

Operations and Maintenance

Although minimal operations and maintenance (O&M) requirements are expected for the proposed project features, O&M activities are expected to entail typical periodic inspection of project features, periodic vegetation management (e.g., clearing or mowing of vegetation around the barrier) and structural repairs on an as needed basis. Structural repairs may be needed periodically to repair damages caused by storm flows. The nature of the discharges would be similar to those characterized for construction, but the scale would be substantially smaller since repairs would be limited to specific areas of the barrier where damages have occurred. Any vegetation removed from O&M activities would be transported to an appropriate facility for disposal.

Characterization of Environmental Effects

The purpose of the Section 404(b)(1) Guidelines is to restore and maintain the chemical, physical, and biological integrity of the WoUS through the control of discharges of dredged or fill material. Except as provided under CWA Section 404(b)(2), no discharge of dredged or fill material will be authorized if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences. In accordance with the Section 404(b)(1) Guidelines, the potential short-term or long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment must be determined.

The following discussion evaluates impacts of all three alternatives on environmental resources identified in Subpart C through Subpart F of the Section 404(b)(1) Guidelines.

Potential Direct and Secondary Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)

Construction (Direct):

Construction would begin with clearing/grubbing and grading of the upper right bank followed by excavation of the area where the flood barrier would be placed. The discharges of fill would not result in any temporary changes to the contour of the streambed. There would be no permanent loss in functions and services of WoUS nor would there be in increase in impermeable surfaces. Thus, there would be no loss of WoUS.

Preconstruction activities would result in temporary discharges of soil and construction materials to WoUS. Construction of access ramps would result in the discharge of soil. Likewise, grading activities for construction access roads or establishing a work area within the TCF would also discharge soil in the form of bulldozer sidecast. Clearing and grubbing would result in temporary discharges of biomass stockpiles which would be relocated to an appropriate facility for disposal.

During construction, substrate on the upper banks of the stream would need to be excavated to construct the floodwall. Soils naturally compacted from periodic inundation and stabilized via root masses would be disturbed. Distinct strata and areas of soils sorted over time by wind and water would be mixed into a homogeneous mixture as soils are excavated and stockpiled. Thus, there would be native substrate to support aquatic functions and services after construction. After construction all temporary construction elements would be removed . The TCF would be re-graded and disturbed areas would be revegetated.

After construction, initial inundation from incoming flows would cause unconsolidated sediment to enter the water column causing some channel erosion. Water infiltration would also cause loose soils to settle and reconsolidate. Regrowth of vegetation over time would further trap and consolidate soils. Thus, impacts would be temporary and decrease over time.

Fill proposed for permanent discharge are soil, rocks, and concrete. There would be no permanent loss of WoUS. Construction would retain the existing channel design specifications. Channel width, conveyance capacity, and gradient would remain unchanged. Thus, there would be no substantial or permanent increases in water erosion of soils or loss of topsoil in the long term. There would be no changes to the in-situ stream substrate that would affect functions and services of WoUS.

Construction (Indirect):

There would be no indirect impacts.

Operation (Direct):

Periodic vegetation management activities would yield temporary discharges of biomass stockpiles in the stream bed. All temporary stockpiles would be removed to an appropriate

facility for disposal. Periodic structural repairs would result in discharges of concrete, rocks, and in situ riverine substrate as characterized under construction. However, the scale would be substantially smaller because repairs would be limited to specific areas of the flood barrier where damages have occurred. There would be no changes to the in situ stream substrate that would affect functions and services of WoUS.

Operation (Indirect):

There would be no indirect impacts.

Suspended Particulates and Turbidity

Construction (Direct):

The TCF would be lined with plastic sheeting anchored by k-rails or large sized sandbags to minimize construction-induced erosion in turbidity. Extent of erosion would be commensurate with the energy of flows. However, high energy storm flows usually tend to be turbid due to their erosive forces. Thus, it's unlikely that turbidity associated with constrcution would not notably increase turbidity within flows that are naturally turbid. During construction, soils naturally compacted from periodic inundation and stabilized via root masses would be disturbed. After construction, disturbed areas would be reseeded. Furthermore, vegetation is expected to naturally reestablish in the area due to the perennial flows and existing seed bank. Vegetation growth over time would further stabilize soils.

After construction, initial storm flows spreading across the width of the stream would result in temporary resuspension of loose soils within the water column. Turbidity would be temporarily increased. However, storm flows would be highly turbid. Thus, the increase in turbidity would not be notable and would subside commensurately as storm flows abate. Furthermore, the rate of resuspension is expected to decrease over time as repeated inundations would result in reconsolidation and re-compaction of loose soils.

Construction (Indirect):
There would be no indirect impacts.

Operation (Direct):

Periodic vegetation management activities which would primarily consists of mowing or limited clearing would not notably disturb substrate. Any maintenance would not be performed during periods of stream flow (i.e., during or immediately after flow evets have been triggered). Thus, there would be no notable increase in turbidity as a result of vegetation management activities.

Periodic structural repairs would occur on an emergency or non-emergency basis. Emergency repairs would likely occur during full storm flows or receding flows. In such instances, there would likely be no opportunity to dewater the work site. There would be localized increases in turbidity. However, storm flows would be highly turbid. Thus, the increase in turbidity would not be notable and would subside commensurately as storm flows abate.

Non-emergency structural repairs would likely occur outside the storm season with opportunities to divert low flows away from the work site. In such instances, turbidity impacts would be like those characterized under construction. However, the scale would be substantially smaller because repairs would be limited to specific areas of the flood barrier where damages have occurred.

Operation (Indirect):
There would be no indirect impacts.

Contaminants

The proposed project area is located within the Nu'uuli Watershed considered an impaired waterbody by the American Samoa Environmental protection Agency (ASEPA) and does not support its designated uses, mainly due to bacteria impairments in stream and/or ocean shoreline reaches i.e., beaches (ASEPA 2018). American Samoa uses a Watershed Classification system to rate the disturbance of its watersheds based on population density/ mi^2 within a watershed. Based on 2010 census data, the disturbance classification for the Nu'uuli Pala Watershed was rated as "extensive" with a population > 750 mi^2 (ASEPA 2018).

Construction (Direct):
Fill materials to be used for project purposes include native soil, rock, and concrete. Earthmoving activities would disturb naturally compacted soils. Upon contact with the water column, contaminants that could potentially be present within the soils could migrate into the water column. However, because the disturbed soils are native to the stream, most of the work within not introduce additional contaminants to WoUS that are not already present within the native substrate.

Rocks are chemically inert and would not leach contaminants into the water column. Use of earthmoving equipment would increase the potential for accidental releases of fuels and lubricants. Prior to construction activities within or near the active channel, work areas would be isolated from nearby low flows. When fully isolated from surrounding flows, accidental releases of fuels and lubricants would not make direct contact with water. Furthermore, implementation of BMPs below would further minimize migration of contaminants into the water column. With implementation of BMPs above, impacts would be short term and minimal. There would be no indirect impacts.

Construction (Indirect):
There would be no indirect impacts.

Operation (Direct):
Periodic vegetation management activities and structural repairs would not result in the discharge of contaminated material. Materials likely to be discharged would be limited to in situ earthen fill, rocks, and grout. Impacts would be like those characterized under construction. However, the scale would be substantially smaller because repairs would be limited to specific areas of the flood barrier where damages have occurred.

Operation (Indirect):
There would be no indirect impacts.

Current Patterns and Water Circulation
Construction (Direct):

Construction would not require the temporary or permanent impoundment of flows in the stream and there would be no impoundment of flows during construction. Construction would retain the existing channel design specifications. Channel width, conveyance capacity, and gradient would remain unchanged. Thus, there would be no changes to current patterns and circulation.

Construction (Indirect):
There would be no indirect impacts.

Operation (Direct):
Periodic vegetation management activities and structural repairs would not require the temporary or permanent impoundment of flows in the streams. Vegetation management activities would be undertaken for the purpose of maintaining the integrity of the flood barrier. Any structural repairs would maintain the design specifications of the channel. Thus, there would be no changes to current patterns and circulation.

Operation (Indirect):
There would be no indirect impacts.

Potential Direct and Indirect Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D)

Threatened and Endangered Wildlife

Two species of land snails on American Samoa are listed as endangered. Neither of these species are expected to occur within the Proposed Action Area.

- *Eua zebrina* Gould 1847 is endemic tree snail species known from mature forest areas on Tutuila. The species was once considered abundant in the Territory, but the species is now known on from a few locations. It is still considered the most common species of the native land snails in American Samoa.

- *Ostodes strigatus* Gould 1847 is an endemic land snail to Tutuila found on the ground in forest areas with heavy tree cover. Presumed extinct on Tutuila (Cowie, personal communication)

Construction (Direct):

There is no designated critical habitat within or adjacent to the proposed Action Area, therefore there would be no permanent or temporary impacts to any critical habitat. All vegetation within

the TCF is comprised of highly disturbed, exotic or non-naïve vegetation. After construction, it is expected that vegetation within the TCF would reestablish quickly due to the tropical climate, abundant adjacent vegetation, and existing seed bank in the soil matrix. Consultation with the U.S. Fish and Wildlife Service (USFWS) pursuant to Section 7 of the Endangered Species Act (ESA) for impacts identified above are underway for direct impacts.

Construction (Indirect):

The fill would consist of earthen fill, rocks, or concrete. The fill materials are chemically inert and would not leach contaminants into the water column or result in long term impacts to turbidity. Thus, the potential for the availability of contaminants from the discharge of dredged or fill material that may lead to the bioaccumulation of such contaminants in wildlife is low.

Consultation with the U.S. Fish and Wildlife Service (USFWS) pursuant to Section 7 of the Endangered Species Act (ESA) for impacts identified above is underway for indirect impacts.

Operation (Direct)

Typical O&M activities entail annual vegetation management. Structural repairs may be undertaken on as needed basis. Maintenance activities are typically conducted annually. To adequately inspect the floodwall, a vegetation free zone (VFZ) along the base of the floodwall would be maintained. If adequate inspections cannot be performed, the amount of vegetation to be removed within the VFZ will be minimized to the extent practicable to facilitate an adequate inspection of the levees to determine their functionality.

Periodic structural repairs would occur on an emergency or non-emergency basis. In general, the fortified design is also expected to provide an increased level of protection against erosion at the base of the flood barrier, reducing the potential need for future structural maintenance and repair activities in repaired portions of the flood barrier.

Emergency repairs would likely occur during full storm flows or receding flows. In such instances, rocks maybe discharged to protect damaged levees. Non-emergency structural repairs would likely occur outside the storm season with opportunities to divert low flows away from the work site. In such instances, potential impacts would be like those characterized under construction. However, the scale would be substantially smaller since repairs would be limited to specific areas of the flood barrier where damages have occurred.

Operation (Indirect)

Indirect impacts are not anticipated. Potential discharges of fill consist of earthen fill, rocks, or concrete. The fill materials are chemically inert and would not leach contaminants into the water column or result in long term impacts to turbidity. Thus, the potential for the availability of

contaminants from the discharge of dredged or fill material that may lead to the bioaccumulation of such contaminants in wildlife is low.

Other Wildlife

Construction (Direct)

Construction noise and vibration would scatter wildlife present within the construction footprint to adjacent areas whether construction occurs in the river or in the uplands. However, most general wildlife present in the project area is non-native, mobile and adaptive. Furthermore, open spaces adjacent to the project footprint both in-stream and in uplands are adjacent to similarly vegetated areas. Thus, wildlife would be scattered to adjoining areas that have the same habitat. Less mobile invertebrates, amphibians, and reptiles could be buried or crushed by construction equipment. However, loss of individuals would be limited to those located within the construction footprint. Individuals outside the construction footprint would be unaffected.

Upon completion of construction, affected areas would be available for wildlife. Though the area would be initially denuded, quick regrowth of vegetation is expected. Overtime, all functions and services associated with the vegetation such as foraging, nesting, or predation avoidance would be fully restored.

Construction (Indirect)

The fill would consist of earthen fill, rocks, or concrete. The fill materials are chemically inert and would not leach contaminants into the water column or result in long term impacts to turbidity. Thus, the potential for the availability of contaminants from the discharge of dredged or fill material that may lead to the bioaccumulation of such contaminants in wildlife is low.

Operation (Direct & Indirect)

Typical O&M activities entail annual vegetation management. Structural repairs may be undertaken on as needed basis. Direct and indirect impacts would be similar to those characterized for Threatened and Endangered Wildlife.

Aquatic and Riparian Organisms

The riparian areas associated with streams in American Samoa are of very limited extent, being restricted to the margins of the streams and to channels of intermittent streams. The reach of Taumata Stream where the proposed recommended plan would be implemented is intermittent and only flows during or immediately after rain events. The vegetation of lowland riparian areas, like Taumata Stream, tends to be dominated by non-native para grass (*Brachiaria mutica*, Coix sp.) and canna lily (*Canna sp*.), as well as many other weedy species found in wetland taro patches. The riparian vegetation in virtually all lowlands areas adjacent to streams on Tutuila, including all streams with the proposed Action Area, has been affected by human activities. In most cases, the terminal and lower reaches of streams have been partially cleared of riparian growth, particularly where the stream flows through a village (USACE 1981).

The biota of these streams reflect the vegetation, and lowland streams tend to support more non-native and sometimes invasive species than native species. The biota of streams and other waterbodies in streams on Tutuila include freshwater mollusks and crustaceans (6 species),

insects (30 species), and fish (29 native species, and 5 non-species). The freshwater fishes occurring in American Samoa streams include diadromous species that spend their adult stages in freshwater and their immature stages in marine environments and euryhaline species that are predominantly marine, but able to move up streams for varying distances at any life stage, depending on barriers and flow stage. The euryhaline species are all widespread forms that are not strictly linked to stream environments. The only amphibian that may be present in the vicinity of Taumata Stream would only include the cane toad (*Rhinella marinus*), an introduced species.

Construction (Direct & Indirect):

Construction of the flood barrier would not require the temporary or permanent impoundment of flows in the stream. Therefore, diadromous fish passage and movement of other aquatic organisms through the project reach would not be disrupted during construction. However, there would initially be an absence of shading from any removed vegetation in the footprint of the flood barrier until some vegetation has reestablished.

Though temporary fill may be discharged to Taumata Stream, there would be no loss of WoUS. Construction would retain the existing channel design specifications. Channel width, conveyance capacity, and gradient would remain unchanged. Thus, fish passage would remain unaffected in the long-term.

Operation (Direct & Indirect)

Typical O&M activities entail annual vegetation management. Structural repairs may be undertaken on as needed basis. Annual vegetation management activities would not require temporary or permanent impoundment of flows in the river. Fish passage and habitat would remain unaffected.

Construction noise and vibration would scatter any birds or reptiles present within the construction footprint to adjacent areas. Less mobile terrestrial species could be buried or crushed by construction equipment. However, loss of individuals would be limited to those located within the construction footprint of the flood barrier and temporary work area. Individuals outside the construction footprint and temporary work area would be unaffected.

Upon completion of construction, affected areas would be available for aquatic and riparian wildlife. Though the area would be initially denuded, quick regrowth of vegetation is expected. Overtime, all functions and services associated with the vegetation such as foraging, nesting, or predation avoidance would be fully restored. Reduced need for maintenance and repair frequency over time is expected to translate to a reduced potential for future impacts to aquatic species

Emergency repairs would likely occur during full storm flows or receding flows. In such

instances, rocks maybe discharged. Impoundment of storm flows in emergency situations in unlikely. Non-emergency structural repairs would likely occur outside the storm season with opportunities to divert low flows away from the work site. In such instances, potential impacts would be like those characterized under construction. However, the scale would be substantially smaller since repairs would be limited to specific areas of the flood barrierwhere damages have occurred.

Potential Direct and Indirect Impacts on Special Aquatic Sites (Subpart E)

Sanctuaries and Refuges
Construction (Direct & Indirect):
There are no sanctuaries or refuges designated under state or Federal laws or local ordinances within the construction footprint. Construction would not directly or indirectly impact sanctuaries or refuges.

Operation (Direct & Indirect):
There are no sanctuaries or refuges designated under state or Federal laws or local ordinances within the construction footprint. Operations and maintenance would not directly or indirectly impact sanctuaries or refuges.

Wetlands
Wetlands consist of areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. See 40 CFR 230.41. Taumata stream is intermmittent and no wetlands are adjacent to the stream channel

Construction (Direct and Indirect):

There are no wetlands designated under state or Federal laws or local ordinances within the construction footprint. Operations and maintenance would not directly or indirectly impact wetlands

Operation (Direct & Indirect):

There are no wetlands designated under state or Federal laws or local ordinances within the construction footprint. Operations and maintenance would not directly or indirectly impact wetlands

Mudflats

Construction (Direct & Indirect): Mudflats are generally found in intertidal, estuarine or near-shore habitats, deltas, or at river mouths. None of these conditions occur in the proposed Action Area. The proposed discharge would not directly or indirectly affect mudflats.

Operation (Direct & Indirect): Operations and maintenance activities would not directly

or indirectly affect mudflats.

Vegetated Shallows
Construction (Direct & Indirect): Vegetated shallows are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as sea grasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems. Vegetated shallows are not present in the proposed Action Area. The proposed discharge would not directly or indirectly affect vegetated shallows

Operation (Direct & Indirect): Operations and maintenance activities would not directly or indirectly affect vegetated shallows.

Coral Reefs
Construction (Direct & Indirect): Coral reefs consist of skeletal deposits, usually of calcareous or silicaceous materials, and occur in marine environments, which does not exist in the proposed Action Area Therefore, there would be no direct or indirect effects to coral reefs.

Operation (Direct & Indirect): As no coral reefs are present or will result from construction of restoration features, operations and maintenance activities would not directly or indirectly affect coral reefs.

Riffle and Pool Complexes
Steep gradient sections of some streams can be characterized by riffle and pool complexes. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. Although this habitat type is generally associated with higher-gradient streams, some form of riffle and pool complex may occur where boulders and gravel have accumulated to the extent that they can back up flows to cause pools and allow for increased water velocity or formation of eddies on the downstream side.

Construction (Direct & Indirect): Due to the shallow gradient of the Taumata Stream through the proposed Action Area, there are no notable riffle and pool complexes in the river or in the low-flow channels. Thus, construction would not directly or indirectly affect riffle and pool complexes.

Operation (Direct & Indirect): Operations and maintenance activities would not directly or indirectly affect riffle and pool complexes.

Potential Direct and Indirect Effects on Human Use Characteristics (Subpart F) Municipal and private water supplies

There are no municipal or private water wells, recharge areas, or intake structures related to water supplies within the reach of Taumata Stream where construction would occur.

Construction (Direct & Indirect):
Construction activities would not affect the municipal or private water supply supplies.

Operation (Direct & Indirect): Operations and maintenance activities would not directly or indirectly affect municipal and private water supplies.

Recreational and Commercial Fisheries
Construction (Direct & Indirect): There are no commercial or recreational fisheries within Taumata Stream where construction would occur. There would be no direct or indirect impacts.

Operation (Direct & Indirect): Operations and maintenance activities would not directly or indirectly affect recreational fishing.

Water-Related Recreation
Construction (Direct & Indirect):
There are no water-related recreation activities or facilities in the reach of Taumata Stream Where the proposed Action Area would occur. Construction would not directly or indirectly affect water-related recreation.

Operation (Direct & Indirect):
There are no water-related recreation activities or facilities in the reach of Taumata Stream through the proposed Action Area. Operations and maintenance activities would not directly or indirectly affect water-related recreation.

Aesthetics
The constructed the flood barrier is not expected to substantially obstruct broad landscape views (including those of Tuasivitasi Ridge) but could diminish localized views for residents. Recognizing the effect that the flood barriers could have on the visual landscape, project siting and design would be conducted in a manner so as to best integrate each flood barrier with the natural characteristics of the site and minimize visual impacts to the extent possible. In particular, the use of any natural topography to minimize the overall size and obtrusiveness of the proposed structures will be investigated. Efforts throughout the planning process would also look for opportunities to minimize the impacts to the extent possible, particularly as related to the overall floodwall heights. Further refinements would be made during the design phases and would further evaluate opportunities to reduce the dimensions of the floodwalls, as well as incorporate design details that may otherwise minimize potential visual impacts, such as use of construction materials and/or landscaping to blend the structures into the surrounding environment Implementation of these measures is expected to reduce potential visual impacts to a less-than-significant level.

Construction (Direct & Indirect):
Construction would entail earthmoving activities that would remove vegetation within the construction TCF. A limited number of earthmoving equipment with highly visible paint schemes and colors would be temporarily present in the invert. The TCF would be temporarily

devoid of heterogeneous forms and textures as well as a natural color palette associated vegetation and replaced with a homogeneous earthen vista with various hues of beige and brown. Upon completion of earthwork all construction equipment and materials would be removed. The TCF would remain temporarily barren and would form a distinct rectangular imprint in the vista. Thus, construction would result in temporary impacts to aesthetics. However, vista within the TCF would match the surrounding vista over time.

Parks, national and historical monuments, national seashores, wilderness areas, and research sites
These preserves consist of areas designated under Federal and State laws or local ordinances to be managed for their aesthetic, educational, historical, recreational, or scientific value. 40 CFR 230.54.

Construction (Direct & Indirect):
There are no national and historical monuments or national seashores in the reach of the Taumata Stream through the Proposed Project Area. There would be no direct or indirect construction impacts.

Operation (Direct & Indirect): There are no national and historical monuments or national seashores in the reach of the Taumata Stream through the Proposed Project Area. There would be no direct or indirect operation and maintenance impacts.

Cumulative Impacts

Present
No annual vegetation maintenance or structural repairs are being implemented at this time as the project has yet to be constructed.

The project area is under the jurisdiction of the American Samoa Enivormental protection Agency. Consistent with the surrounding urban land uses within the Nu'uuli watershed, Taumata Stream on the Clean Water Act Section 303(d) of Impaired Waters list due to high levels of bacteria. However, the riparian vegetation and the low-flow channel continue to be an important resource for wildlife.

Future
After the flood barrier construction is completed, a decrease in the need for structural maintenance is expected. Thus, temporary impacts to aquatic services and functions are likely to decrease.

Annual vegetation maintenance will need to be conducted and structural repairs will be implemented as needed to repair storm damages. Although American Samoa Department of Public Works will be is responsible for O&M activities, USACE will continue to exercise permitting authorities pursuant to Section 404 of the Clean Water Act for discharges of dredged or fill material within WoUS, and Section 408 of the Rivers and Harbors Act for modifications to federally constructed structures. Continued receipt of Section 404 and Section 408 permits for

the construction, modifications, and maintenance of existing and future infrastructure such as bridges and utilities are anticipated. These non-USACE projects may require issuances of Section 404 and Section 408 permits. With few exceptions, most projects are expected to be small in scope and limited to like-for-like repairs.

EVALUATION AND TESTING (SUBPART G)

Proposed discharges of permanent fill consist of soil, rocks, or concrete. The fill materials are chemically inert and would not leach contaminants into the water column. Soils proposed for discharge are native to site. Work within WoUS would not introduce additional contaminants not already present within the native substrate. Per 40 C.F.R 230.60(a), testing is not required.

Measures to Minimize Adverse Impacts (SUBPART H)

Some measures, in the form of site-specific best management practices, would need to be implemented to avoid and minimize impacts associated with sedimentation, erosion (e.g., Horsley Witten Group, Inc. 2019) and stormwater contamination, in compliance with the requirements of the project's land use permit. These could include, but are not limited to, the following:

- Employee/subcontractor training; sequencing of activities to minimize exposure of cleared areas; timing construction to avoid periods of actively flowing water in episodic streams (to the extent possible)

- Minimize extent of clearing and grubbing; maintain existing vegetation (to the extent possible); provide temporary soil stabilization (e.g., mulching; hydroseeding; soil binders, geotextiles, etc.); install silt fencing and/or sediment traps; provide dust control (but avoid excess dust control watering); implement and maintain proper dewatering techniques (if needed); protect and manage stockpiles; cover loose materials in haul trucks; stabilize construction entrance/exit and provide tire wash; revegetate temporarily disturbed areas.

- Regular vehicle and equipment inspection; fueling and maintenance in designated areas; Use of drip pans; Proper storage and disposal techniques; implement spill controls

- Protection of stockpiles; provide watertight dumpsters, with regular waste removal and disposal; proper containment, labeling and disposal of hazardous materials, such as petroleum products, solvents, etc.); regular site inspection and litter collection; salvage and reuse of materials, as appropriate

- Proper storage and handling techniques for concrete-curing compounds; perform washout of concrete trucks in designated areas only; containment in wash water pits; proper disposal of material from washout facilities

- Equipment and vehicle washing in designated areas; provide containment of wash water
- Proper sanitary/septic waste management

Preparation and implementation of these best management practices, as well as adherence to other requirements of the land use permit, would reduce the potential construction-related water quality impacts to a less-than-significant level. With implementation of these Best management practices, the extent of water quality impacts from the proposed Action are expected to be less than significant.

Tafuna, American Samoa

Flood Risk Management Study

Consistency Determination

U.S. Army Corps of Engineers
Honolulu District

December 2021

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Consistency Determination
Tafuna, American Samoa
Flood Risk Management Study

1 INTRODUCTION AND DETERMINATION

This document constitutes the Consistency Determination (CD) of the Honolulu District of U.S. Army Corps of Engineers (Corps) for the Tafuna Flood Risk Management Study (Study). The Corps proposes to implement flood risk management (FRM) measures (both structural and non-structural) to reduce the risk of flooding to commercial, residential, and public infrastructure within the Tafuna area on the island of Tutuila in the Territory for American Samoa. The Corps and the non-federal sponsor, the American Samoa Government represented by the American Samoa Department of Public Works, have evaluated the results of the Study and recommend an alternative as the basis for project construction authorization. For the purposes of this CD, the proposed (recommended) alternative for the Study is *Alternative C: Taumata Flood Barrier and Non-structural Improvements*. The Corps has evaluated the recommended alternative and has determined it is consistent to the maximum extent practicable with the American Samoa Coastal Management Act (ASCMA), pursuant to the requirements of the Coastal Zone Management Act of 1972, as amended, (CZMA). The environmental consideration and consistency sections below provide the basis for the finding. The Corps requests the concurrence of the American Samoa Coastal Management Program (ASCMP) with this CD.

2 AUTHORITY FOR STUDY

The Study was authorized under Section 444 of the Water Resources Development Act (WRDA) of 1996 (as amended by Section 207 of the Water Resources Development Act of 1999) which authorizes flood damage reduction studies to be conducted in the Territory of American Samoa.

"*The Secretary may conduct studies in the interests of water resource development including navigation , flood damage reduction, and environmental restoration in that part of the Pacific region that includes American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. This authority may be considered for implementation if requested by the appropriate non-federal sponsors, and if it is consistent with current program and budget priorities in effect at the time of consideration. Nevertheless, no work may be undertaken until funds are appropriated for this purpose".*

Funding was received in May 2020 to initiate a Feasibility Study at full Federal expense under the Additional Supplemental Appropriations for Disaster Relief Act of June 6, 2019 (Public Law 116-20).

3 STANDARD OF REVIEW

The United States Congress enacted the CZMA in 1972 and the Coastal Zone Act Reauthorization Amendments in 1990 in response to the increasing pressures of overdevelopment on the nation's coastal resources. These acts made federal financial assistance available to any coastal state or

territory willing to develop and implement a comprehensive land and water use program for the designated coastal zone, including unified policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance.

Under Section 307(c)(1) of the CZMA, 16 USC Section 1456(c)(1), federal activities that affect any land or water use or natural resource of the coastal zone are required to be consistent with the affected state's or territory's coastal management program to the "maximum extent practicable." Section 15 CFR 930.32 of the National Oceanic and Atmospheric Administration's (NOAA) regulations implementing the CZMA defines "consistent to the maximum extent practicable" as: *"fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency."*

In the U.S. Territory of American Samoa, the American Samoa Coastal Management Program (ASCMP) was issued in response to the enactment of the federal CZMA of 1972 (16 U.S.C. §§ 1451 et seq) and approved by NOAA in 1980. The ASCMP administrative code was adopted pursuant to authority granted the American Samoa Department of Commerce under Public Law 21-35, the American Samoa Coastal Management Act of 1990, ASCA §§ 24.0501 et. seq.

The ASCMP is established as an office within the American Samoa Government. The Department of Commerce is the designated territorial agency, as required by federal law, for the administration and implementation of the ASCMP. The general purpose of ASCMP is to provide effective resource management by protecting, maintaining, restoring, and enhancing the resources of the coastal zone. Federal consistency provisions of the CZMA require that all federally funded, licensed, or permitted projects affecting the coastal zone of American Samoa be conducted in a manner that is consistent with the ASCMP. The ASCMP has designated the entire Territory (totaling approximately 77 square miles with a coastline of 126 miles) and the sea within three (3) miles of the shoreline as a coastal zone. The ASCMP has developed a unique approach to coastal zone management that incorporates both western and traditional Samoan systems.

Chapter 2 Title 26 (Environment Safety and Land Management) of the American Samoa Administrative Code contains the ASCMP Administrative Rules. It provides that the ASCMP Administrative Code is adopted pursuant to authority granted the Department of Commerce under Public Law 21-35, the American Samoa Coastal Management Act of 1990. The Act required the establishment of a system of environmental review, along with economic and technical considerations, at the territorial level intended to ensure that environmental concerns are given appropriate consideration in the land use decision-making process. This Chapter establishes within the Department of Commerce a consolidated land use permitting process, known as the Project Notification and Review System (PRNS), including development standards, procedures for the designation, planning and management of Special Management Areas (SMAs), procedures for environmental assessments, and procedures for determination of federal consistency (section 4 of the Act).

Section 5 of the Act mandated the establishment of a system of environmental review under a consolidated land use permitting process and project reviews at the territorial level for all uses, developments, or activities which impact the coastal zone, known as the Project Notification and Review System (PNRS). The PNRS was created to implement the ASCMP as established by Executive Orders 03-80 and 07-88, codified as A.S.A.C. §§ 26.0201 et seq. and ensure that

environmental concerns, along with economic and technical considerations, are given appropriate consideration in the land use decision-making process. The PNRS Board is comprised of an interdisciplinary consortium of all American Samoa government agencies which have some type of purview or interest in land use decisions in the Territory. The Department of Commerce holds exclusive authority to designate uses subject to land use permit requirements and to approve land use permit applications

4 PROJECT DESCRIPTION

4.1 Project Location and Background

American Samoa is an unincorporated territory of the United States located in the mid-South Pacific Ocean and part of the Samoan Islands archipelago in Polynesia (Figure 1). The Study Area is located on the main island of Tutuila within Tualauta County, the largest and most populated island and county in American Samoa, respectively. The Study Area is located on the Tafuna Plain and within the Nu'uuli Pala watershed along the southern facing coast of Tutuila, and includes Taumata, Vaitele, Leaveave, Mapusagatuai, and Puna Streams that drain the southwest slopes of Tuasivitasi Ridge on the northwest side of the watershed (Figure 2).

A previous flood hazard study (USACE Pacific Ocean Division 1977) evaluated the hydrologic and hydraulic characteristics of the streams and drainageways in the Tafuna area. The findings were adopted by the Federal Emergency Management Agency (FEMA) in May 1991 and used to develop the 1% (100-year) AEP floodplain for the Tafuna area. The Tafuna Plain Drainage Study (USACE Pacific Ocean Division 1994) identified the characteristics and flow paths of the major streams and drainage ways in the Tafuna plain. The information was intended to provide a basis for understanding the magnitude and causes of the existing flood problems in the area and was used by FEMA for the Flood Insurance Rate Maps for Tafuna. A 2016 Hydrologic and Hydraulic Engineering Analysis (USACE Honolulu District 2016) presented the methodology used and the results of the floodplain management study of the Leaveave Drainageway and Drainageway 2 in Tutuila. A2019 Hydrologic and Hydraulic Engineering Analysis (USACE Honolulu District 2019 presented the methodology used and the results of the floodplain management study of Drainageway 4, 5, and Unnamed Stream 15 in the Tafuna area.

Figure 1. Project Location Map

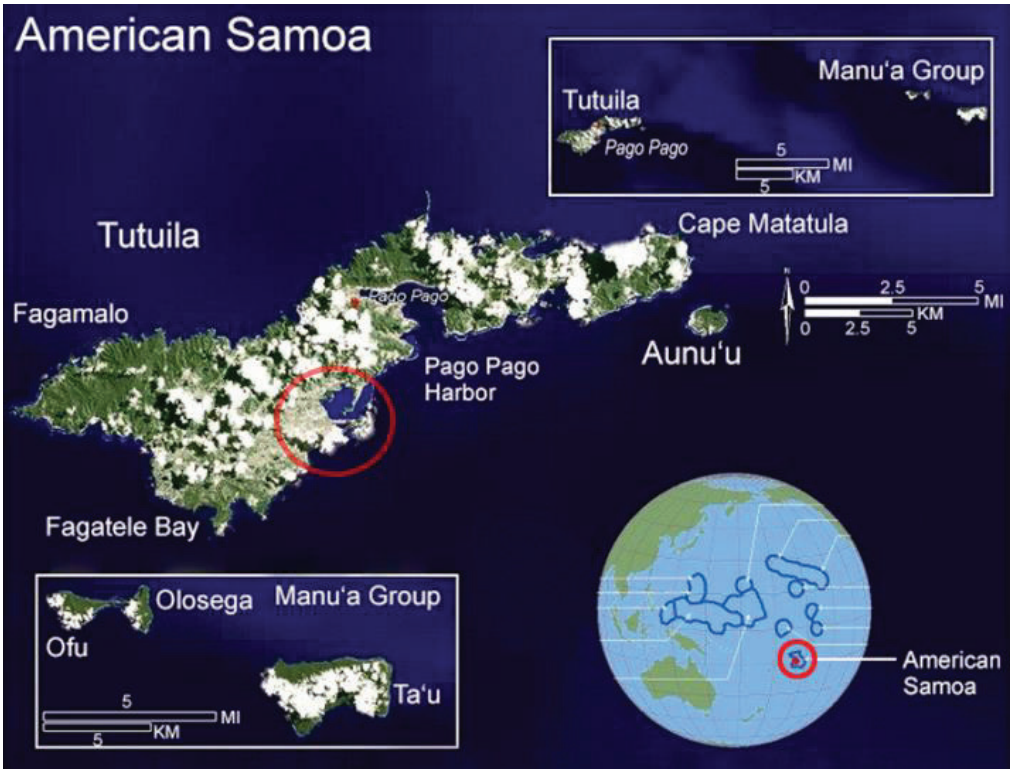


Figure 1. Taumata, Leaveave, and Vaitele Streams

The Nu'uuli Pala watershed drains the most populous area of the island, including the village of Nu'uuli, and parts of Tafuna, Faleniu, Malaeimi, and Mesepa among other areas.

The location where flood risk management measures are proposed to be implemented (i.e., the proposed Action Area) is within the largest subdrainage of the of the Nu'uuli Pala watershed, the Vaitele-Taumata Stream sub-drainage. The Vaitele-Taumata Stream sub-drainage lies near the center of the Nu'uuli Pala watershed and includes Taumata, Vaitele, Leaveave, Mapusagatuai, Leaveave, and Puna Streams that drain the southwest slopes of Tuasivitasi Ridge, located on the northwest side of the watershed.

The proposed Action Area is located in the lower alluvial coastal plain section of the Vaitele-Taumata sub-drainage on the Tafuna Plain where streams are generally characterized by lack of defined channels and overland sheet flow due to relatively flat topographic elevations, heavy vegetative growth, and development encroachments. Most streams with the proposed Action Area have been altered by human activities, and the streamside (riparian) vegetation is comprised of species associated with both wetlands and upland habitats, but tends to be dominated by non-native, weedy vegetation. In most cases, the terminal and lower reaches of streams have been partially cleared of riparian growth, particularly where the stream flows through a village (USACE 1981). None of the streams within the proposed project area are considered perennial and only flow after rain events.

All streams comprising the Vaitele-Taumata drainage flow to the Nu'uuli Pala Lagoon, a shallow estuarine body of water (embayment) and the only large, enclosed lagoon on Tutuila[1]. The lagoon connects to the Pacific Ocean at a shallow, narrow opening across a fringing coral reef at its southeast corner. The lagoon is bordered by mangroves on its northern side. The Environmental Quality Commission (EQC) of the American Samoa Government has classified the Nu'uuli Pala Lagoon as a special embayment and has been designated by the American Samoa Coastal Management Plan Rules as a Special Management Area (SMA).

4.2 Need for and Objectives of the Project

4.2.1 Need for Project

The central portion of the Tafuna-Leone Plain, located within its lower alluvial portion, is an area of focus and concern for many government agencies due to the rate of development in the area and the potential for aggravated flood problems. Flooding in this area results primarily from intense rainfall and a lack of well-defined stream channels. Typically, the streams in this area are incapable of supporting small flood events such as a 10% (10-year) annual exceedance probability (AEP) flow. Flooding is exacerbated due to encroaching development in the flood plain, obstructions such as thick vegetation, and constrictions at bridges and culverts.

The purpose of the Study was to is to identify flood hazards within the Study Area and develop potential flood-risk management measures (both structural and non-structural) to reduce the effects of flooding within the proposed Action Area of the Tafuna Plain. The proposed Project

[1] Embayments, by definition, are bodies of water subject to tidal action and bounded by headlands which restrict the exchange of water with the open ocean. A bay or lagoon is an embayment if the ratio of the volume of water (cubic feet) to the cross-sectional area (square feet) at the entrance is more than 700, when determined at mean lower low water.

would implement flood risk minimization measures within the proposed Action Area, specifically along waterways which meet the minimum flow velocity of 800 cfs requirement (Engineer Regulation (ER)1165-2-21).

4.2.2 Objectives

The planning objectives for the Study include the following for the 50-year period of analysis starting in 2030:

- Reduce flood risks to property and critical infrastructure in the Tafuna-Leone Plain;
- Reduce risk to life safety in the Tafuna-Leone Plain.

4.3 Plan Formulation

The Plan Formulation process is used to formulate alternative plans and evaluation criteria leading to the recommendation of the Project for implementation. Under the National Environmental Policy Act (NEPA), reasonable alternatives are those that are practical or feasible from a technical or economic perspective and based on common sense. Alternatives must be responsive to the purpose and need. Factors used to determine feasibility include site suitability, economic limitations, consistency with local plans and policies, other plan or regulatory limitations, and jurisdictional boundaries.

The Corps has prepared a Draft Integrated Feasibility Report (IFR) and Environmental Assessment for the Study that identifies, evaluates, and discloses all impacts that would result from the implementation of potential flood risk management measures for critical areas most prone to flooding within the proposed Action Area, specifically along waterways that meet the minimum flow velocity of 800 cubic feet per second (cfs) per the requirements of Engineer Regulation (ER) 1165-2-21. The IFR identifies flood hazards and analyses a series of potential alternatives, including the "No Action" alternative, to address flood risk management in the proposed Action Area.

Details on the process used to formulate alternative plans and evaluation criteria for the Study can be found in the *Draft Integrated Report and Environmental Assessment.*

4.4 Project Description

Alternative C: Taumata Stream Flood Barrier and Nonstructural Improvements was selected as the recommended plan for implementation (Figure 3 and 4). While maximizing net benefits, it also provides relatively higher amounts of flood risk management benefits compared to the other alternatives, has anticipated positive impacts on water quality (e.g., avoids indirect impacts to mangrove habitat in the Nu'uuli Pala Lagoon), has a manageable amount of real estate requirements, and is supported by the American Samoa Government.

Alternative C includes a structural and non-structural component: 1) the structural component is the construction of approximately 2,400 linear feet of flood barrier with an average height of seven feet (from ground) along Taumata Stream; and 2) the nonstructural component includes include dry

floodproofing 38 nonresidential buildings and elevating 242 residential structures (assumes 100% participation rate) as these structures will not receive flood risk benefits from the Taumata Stream flood barrier (Figure). The reach of Taumata Stream where the proposed flood barrier would be constructed is located south of Highway 1 and between State Routes 14 and 18. The flood barrier would be constructed along the south (right) bank of Taumata Stream (looking downstream). The upstream limit of the barrier would begin approximately 900 feet east of State Route 14 along Taumata Stream and extend downstream for 2,400 linear feet to terminate near State Route 14 (see Figure 3 and 4). Structures and improvements in the proposed Action Area include residential structures, businesses, government buildings, and gravesites. At this time, construction of project features are not anticipated to affect these structures.

The minimum estimated real estate requirements for Alternative C are as follows:

- Taumata Flood Barrier: 2.3 acres of flood protection levee easements (in perpetuity)
- Staging, access, construction: 1.8 acres of temporary work area easements (for two years)

The non-structural components of Alternative C are based on voluntary participation and would require Right of Entry (ROE) agreements and floodproofing agreements.

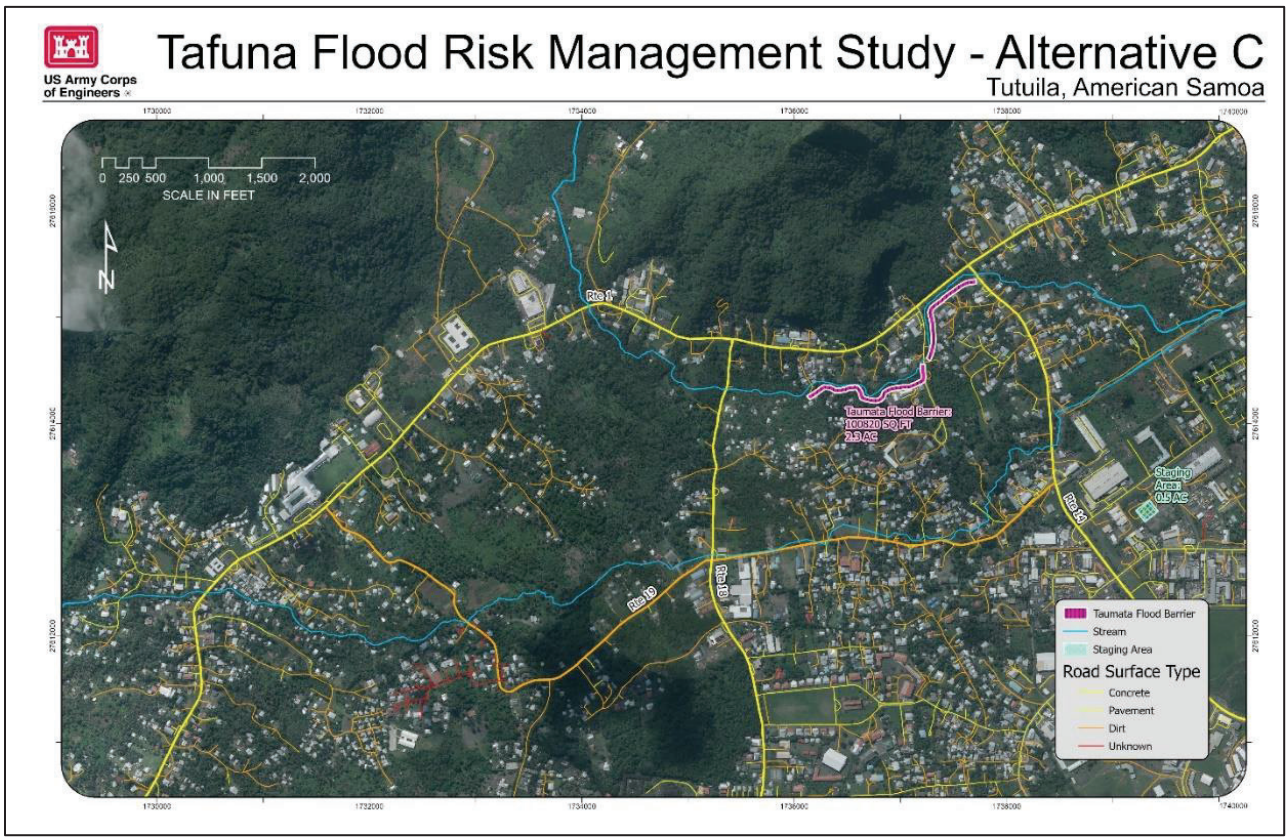


Figure 3a. Alternative C: Taumata flood barrier and nonstructural improvements

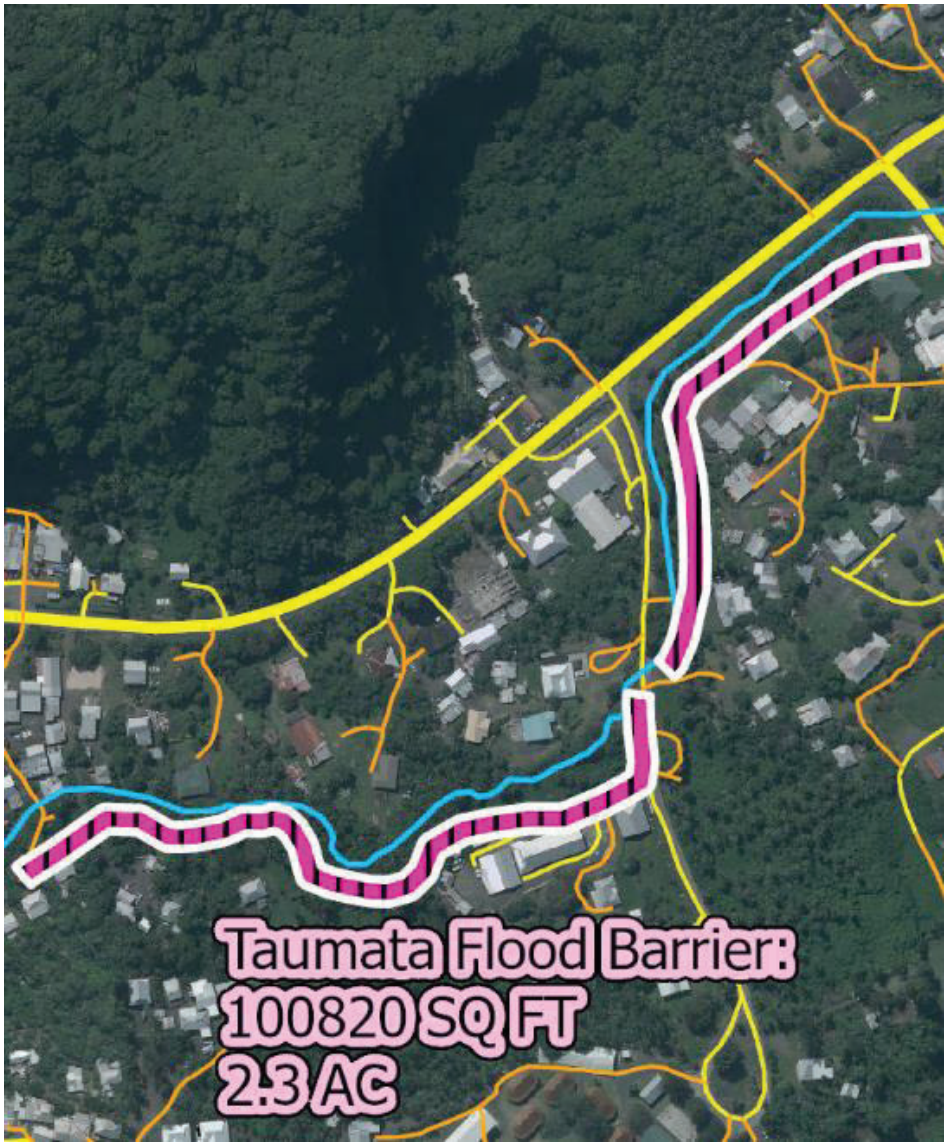


Figure 3b: Alternative C: Taumata flood barrier detail

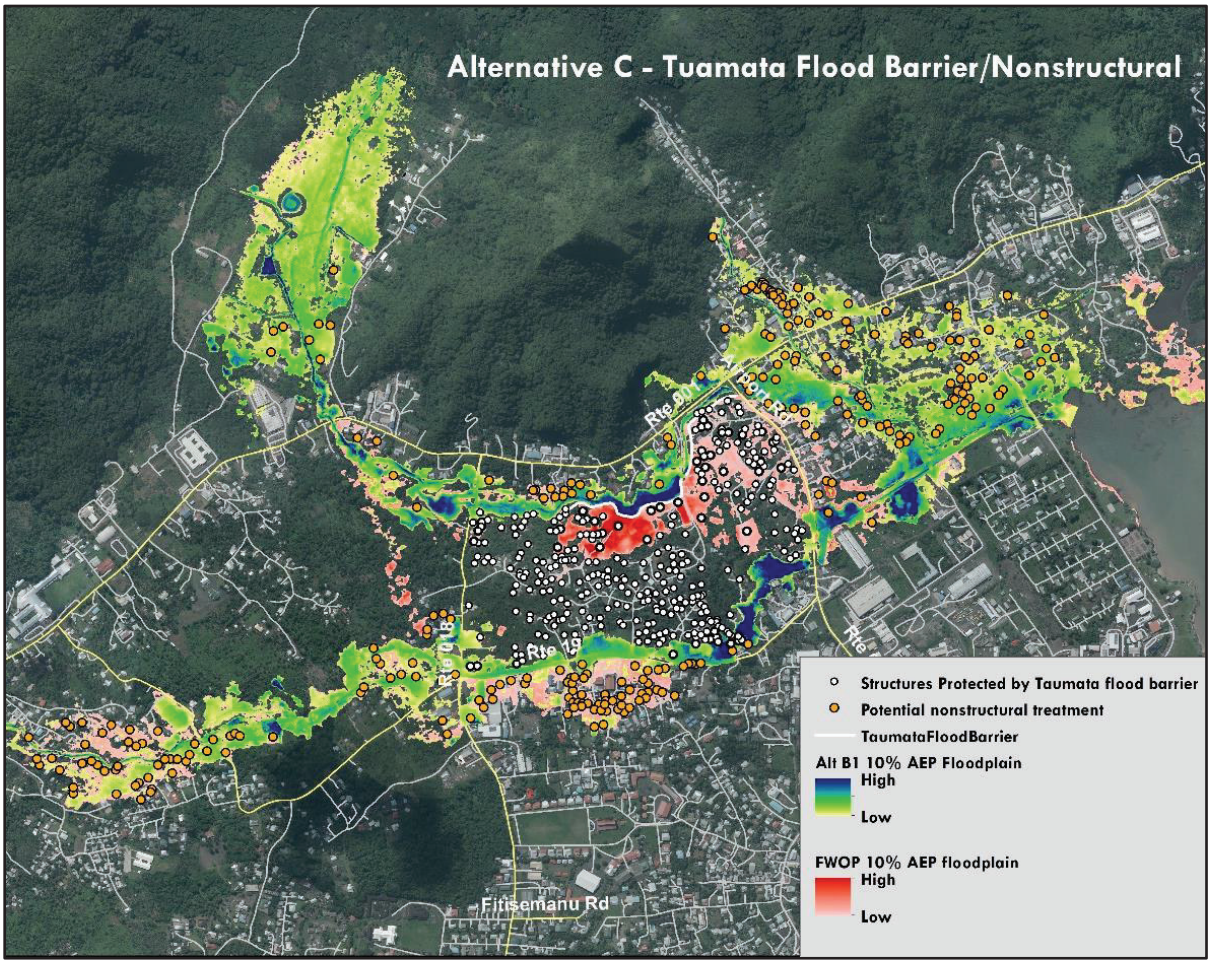


Figure 4: Alternative C candidate structures for nonstructural improvements.

Permanent Construction Footprint

A permanent flood protection levee easement totaling approximately 2.3 acres (100,820 square feet) is required for the construction of the flood barrier along Taumata Stream. The barrier would extend along the upper right (south) bank of Taumata Stream (looking downstream).

Temporary Construction Footprint

The minimum real estate required for construction and staging, including access, is a temporary work area/construction footprint (TCF) totaling approximately 1.8 acres. Construction and access to the flood barrier would require approximately 1.3 acres and staging would require 0.5 acres. Additionally, construction is planned within a 24-foot-wide corridor alongside the structural project features. The temporary work area easement is estimated to be required for two (2) years during project construction.

Staging areas must be established for the use and distribution of materials and equipment that will be used to construct the proposed Project. A 0.5-acre staging area has been identified and is located at the American Samoa Department of Public Works facility near the eastern end of the Leaveave Stream (Figure 5). The staging area generally contains contractor trailers, parking, fencing, and storage of equipment and materials. The staging area is estimated to accommodate construction for

both planned structural features as well as equipment and supplies needed for non-structural floodproofing and elevating structures. The staging area is generally flat and within close proximity to the proposed project features. Any material stored in the staging area would be covered to reduce the loss of material due to erosion and avoid impacts to the adjacent environment. The staging area would be restored to its previous condition upon construction completion.

Figure 5: Proposed location of staging area at the American Samoa Department of Public Works

All vegetation within the TCF will be removed in order to facilitate construction and provide enough room for construction equipment to operate. Vegetation will be removed prior to construction. Clearing and grubbing will result in discharge of bulldozer sidecast and temporary stockpiling of biomass.

Construction Site Equipment and Access

Required equipment to construct the proposed project features could include, but is not limited to, the use of an excavator(s) and front loader. It is anticipated that personnel, equipment, and imported materials would access project construction along public roadways parallel to the streams. Access points identified adjoining construction areas outside of the public roadway will be included in the TCF as project features are refined. After site preparation and vegetation removal activities, it is anticipated that construction of the flood barrier would occur. Construction is anticipated to last for two (2) years.

Operations and Maintenance

Although minimal operations and maintenance (O&M) requirements are expected for the proposed

project features, O&M activities are expected to entail typical periodic inspection of project features, periodic vegetation management (e.g., clearing or mowing of vegetation around the barrier) and structural repairs on an as needed basis. Structural repairs may be needed periodically to repair damages caused by storm flows. The nature of the discharges would be similar to those characterized for construction, but the scale would be substantially smaller because repairs would be limited to specific areas of the barrier where damages have occurred. Any vegetation removed from O&M activities would be transported to an appropriate facility for disposal.

4.5 Benefits and Environmental Issues

4.5.1 Benefits

The Corps has evaluated the proposed Project (Alternative C: Taumata Flood Barrier and Non-structural Improvements) and determined that the localized and short term (temporary) environmental impacts from the proposed project would be outweighed by the long-term benefits of increased flood risk protection afforded to local communities. Overall, the project would function to decrease health and safety risks associated with potential flooding in the watershed and reduce the potential extent of flooding in the watershed, thereby reducing the number of people subject to flood-related health and safety risks, including the majority of the watershed's residents. In addition to reducing health and safety risks to the affected population, critical infrastructure and other public facilities would be removed from the 1-percent ACE floodplain, thereby contributing to health and safety through increased resiliency in response to flood events. Another beneficial impact associated with implementation of the project is heightened awareness of the flood-related risks, including an increased understanding of the overall potential for flooding based on dissemination of project-related information, thereby improving public health and safety.

In accordance with the Clean Water Act Section 404(b)(1) Guidelines, the Corps must identify and normally select the least environmentally damaging practicable alternative (LEDPA) on the aquatic ecosystem. The proposed recommended plan (Alternative C) Taumata Stream Flood Barrier and Non-structural Improvements has been identified as the LEDPA. A 404(b)(1) analyses can be found in Appendix E of the draft Integrated Feasibility report.

4.5.2 Environmental Issues

The proposed action would not result in any direct impact/loss any resources within the coastal zone (habitat or species), as the proposed action is the construction of a flood barrier located on Taumata Stream. The downstream terminus of this flood barrier would be located approximately 3,000 linear feet from the nearest coastal zone resource (Nu'uuli Pala Lagoon). Although the Nu'uuli Pala Lagoon is not within the proposed Action Area, Taumata Stream (within the proposed Action Area) is a tributary to Vaitele Stream, which enters the lagoon at its northwest corner. Therefore, all runoff through the proposed Action Area eventually drains at the mouth of Vaitele Stream to the Nu'uuli Pala Lagoon, so indirect impacts in the form of temporary water quality degradation, could potentially occur through pre-construction, construction and post-construction project activities. For this reason, a detailed overview of the Nu'uuli Pala Lagoon to include an analysis of potential effects is included herein

Nu'uuli Pala Lagoon Overview

The Nu'uuli Pala Lagoon (Lagoon), a shallow estuarine body of water and the only large, enclosed lagoon on Tutuila. The Lagoon is roughly circular, approximately one (1) mile in diameter, and has a total surface area of approximately 1.2 square miles (768 acres), including open water and vegetated areas and comprised of 13% emergent wetland vegetation (including mangroves), 2% coral, and 77% un-colonized sediments (NOAA 2009). The bottom of the Lagoon is mostly unconsolidated muddy, coral sand to silty mud, and the water column is usually very turbid. Two-thirds of the lagoon is relatively flat and shallow, with depths ranging from 1-5 feet, depending on the tidal stage.

The Lagoon receives surface runoff from a large portion of the Tafuna Plain, including the village of Nu'uuli, and parts of Tafuna, Faleniu, Malaeimi, and Mesepa among other areas. The combined population of these villages as of 2011 was estimated at 15,424, or approximately 28% of the total population of American Samoa (ASG 2011).

During the 1960s, the Lagoon's natural circulation patterns were heavily altered through the creation of the airport (Scott 1993). The construction of the runways directly affected the Lagoon through the removal of dredge material to create new land and through the artificial restriction of ocean water exchange through the narrow channel between the airport runway and Coconut Point. The Lagoon was further impacted in the 1960s by the conversion of approximately 33% of the original mangrove vegetation to upland through dewatering (NOAA 2009).

Freshwater Inputs, and Tidal Patterns

The Lagoon is subject to typical tropical rain conditions and regularly experiences large, rapid fluctuations in the freshwater input. Freshwater enters from about six (6) streams (including
Freshwater Inputs

Vaitele Stream), all draining relatively small watersheds. The outlet of Vaitele Stream is located at the northwest corner of the Lagoon. When flowing, Vaitele Stream can deliver 950-1,350 gallons/minute of freshwater on average to the Lagoon. Papa Stream at the northeast corner of the lagoon (although not within the proposed Action Area) drains approximately 0.8 square miles and contributes a greater volume of runoff to the Lagoon, about 1,760 gallons/minute of freshwater runoff, when flowing (USDOI 1971). Given this, the northern region of the Lagoon receives much of this local runoff directly. Low surface water salinity levels recorded near the mouth for Vaitele Stream are indicative that subsurface freshwater inputs (e.g., springs) also occur here. Estuarine conditions in the Lagoon are created by freshwater inputs from two main streams (Puna and Vaitele Streams) and from numerous springs near its western and northern shores.

Water Circulation and Tidal Patterns

Estuarine conditions in the Lagoon are created by freshwater inputs from surface streams and from numerous springs near its western and northern shores. The Lagoon is classed as a stratified estuary but has some unusual features that set it apart from continental estuaries and its unique response to ocean tides is a function of the Lagoon's area, the geometry of the communicating channel with the ocean, and the character of the ocean tide itself. Bottom topography and depth profiles play an important role in defining the circulation patterns, with two distinct "regions" in the Lagoon evident: (1) the area near the lagoon mouth and adjacent to the airport has mean depth

of approximately 10 feet has very irregular topography, and (2) the remainder of the lagoon, while not uniformly flat, is basically a large, shallow shoal area with mean depth of three (3) feet or less.

Over half the lagoon is three (3) feet deep or less, solar effects are large, and the tidal inflow is about 40% of the Lagoon's volume. All of this contributes to a highly variable environment within the Lagoon. In addition, the Lagoon's connection to the ocean is restricted. The existing entrance to the lagoon is only about 1,200 feet wide, with most of that width covered by a reef flat with a very shallow (~1.6 foot) shoal sill that is partly uncovered at low tide. This coupled with the bottom topography inside the shoal sill forces a significant vertical circulation to occur in the outer third of the lagoon during each tidal cycle. The most important point about tidal circulation in the lagoon is that water entering from the ocean on each tidal cycle cannot leave again without mixing fairly extensively with resident lagoon water. This is due to the shallow entrance sill and the basin inside, which is large enough to contain the volume of tidal inflow. In contrast, seawater in most estuaries flows freely in and out underneath the estuarine water and much of this water leaving during ebb tide is merely the same water that entered during a flood event.

Tides in the Lagoon are about 85% as large as the ocean tide and follow it slightly in time. The high tide lag is about 30 minutes. However, as low tide is approached, the water level in the lagoon begins to fall more slowly than that of the ocean outside; low tide is somewhat attenuated and lags the ocean tide by about 1.5 hours. There is a sight amplification of the tide when proceeding from the entrance.

The mean residence time for water in the lagoon is about 30 hours. The mean total lagoon volume is approximately 70 million cubic feet (528 million gallons), a volume equal to about 40% exchanged during a semidiurnal tidal cycle. However, the lagoon is not completely mixed during a tidal exchange, and residence times vary from 12 hours near the lagoon entrance to two (2) weeks at the western edges during dry periods. During a rain event, residence times, at least for surface waters, would be expected to decline even more. The prevailing easterly winds drive surface water toward the western side of the lagoon. Therefore, any surface water containing pollutants brought in by streams inputs will tend to collect in the northwest area of the lagoon and removal by tidal circulation will be slowed.

Management Status

The Lagoon has been designated a Special Management Area (SMA) and supports the largest area of mangroves on Tutuila which reportedly provide important habitat for a variety of fish, invertebrate, and mollusk species. Three (3) species of mangrove species occur in the Lagoon: oriental mangrove (*Bruguiera gymnorrhiza*) is the dominant species, red mangrove (*Rhizophora mangle*) can be found along seaward margins, and the puzzlenut tree (*Xylocarpus moluccensis*) is quite rare reported in small numbers along the lagoon edge of Coconut Point, although the species may also exist along the northern shore of the lagoon (Sustainable Forestry Initiative Inc. 2019). Excluding open water areas, the lagoon covers 123 acres of which approximately 100 acres is comprised of Oriental mangrove and Red mangroves. Other mangrove forest associates include beach hibiscus (*Hibiscus tiliaceus*), fish-poison tree (*Barringtonia asiatica*), and Tahitian chesnut (*Inocarpus fagifer*). There is also a narrow strip of saltwater marsh within the lagoon.

In addition, the water column and bottom and all surrounding waters and submerged lands around

the lagoon are designated as Essential Fish Habitat (EFH) by the National Marine Fisheries Service (NMFS) and support various life stages for the management unit species (MUS) identified under the Western Pacific Fishery Management Council's American Samoa Archipelago and Pacific Pelagic Fishery Ecosystem Plans. The MUS and life stages found in these waters include: eggs, larvae, juveniles, and adults of Bottom-fish and Pelagic MUS (WPRFMC 2005). Specific types of habitat considered as EFH include coral reef, patch reefs, hard substrate, artificial substrate, seagrass beds, soft substrate, mangrove, lagoon, estuarine, surge zone, deep-slope terraces and pelagic/open ocean.

Aquatic Species

The bathymetric features of Pala Lagoon are largely responsible for the restrictive circulation patterns in the shallow basin, which likely accounts for the distribution patterns of all species (including corals) with the lagoon. Survey data indicate a general gradient of species, with the greatest diversity of organisms found at the at the mouth of the lagoon at the open ocean and the lowest diversity within the inner basin and on the mud flats and inner lagoon shores. The inner basin is shallower (the mean depth of this mostly sediment covered flat is less than three (3) feet), larger, and more isolated from ocean circulation and mixing than the areas near the Lagoon's mouth.

Reef corals, dominated by thickets of staghorn *Acropora sp*., are present only at the outer Airport-Coconut Point region near the mouth of the lagoon, presumably due to the proximity of more favorable open ocean conditions that promote the good circulation and exchange of water. Limited amounts of calcareous green algae *Halimeda sp*. and the sea grass *Halophila minor* have also been observed on the sandflats bordering Coconut Point. Corals are not found in the inner lagoon due to the low salinity and naturally high turbidity of the water column. Runoff to this portion of the lagoon from villages adjacent to the shoreline, in addition to poor water circulation, may have some effect; however, the lack of hard substrate in this area may the most limiting factor and inhibit recruitment by larval corals that are not able colonize finer sediment substrates, like sand or silty mud.

The Lagoon supports an abundance of fish and aquatic invertebrates, some of which are still occasionally harvested for food. Common invertebrates include various species of bivalve mollusks and echinoderms (e.g., starfish, sea urchins, sea cucumbers). Diversity of these species mimics a similar pattern as for corals, with decreasing diversity from the outer to the inner lagoon regions.

The inner basin tends to be dominated by the red algae *Acanthophora spicifera*, which covers much of the muddy and sandy bottom of the lagoon. Other algae include the green algae *Caulerpa* sp. and the brown algae *Dictyota sp.* and *Padina sp.* (Volk 1993). Small springs along the rocky western shore of the lagoon support dense mats of the filamentous algae *Enteromorpha sp.* (Yamasaki et al. 1985). Although the biota of the inner lagoon is generally lacking in diversity, survey data the inner lagoon does serve as an important nursery and spawning ground for various fish and invertebrate species. Yamasaki et al. (1985) found a surprisingly high diversity of fish species in the inner lagoon and a great abundance of mullet (Mugilidae). These authors also found an abundance of small predatory fish, notably juvenile *Sphyraena barracuda* (great barracuda) and *Caranx ignobilis* (giant trevally).

Two protected marine species include two species of sea turtles, the endangered hawksbill sea turtle (Eretmochelys imbricata) and the endangered green sea turtle (Chelonia mydas) have the potential to present in the Lagoon. Only the hawksbill turtle has historically reported from within the lagoon (Volk 1993). The lagoon does not support critical habitat or breeding/nesting of either of these species.

Baseline Water Quality

Mason and Whitall (2019) quantified the magnitude and distribution of pollution in the Lagoon to serve as a baseline against which future impacts can be measured. Overall concentrations of organic contaminants in sediment from the lagoon are low as compared to other studies conducted by NOAA's National Status and Trends Program. Levels of legacy organic contaminants, including polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and Dichlorodiphenyltrichloroethane (DDT), appear to be low and not currently a concern in the Lagoon. Levels of multi residue pesticides, human use pharmaceuticals, and perfluorinated compounds also appear to be low. Of particular note, however, is that organic and inorganic compound contaminants were consistently recorded at higher levels in proximity to sources of freshwater entering to the Lagoon. For example, water quality data collected from near the mouth from Vaitele Stream near the north end of Lions Park represented 60% of all maximum contaminant values measured in the Lagoon by Mason and Whitall (2019).

Relatively elevated levels of trace and major metals, including arsenic, chromium, copper, nickel, and zinc, have been recorded in the Lagoon (Whitall and Holst 2015; Whitall and Holst 2019). Trace and major element concentrations of heavy metals were highest at one location at the northeast side of the end of the Pago Pago airport runway, adjacent to the mouth of the Pala Lagoon. This location makes it one of the most likely sites to be well-flushed by tidal action; therefore, contaminant loads would be expected to be at or near the lowest measured in the lagoon. While this pattern held true for organic contaminants and most other metals, for chromium, nickel, and lead, measured concentrations were consistently high. Chromium, nickel, and lead are all common components of lead-acid batteries which have been observed a large number and in various states of decomposition along the airport runway fence line and near the mouth of the lagoon. This strip of shoreline north of the airport is a popular spot for night fishing activities, and that the source of the batteries could be fishermen improperly discarding flashlight batteries into or adjacent to the marine environment (Whitall and Holst 2015).

Based on comparisons with crustal metals, such as aluminum and iron, it appears that although many of these metals are elevated in the lagoon, much of these measured concentrations may be attributed to naturally high rates of erosion. For example, zinc concentrations in the Pala Lagoon exceeded the Effects Range-Low at four locations, but concentrations were very highly correlated to aluminum. This high level of correlation points toward these elevated concentrations occurring naturally through erosion processes.

Polybrominated Diphenyl Ethers (PBDEs) in the Lagoon were found to be elevated as compared to other relatively lower population coastal US areas; however, there are currently no established guidelines for the flame retardant class of chemicals that comprise PBDEs. Because PBDEs are often associated with flame retardants in furniture and other household goods, the reduction of bulk trash and other marine debris to the Lagoon could potentially help reduce future loading of

PBDEs to the marine environment.

Lower salinity numbers recorded near the mouth of Vaitele Streams point toward the potential for increased land-based runoff, though it is important to note that significant rainfall events occur regularly and could potentially affect the salinity levels here. The distribution of lower salinity sites is significantly correlated to distance from freshwater inputs into the Lagoon suggesting that salinity values are primarily driven by freshwater runoff and tidal influence instead of direct deposition of rainfall.

The bacterial indicator *Clostridium perfringens*, a surrogate for measuring human and animal waste inputs to the environment, was detected in every sediment sample collected in from the Lagoon. This points toward non-point source (i.e., stream runoff, ground water) based sources of potential human and animal waste entering the Pala Lagoon.

4.5.3 Environmental Effects Analysis

The proposed recommended alternative (Alternative C: Taumata Stream Flood Barrier and Non-structural Improvements) would not result in any direct impact to or loss of any coastal zone resource (habitat or species), as the proposed action is construction of a flood barrier located on Taumata Stream with non-structural elements incorporated. The downstream terminus of this flood barrier would be located approximately 3,000 linear feet from the nearest coastal zone resource, the Nu'uuli Pala Lagoon. However, localized and short term (temporary) effects in the form of temporary water quality degradation could potentially occur through pre-construction, construction and post-construction phases of the proposed Project activities so as to have indirect negative effects on habitats and species within the Lagoon. Therefore, this analysis focuses on these types of indirect effects.

Soft engineering strategies, such as installation of detention basins and floodplain zoning (a non-structural solution), were considered as potential solutions early in the planning phase of the Study. However, results of hydrologic modeling revealed that a detention-based solution would not be effective in reducing the effects of flooding in the proposed Action Area. There were also significant water quality concerns related to impacts to groundwater wells on the Tafuna Plain. Soils in the study area tend to be highly permeable and any water detained could eventually seep to groundwater and pose a potential health/safety issue. In addition, there was a significant concern in the ability to secure sufficient real estate/property for placement of these detention basins. Floodplain zoning was also screened out from further consideration as an infeasible or un-implementable measures due to the complexities of the communal land ownership system in American Samoa. In addition, the lack of land parcel data in American Samoa would make floodplain buyout analysis problematic, if not impossible. It was considered more realistic and practical to elevate or flood proof structures within the floodplain as the most viable non-structural solutions. These types of non-structural measures are not considered to have any negative impact on the quality of the human or natural environment.

Indirect Effects on Habitats and Species

The Corps recognizes that flood management strategies involving hard engineering techniques typically are generally more disruptive ecological processes and often increase the rate of water

flow and sediments into marine system and could result in adverse effects to EFH. Compared to most other alternatives considered in this Study that involved improvements to stream conveyance capacity and would involve instream/channel modifications, implementation of Alternative C is much less likely to result in adverse effects on estuarine and watershed systems. Its only structural component is a flood barrier that would be constructed alongside a defined reach of a non-perennial stream where the habitat is highly disturbed and comprised of mostly non-native species.

This flood barrier would not impact longitudinal connectivity or flows with the stream channel but would inhibit the movement of flood flows from the channel from reaching the most flood-prone areas of the project area during flood events.

Based on an analysis of the known locations of sensitive marine habitat receptors in the Pala Lagoon, coral reef, patch reefs, hard substrate/bottom, seagrass beds, surge zone, deep-slope terraces and pelagic/open habitats would not be affected by the proposed action as these habitat types are either non-existent in the lagoon, very limited in extent within the lagoon, or are far removed from the area that would be most influenced by project activities (i.e., the inner lagoon and the stream output at Vaitele Stream). The outlet of Vaitele Stream is approximately 0.8 miles from the Coconut Point and the mouth of the lagoon where sensitive receptors (i.e., coral reef, patch reefs, hard substrate/bottom, seagrass beds, surge zone, deep-slope terraces and pelagic/open habitats) would be found. Given the circulation and mixing profiles of the lagoon as described, these receptors would not be expected to be influenced by any residual water quality effects induced by the proposed recommended project.

The inner portion of the Lagoon near the mouth of Vaitele Stream is primarily soft, un-consolidated bottom and species diversity is low in this potion of the lagoon. However, mangroves are located close to the near the mouth of Vaitele Stream and represent a sensitive biological receptor to water quality impacts. Mangrove systems are a source of energy for food chains that occur within the forest as well as adjacent lagoons (Lugo and Snedaker 1974). Mangrove leaf detritus is an important source of energy as bacteria and fungi that consume detritus are in turn, consumed by mixed trophic herbivores and carnivores (Odum and Heald 1975). Maintaining water quality conditions within the mangrove forest and lagoon contributes to ensuring the pathways of mangrove leaf-litter energy flow would remain stable.

Although quantitative marine assessments and sediment plume modeling activities were not conducted for this study, the overall rate or volume of water entering the marine environment is not expected to significantly increase spatially or temporarily from the proposed recommended plan so as to have negative effect on mangroves. Although a limited number of mangroves are located close to the mouth of Vaitele Stream, they are most abundant at the eastern end of the lagoon and therefore more removed from any potential water quality impacts induced by the proposed recommended project.

Hydrologic modeling conducted byt eh Corps also too into account climate change and sea level rise

Sediment Transport, Water Volume, and Flow Frequency

Quantitative sediment plume modeling activities were not conducted for the study, as the overall

rate or volume of water entering the marine environment is not expected to significantly increase spatially or temporarily with implementation of the proposed recommended alternative. However, in accordance with ER 1110-2-8153, the proposed recommended plan was reviewed in consideration of impacts due to sedimentation. As discussed, the Vaitele-Taumata subdrainage of the Nu'uuli Pala Watershed watershed drains to the Pala Lagoon. Table X summarizes the without project average in-channel and overbank velocities for the Taumata Stream for varying sized storm events. The proposed recommended plan includes a flood barrier (levee and/or floodwall) that will prevent water from frequently overtopping the stream banks. This will, therefore, decrease that amount of water flowing through the residential and commercial areas during frequent storm events. By reducing runoff from these areas, the proposed recommended plan could potentially decrease pollutant and sediment loading to the lagoon. Given this, the Corps considered there is a low probability that sediment deposition will occur over sensitive and hard-to-replace habitats, like mangroves.

As hydraulic modeling is refined, the Corps study stream continue to evaluate if there will be any adverse impacts to the Pala Lagoon due to sedimentation.

Table X. Average water velocities in Study Area, Taumata Stream

	50% AEP		10% AEP		1% AEP	
	In Channel (ft/s)	Overbank (ft/s)	In Channel (ft/s)	Overbank (ft/s)	In Channel (ft/s)	Overbank (ft/s)
Without Project	5	1.7	4.4	1.3	5.2	1.6

Effects on Turbidity and Water Quality

The proposed recommended alternative (Alternative C: Taumata Stream Flood Barrier and Non-structural Improvements) entails the construction of a flood barrier located on Taumata Stream with non-structural elements incorporated. Localized and short term (temporary) impacts in the form of temporary water quality degradation (i.e., increased sedimentation and water column turbidity) may occur, mainly during the pre-construction and construction phases of the proposed Project, but these impacts are considered such as to be less than significant so as to negatively affect the water quality of the lagoon. The lagoon waters are already highly turbid, so it unlikely that the proposed recommended alternative (flood wall) would substantially influence this water quality parameter to have a negative effects on sensitive biological receptors, like mangroves.

The Nu'uuli Pala Watershed (the watershed within which the proposed Project is located) is considered an impaired waterbody by the American Samoa Environmental protection Agency (ASEPA) and does not support its designated uses, mainly due to bacteria impairments in stream and/or ocean shoreline reaches i.e., beaches (ASEPA 2018). American Samoa uses a Watershed Classification system to rate the disturbance of its watersheds based on population density/ mi^2 within a watershed. Based on 2010 census data, the disturbance classification for the Nu'uuli Pala Watershed was rated as "extensive" with a population > 750 mi^2 (ASEPA 2018).

The Lagoon has been shown to be influenced by multiple potential sources of land-based sources of pollution including runoff from roads, poorly functioning septic systems/cesspools, the airport, a jail, a history of piggeries, and low intensity agriculture, especially banana cultivation (Mason and Whitall 2019). Previous studies have shown the presence of fecal coliform bacteria in the

aquifers after heavy rains.

Best Management Practices for Water Quality

Due to the location of the proposed Action on Taumata Stream, no construction machinery will be placed, stored or otherwise located in the intertidal zone at the Lagoon at any time and construction equipment will not need to be washed on or near Lagoon. However, temporary effects from increased erosion or sedimentation may occur as a result of the pre-construction and early phase construction activities that could affect temporarily water quality in the Lagoon.

To this end, the contractor for the proposed Project would be required to prepare an Stormwater Pollution Prevention Plan (SWPPP) that will assure that: (a) the contractor will not store any construction materials or waste where it will be or could potentially be subject to erosion and dispersion to the stream channel and subsequently, the Lagoon; (b) where practicable, the contractor will use biodegradable (e.g., vegetable oil-based) lubricants and hydraulic fluids, and/or electric or natural gas powered equipment; and (c) immediately upon completion of construction and/or when the staging site is no longer needed, the site shall be returned to its pre-construction state. This SWPPP would be informed by principles and best management practices in the American Samoa Erosion and Sediment Control (ESC) Field Guide ver. 2.0 (Horsley Witten Group, Inc. 2019). The implementation of the practices in this guide are necessary to ensure compliance with the Territorial Environmental Quality Act, Title 24 Water Quality Standards, Pollution Control (A.S.A.C. § 24.0208). Under these regulations, the American Samoa Environmental protection Agency (ASEPA) is required to "prevent negative impacts to receiving waters and ground waters as a result of disruption in natural drainage patterns caused by development.".

If there is any indication that turbidity or sedimentation rates substantially change during and after certain project activities, adaptive management approaches would be implemented and plan be developed. Adaptive Management is a systematic approach for improving resource management by learning from post-project monitoring outcomes (40 CFR 1508.1(s)). Adaptive Management focuses on learning and adapting in order to create and maintain sustainable resource systems.

The purpose of the proposed Adaptive Management Program is to the provide flexibility over the 50-year life of the Project to modify/adjust future renourishment events in terms of timing, location, volume, construction methods and other elements of the Project if post-construction monitoring data indicates that Project-related impacts are substantially different (e.g., greater or lesser) that those predicted by the Integrated Feasibility Report.

The key steps in the Adaptive Management process are the following: (1) Design; (2) Implement; (3) Monitor; (4) Evaluate; (5) Assess; and (6) Adjust. For the recommended project, potential scenarios that could trigger an Adaptive Management action include impacts larger than expected, higher erosion in the project area, climate chang,e and sea level rise beyond maximum predicted levels. Should the need for an Adaptive Management action be determined based on subsequent information, it would be implemented accordingly so that any adjustment could be made.

The Corps will continue coordination and informal consultation with USFWS, NMFS, and the DMWR on the above-listed environmental/biological resources. Best Management Practices

(BMPs), environmental commitments would be implemented and environmental/biological monitoring would occur during construction to avoid and reduce (minimize) impacts to species and EFH.

Cultural Resources:

For archaeological and cultural resources, the Corps has developed a draft Programmatic Agreement (PA) that includes proposed mitigation measures for all historic properties which may be adversely affected by undertaking activities (see Appendix E of the draft IFR). Treatment strategies include design-based avoidance, design-based minimization, and data recovery For locations or actions which the Corps and the American Samoa State Historic Preservation Office (ASSHPO) agree may be inappropriate for archaeological data recovery, but for which there are still impact concerns, archaeological monitoring shall be considered as a mitigation option. If implemented, archaeological monitoring would be included in the construction specifications and drawings demarcating where archaeological monitors (hired under contract) are to be used.

5. CONSISTENCY WITH PROVISIONS OF THE AMERICAN SAMOA COASTAL MANAGEMENT ACT

5.1 Resource Agency Coordination and Regulatory Compliance

See Appendix E of the draft Integrated Report for information on agency coordination and regulatory compliance, especially letter received from the American Samoa Depart of Commerce.

5.2 Previous Coastal Commission Determination(s)

None previously submitted. This CD is consistent with the requirements of the American Samoa Coastal Management Act to the maximum extent practicable. The Corps finds that the proposed project is consistent with the general policies of the ASCMP and consistent with the coastal zone values and the basic goals of the ASCMP.

6. SIMILAR PROJECTS THAT RECEIVED AMERICAN SAMOA COASTAL MANAGMENT COMMISSION APPROVAL

None determined

7. REFERENCES

PROGRAMMATIC AGREEMENT AMONG UNITED STATES ARMY CORPS OF ENGINEERS AND THE AMERICAN SAMOA STATE HISTORIC PRESERVATION OFFICER FOR THE TAFUNA FLOOD RISK MANAGEMENT PROJECT, TAFUNA, AMERICAN SAMOA

January XX, 2022

WHEREAS, the U.S. Army Corps of Engineers (USACE) is considering implementing flood risk management measures along Tuamata Stream to minimize periodic flooding in the Tafuna region of American Samoa; and

WHEREAS, these measures will include channel conveyance improvements, dry floodproofing of commercial buildings, elevating residences, and a structural flood barrier consisting of 2,400 linear feet of seven-foot-high concrete barrier along the southern bank of Tuamata Stream; and

WHEREAS, USACE, in coordination with the American Samoa State Historic Preservation Officer (SHPO), has defined the preliminary Area of Potential Effect (APE) as the area that will be directly affected by structural flood barrier construction, to include the anticipated footprint of the barrier plus a buffer suitable for construction-related operations and equipment staging (Appendix A); and

WHEREAS, USACE and the SHPO have identified one major historic property within the APE—Site No. AS-31-39—which is eligible for listing on the National Register of Historic Places (NRHP) and will be adversely affected by the undertaking; and

WHEREAS, USACE and the SHPO agree that additional identifications and evaluations may be required because the Tuamata Stream area is considered to have a "high risk" for historic ~~properties;~~ and

WHEREAS, USACE cannot complete the cultural resources investigations, evaluations, and coordination necessary for compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (54 U.S.C. § 306108), as amended, prior to the design phase of the Undertaking; and

WHEREAS, the Advisory Council on Historic Preservation (ACHP) has been notified by USACE of the finding of adverse effect and has chosen not to participate in consultation; and

WHEREAS, USACE made the historic resources, effects determinations and proposed mitigations available for public review in the Draft Tafuna Flood Risk Management Study, prepared pursuant to the National Environmental Policy Act, which will serve as the District's Section 106 public coordination for the Undertaking; and

WHEREAS, this PA was developed pursuant to Section 106 of the NHPA and in accordance with 36 CFR Part 800.14, USACE and the SHPO have determined that execution of this PA will establish alternative procedures to streamline the coordination of the Undertaking; and

WHEREAS, USACE will implement the provisions of this PA during the appropriate phase (e.g., planning, design, construction) as funding for various phases of the project is appropriated in future years; and

NOW, THEREFORE the USACE and the SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties.

STIPULATIONS

USACE shall ensure that the following measures are carried out:

I. APPLICABILITY

A. This PA applies to all undertaking activities associated with the Tafuna FRM Project, regardless of whether they are carried out by USACE, it's permittees, or another governmental entity. In the event that another federal agency not initially a party to or subject to this PA receives an application for funding/license/permit for the Undertaking as described in this PA, that agency may fulfill its Section 106 responsibilities by stating in writing it concurs with the terms of this PA and notifying USACE, SHPO, and any other consulting parties that it intends to do so. Such agreement shall be evidenced by filing the written statement with the ACHP, and implementation of the terms of this PA. Before USACE's final approval of any project, construction activity, or irrevocable commitment associated with the undertaking covered by this PA, all provisions required hereunder must be completed.

II. IDENTIFICATION

A. USACE, in coordination with SHPO, shall identify areas that require supplemental investigation to document previously unidentified historic properties eligible for inclusion in the NRHP. Identification efforts shall be undertaken for: 1) areas not sufficiently covered by previous cultural resource investigations, and 2) expansions of the APE associated with unforeseen modifications to the scope of the project. Supplemental identification efforts shall occur prior to data recovery or other mitigation activities for previously identified historic properties, to the extent possible and practical.

B. USACE shall consult with the SHPO to develop technical approaches and research designs for supplemental identification of historic properties. Technical approaches may include pedestrian archaeological survey and/or subsurface testing prior to construction, or archeological monitoring during construction, depending on the resources of concern and the archaeological sensitivity of the area. The level of effort and work products (technical reports) for these activities shall be determined in consultation with the SHPO. Proposed technical approaches shall be submitted by USACE to the SHPO for review and comment within 30 days of receipt. If no comments are received within 30 days, USACE may assume concurrence with the proposed approach and proceed with supplemental identification efforts.

C. The results of supplemental identification efforts shall be submitted to the SHPO for review and comment. If acceptable to SHPO, the supplemental identification results shall form the basis for the development of mitigation treatments for any identified NRHP-eligible sites, buildings, structures, objects, districts, or traditional cultural places.

D. USACE shall ensure that qualified professionals meeting the National Park Service professional qualifications for the appropriate discipline [*National Park Service Professional Qualification Standards, Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44738-39)] are used to complete all identification and evaluation efforts related to this undertaking.

III. EFFECT DETERMINATIONS

For all historic properties, either previously identified or identified during supplemental survey efforts, found to occur withing the APE, USACE shall consult with SHPO regarding the potential of undertaking activities to affect.

A. Activities involving historic properties for which USACE has consulted with the SHPO and found that the proposed activity will have No Adverse Effect require no further review under this PA.

B. Activities involving historic properties for which USACE has consulted with the SHPO and found that the proposed activity may have adverse effects, USACE shall work collaboratively with SHPO to craft a mitigation strategy utilizing the treatment options in Section IV.

C. Should USACE and SHPO disagree as to whether the criteria of adverse effect apply to the effects of the undertaking activity on particular historic properties, USACE will request the ACHP to review the finding and request their written opinion, in accordance with 36 CFR 800.5(c). USACE will take the ACHP’s opinion into account when reaching a final decision.

IV. TREATMENT OF HISTORIC PROPERTIES

USACE will implement mitigation measures, as enumerated below, for all ~~historic~~ properties which may be adversely affected by undertaking activities. Treatment strategies include design-based avoidance, design-based minimization, data recovery, and monitoring.

The analysis of alternatives by USACE and SHPO shall consider the most appropriate treatment approach based on consideration of 1) the nature and significance of the resource, 2) design feasibility, 3) cost, 4) public benefit and values, and 5) the effect of the treatment on achievement of flood risk reduction goals.

A. AVOIDANCE. The preferred treatment is avoidance of adverse effects to historic properties. USACE shall, to the extent feasible, avoid historic properties either through project design changes, use of temporary fencing or barricades, realignments, or other measures that will protect historic properties. The SHPO shall assist the USACE with developing specific plans for avoiding effects to historic properties and the USACE shall incorporate such avoidance measures into project activities as part of the implementation of the Undertaking.

B. MINIMIZATION. When USACE, in consultation with the SHPO, determines that complete avoidance of historic properties is not feasible, the parties shall explore and develop practical methods to minimize impact to historic properties.

C. DATA RECOVERY. When USACE in consultation with the SHPO, determines that complete avoidance or minimization of impacts to archaeological historic properties is infeasible, USACE shall implement archaeological data recovery as mitigation for the adverse effects caused by undertaking activities.

(1) Archaeological Data Recovery. USACE shall develop a data recovery plan for archaeological sites which USACE determines, in consultation with the SHPO, cannot be avoided or preserved in place. The data recovery plan to retrieve significant archaeological information will be developed and implemented by USACE or its representative(s), in consultation with the SHPO, and prior to the implementation of project-related activities within or in the vicinity of the archaeological sites.

(i) USACE shall ensure that the data recovery plan for each NRHP-eligible site addresses substantive research questions developed in consultation with the SHPO. The plan shall be consistent with the *Secretary of the Interior's Standardsand Guidelines for Archaeological Documentation* (48 FR 44734-37) and the ACHP's publication, *Treatment of Archaeological Properties*.

(ii) USACE shall submit data recovery plans to the SHPO for review and comment within ~~30~~ days of receipt. USACE and SHPO shall consult to resolve any objections to the data recovery plan. The data recovery plan shall then be implemented by USACE. If USACE has not received comments from the SHPO within ~~30~~ days, USACE may assume

concurrence with the proposed data recovery plan and acceptance of the proposed data recovery plan as the final draft.

(iii) USACE shall conduct documentation of archaeological sites in accordance with the *Secretary of the Interior's Standardsand Guidelines for Archaeological Documentation* (48 FR 44734-37).

D. ARCHAEOLOGICAL MONITORING. For locations or actions which USACE and SHPO agree may be inappropriate for archaeological data recovery, but for which there are still impact concerns, archaeological monitoring shall be considered as a mitigation option. If implemented, archaeological monitoring shall be included in the construction specifications and drawings demarcating where archaeological monitors are to be used. The archaeological monitor may: 1) be hired under the construction contract, 2) be hired under a separate master contract through USACE, or 3) be a Secretary of the Interior-qualified USACE archaeologist. Protocols shall be included in the contract specifications regarding responsibilities of all parties, including the authority of the monitor to temporarily stop work in localized areas. The nature and intensity of archaeological monitoring (e.g., full-time on-site monitoring, daily spot-check monitoring, or on-call monitoring) can be changed through a written request by either USACE or the SHPO, with concurrence by the other.

(1) If archaeological monitoring is selected as mitigation, USACE shall develop an Archaeological Monitoring Plan, in consultation with the SHPO. The Archaeological Monitoring Plan shall clearly state:

(i) Whether monitor will be on site full-time, part-time or on an on-call basis and the rationale for this selection.
(ii) Timing of monitoring (both in the overall construction schedule and time allotted in the field). Ideally work on areas to be monitored shall be surveyed at the initiation of construction to allow for consultation and further work, as needed, should significant resources be encountered.
(iii) Authority and role of the archaeologist.
(iv) Location of monitoring.
(v) Nature of the work to be undertaken by the archaeologist (extent of excavation,types of recording, screening, artifact sampling, etc.).
(vi) Types of resources anticipated.
(vii) Protocol for actions should archaeological resources be encountered.
(viii) Protocol for actions should human remains be encountered.
(ix) Artifact analysis methods and reporting requirements.

V. TRADITIONAL CULTURAL PROPERTIES (TCPs)

TCPs will be evaluated for NRHP eligibility using the Criteria established for the NRHP [36 CFR Part 60]. If USACE and the SHPO agree that an NRHP-eligible TCP is present and it is determined that the TCP will be adversely affected by the Undertaking, then the property shall be treated according to the following:

A. USACE, in consultation with the SHPO, shall identify and evaluate design alternatives and treatment measures which will avoid, minimize, or mitigate impacts.

B. Treatment options may be generated from the guidelines provided by National Park Service Bulletin 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties*, and through ideas proposed by ~~interested parties~~ that are not standard treatment mitigations (creative mitigations).

VI. BUILDINGS AND STRUCTURES

Two flood risk management measures associated with the undertaking, dry floodproofing of commercial buildings and elevation of residences, have the potential to affect historic buildings. If the identification efforts in Stipulation II result in NRHP-eligible historic buildings for which floodproofing measures are found to constitute adverse effects, then the following mitigation process will be followed:

A. DESIGN REVIEW. SHPO and appropriate interested parties (e.g., building owner) will be afforded the opportunity to review design plans and specifications (in electronic format) in order to have input into proposed modifications and thereby minimize impacts to the historic character of NRHP-eligible buildings. The USACE will provide plans and specifications to the SHPO and interested parties for review and comment at the earliest design submittal, with a 30-day review period. If the USACE has not received comments from the SHPO and consulting parties within ~~30~~ days, the USACE may assume concurrence with the proposed plans and acceptance of the proposed designs.

B. DOCUMENTATION. Documentation of historic buildings shall be the preferred method of mitigation for NRHP-eligible buildings whose adverse effects cannot be sufficiently avoided or minimized through design change. USACE shall consult with the SHPO and interested parties to determine the appropriate level and type of documentation for affected resources, to include Historic American Building Survey/Historic American Engineering Record (HABS/HAER), or Historic American Landscapes Survey (HALS) where appropriate. Documentation shall be consistent with the requirements and standards of the Department of the Interior. All HABS/HAER/HALS documents must be submitted to the National Park Service (NPS) for review prior to construction affecting the resource, unless otherwise agreed to by either the SHPO or NPS.

C. INTERPRETATION. If exceptionally significant historic buildings are identified, and found to be subject to adverse effect, USACE will consult with the SHPO to develop an interpretation plan to ensure preservation of the historic context of the resource. USACE will provide interpretation plan documentation to SHPO and consulting parties with a ~~30~~-day review period. If USACE has not received comments from the SHPO and consulting parties within ~~30~~ days, USACE may assume concurrence with and acceptance of the proposed plans.

VII. DISPUTE RESOLUTION

Should a signatory or concurring party to this PA object to any of the actions proposed or the manner in which the terms of this PA are implemented, USACE shall consult with such party to resolve the objection. If USACE determines that such objection cannot be resolved, USACE shall:

A. Forward all documentation relevant to the dispute, including USACE's proposed resolution, to the ACHP. The ACHP shall provide USACE with its advice on the resolution of the objection within 30 calendar days of receiving adequate documentation. Prior to reaching a final decision on the dispute, USACE shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. USACE shall then proceed according to its final decision.

B. If the ACHP does not provide written comments regarding the dispute within the 30 calendar day time period, USACE may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, USACE shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the PA, and provide them and the ACHP with a copy of such written response.

C. USACE's responsibilities to carry out all other actions subject to the terms of this PA that are not the subject of the dispute remain unchanged.

VIII. AMENDMENTS

If any signatory party or concurring party believes that this PA should be amended, that party shall immediately so notify and consult with the other parties for no more than 30 calendar days to consider amendments to this PA. The parties may agree to a longer consultation period. This PA may be amended only upon the written agreement of all signatory parties. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

IX. TERMINATION

If any signatory to this PA determines that its terms will not or cannot be carried out, the party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation VIII.

A. This PA may be terminated unilaterally by USACE. It may be terminated by agreement of any two signatory parties. The signatory parties proposing termination shall notify all parties to this PA explaining the reasons for the termination. Prior to termination, whether by USACE or any other signatory parties, the signatory parties shall consult for no more than 30 calendar days to consider alternatives that would avoid termination. The signatory parties may agree to a longer consultation period.

B. Should such consultation fail, the signatory parties supporting termination may terminate this PA by so notifying all parties to this PA in writing. Should the PA be terminated, USACE shall consult in accordance with 36 CFR § 800.14(b)(3) to develop a new PA or comply with 36 CFR Part 800 Subpart B with regard to each undertaking.

X. DURATION AND RENEWAL OF AGREEMENT

This PA will remain in full force and effect for ~~10~~ years after the date of the last signatory's signature. This PA will be reviewed periodically, not less than ~~five~~ years from the execution of the PA. Sixty calendar days prior to the date this PA would otherwise expire, USACE shall consult with the Signatories to determine whether the PA needs to be extended, amended, or terminated and take such actions as appropriate.

XI. ADDITION OF SIGNATORIES AND CONCURRING PARTIES

A. In the event that there is additional federal involvement in a proposed undertaking, that federal agency will have the option to accept the terms of this PA, which will not require an amendment. If the federal agency signs as an invited signatory, USACE must notify the signatories in advance of the federal agency committing to the terms of this agreement.

B. Organizations desiring participation in this PA after its execution may submit a written request to the Chief Engineer to sign as a concurring party. Such a request will not require an amendment to the PA, USACE will provide the organization with a concurring party signatory page, and USACE will inform the signatories within thirty (30) calendar days of receiving that organization's newly executed concurring party signatory page.

XII. EFFECT OF THE PASSAGE OF TIME

In any case where a party fails to comment or act within a time frame that is specified or is otherwise agreed upon by the parties, USACE may thereafter immediately proceed in the matter at issue without further regard to comments or actions by that party.

XIII. EFFICIENT COMMUNICATIONS

In accordance with Executive Order 13563 "Improving Regulation and Regulatory Review," and Executive Order 13589 "Promoting Efficient Spending" communications between signatories of this Agreement and consulting parties discussed herein shall be in electronic form whenever practicable, permitted by law, and consistent with applicable records retention requirements. Unless specifically requested in another form (i.e., mail/hard copy) by the ~~SHPO,~~ concurring parties, or consulting parties in writing to USACE.

XIV. ANTI-DEFICIENCY ACT COMPLIANCE

The stipulations of this PA are subject to the provisions of the Anti-Deficiency Act, 31 USC §1341. If compliance with the Anti-Deficiency Act alters or impairs USACE's ability to implement the

stipulations of this PA, USACE will consult in accordance with the amendment and termination procedures found at Stipulations VIII and IX of this PA.

XV. DEFINITIONS

The definitions of terms appearing at 36 CFR 800.16 are incorporated by reference into this PA.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 Ala Moana Boulevard, Rm. 3-122
Honolulu, Hawaii 96850

11 January 2022

Christopher W. Solek
Chief, Regional Planning Section
Environmental Resources Branch, Planning Division
U. S. Army Corps of Engineers, Los Angeles District
915 Wilshire Blvd., Los Angeles, CA 90017

Dear Mr. Solek:

The U.S. Fish and Wildlife Service (Service) is providing this Initial Draft of a Fish and Wildlife Coordination Act Planning Aid Report for the Tafuna Flood Risk Management Study, involving the island of Tutuila in American Samoa. The Fish and Wildlife Coordination Act of 1934 [16 U.S.C. 661 et seq.; 48 Stat. 401], as amended (FWCA), was established to provide a basic procedural framework for the orderly consideration of fish and wildlife conservation measures to be incorporated into Federal water resources development projects. This report has been prepared under the authority of and in accordance with provisions of the FWCA, the Federal Clean Water Act of 1977 [33 U.S.C. 1251 et seq.; 62 stat. 1155], as amended (CWA), and the Endangered Species Act [16 U.S.C 1531 et seq.], as amended (ESA). These comments are also consistent with the National Environmental Policy Act of 1969 [42 U.S.C. 4321 et seq.; 83 Stat. 852], as amended, and other authorities mandating the Service's review of projects and provision of technical assistance to conserve trust resources.

The version of the report transmitted here is an initial draft, being provided on short notice at your request to satisfy internal U. S. Army Corps of Engineers deadlines, and does not yet incorporate comments or recommendations from the Territory of American Samoa's Department of Marine and Wildlife Resources, or from NOAA's National Marine Fisheries Service. Because FWCA specifically requires the Service to incorporate any recommendations that the local jurisdiction may provide, it should be anticipated that a second draft of the report, incorporating such comments, will be provided within the next 4 weeks, and may contain additional comments and recommendations beyond those contained in this initial draft.

We appreciate the opportunity to provide input on the proposed project. If you have any questions regarding the report, please contact Fish and Wildlife Biologist Dan Polhemus (808-792-9415, or dan_polhemus@fws.gov).

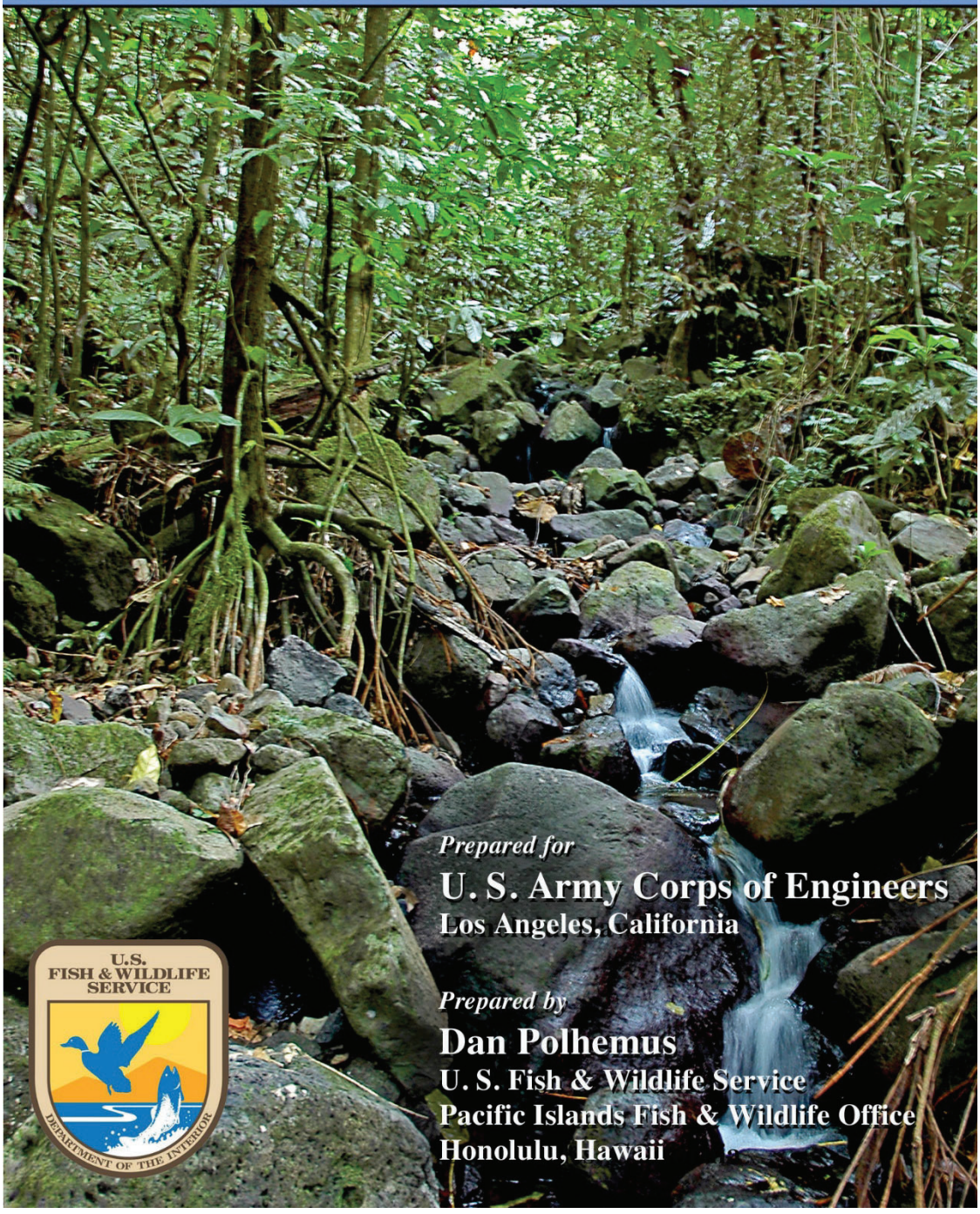
Sincerely,

Dan Polhemus, Aquatic Ecosystem Conservation Program Manager

Phase 1 Aquatic Resources Habitat Characterization
Tafuna, American Samoa
Flood Damage Reduction Study

Planning Aid Report - Fish & Wildlife Coordination Act

DRAFT REPORT **January 2022**



Prepared for

U. S. Army Corps of Engineers
Los Angeles, California

Prepared by

Dan Polhemus
U. S. Fish & Wildlife Service
Pacific Islands Fish & Wildlife Office
Honolulu, Hawaii

Polhemus, D. A. 2022.

Phase 1 Aquatic Resources Habitat Characterization: Tafuna, American Sāmoa, Flood Risk Management Study

U. S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office

Fish and Wildlife Coordination Act Planning Aid Report

January 2022

Cover: A headwater stream in Amalau Valley, Tutuila Island, American Sāmoa.

DRAFT

FISH AND WILDLIFE COORDINATION ACT
PLANNING AID REPORT

TAFUNA FLOOD RISK MANAGEMENT STUDY
AMERICAN SĀMOA

Prepared by:

DAN A. POLHEMUS

U.S. Department of the Interior
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
Honolulu, Hawaii

Prepared for:

U.S. Army Corps of Engineers – Los Angeles District
Los Angeles, CA

January 2022

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INTRODUCTION

Authority, Purpose and Scope

The current document constitutes the U.S. Fish and Wildlife Service's (Service) draft Planning Aid Report on plans developed by the U.S. Army Corps of Engineers (USACE) for a flood risk reduction study for portions of the Tafuna-Leone Plain, located on the island of Tutuila, Territory of American Sāmoa (Fig. 1). This report has been prepared under the authority of the Fish and Wildlife Coordination Act of 1934 (FWCA) [16 U.S.C. 661 *et seq.*; 48 Stat. 401], as amended, and other authorities mandating Department of the Interior (DOI) coordination to minimize impacts from federal projects. This report is also consistent with the National Environmental Policy Act of 1969 (NEPA) [42 U.S.C. 4321 *et seq.*; 83 Stat. 852], as amended and the Endangered Species Act of 1973 [16 U.S.C. 1531 *et. seq*.; 87 Stat. 884], as amended (ESA).

The purpose of this report is to document existing fish and wildlife resources at the proposed project site and to ensure that fish and wildlife conservation receives equal consideration with other proposed project objectives as required under the FWCA. The report includes an assessment of conspicuous diurnal fish and wildlife resources at the proposed project sites, an evaluation of potential impacts associated with the proposed alternative actions, and recommendations for fish and wildlife mitigation measures.

The proposed Tafuna Flood Risk Management Study is authorized under Section 444 of the 1996 Water Resources Development Act (Public Law 104-303, 110 Stat. 3747), as amended, for the Tafuna-Leone Plain, located in the southwestern portion of the island of Tutuila, Territory of American Sāmoa. This civil works project is being undertaken by the USACE as the Federal sponsor, in partnership with the Territory of American Sāmoa, Department of Public Works as the non-Federal sponsor.

The overall purpose of the study is to determine if there is a Federal interest in participating in a flood risk management project to address periodic flooding on the Tafuna-Leone plain from Leaveave Stream. The study will be conducted in partnership with the Government of American Sāmoa and is currently in a Scoping Phase. One focus of the current Scoping Phase is to determine the existing environmental baseline conditions in the study area, in order to inform an evaluation of potential effects resulting from the various project alternatives. Pursuant to correspondence dated September 11, 2020, the USACE has invited the Service to participate in this study, and to prepare a FWCA Planning Aid Report providing recommendations to avoid or minimize impacts that might result from this proposed project.

The USACE has undertaken several previous hydrologic and hydraulic analyses of the Tafuna-Leone plain, most recently in 2016 and 2019. Staff from the USACE also conducted a site visit to the proposed project area in February 2020. The information gained from these efforts forms the basis for the current Flood Risk Management Study, which seeks to review the project in the context of current conditions, and to evaluate a range of alternatives to address flood risks in this area.

The current study includes evaluation of both structural and non-structural measures being proposed by the USACE to reduce flood risk in the Tafuna-Leone Plain area. After considering a wide array of alternatives, the USACE in an interagency briefing conducted on 26 October 2021 indicated that the following alternatives would be pursued: 1) construction of a flood barrier along the south bank of the Taumata Stream mid-reach where it skirts the base of Tau Mountain; and 2) non-structural floodproofing of numerous residential and non-residential structures. Significantly, no channelization of stream courses or construction of detention basins is being proposed, greatly reducing potential impacts to native diadromous species.

Service biologists have participated in online meetings to discuss the proposed project with staff from the USACE, the National Marine Fisheries Service (NMFS) and representatives of the territorial government of American Sāmoa. Copies of this draft report have been provided to the NMFS, the American Sāmoa Government's Department of Marine and Wildlife Resources (DMWR), and the U.S. Environmental Protection Agency (EPA). Their comments will be incorporated into the final report.

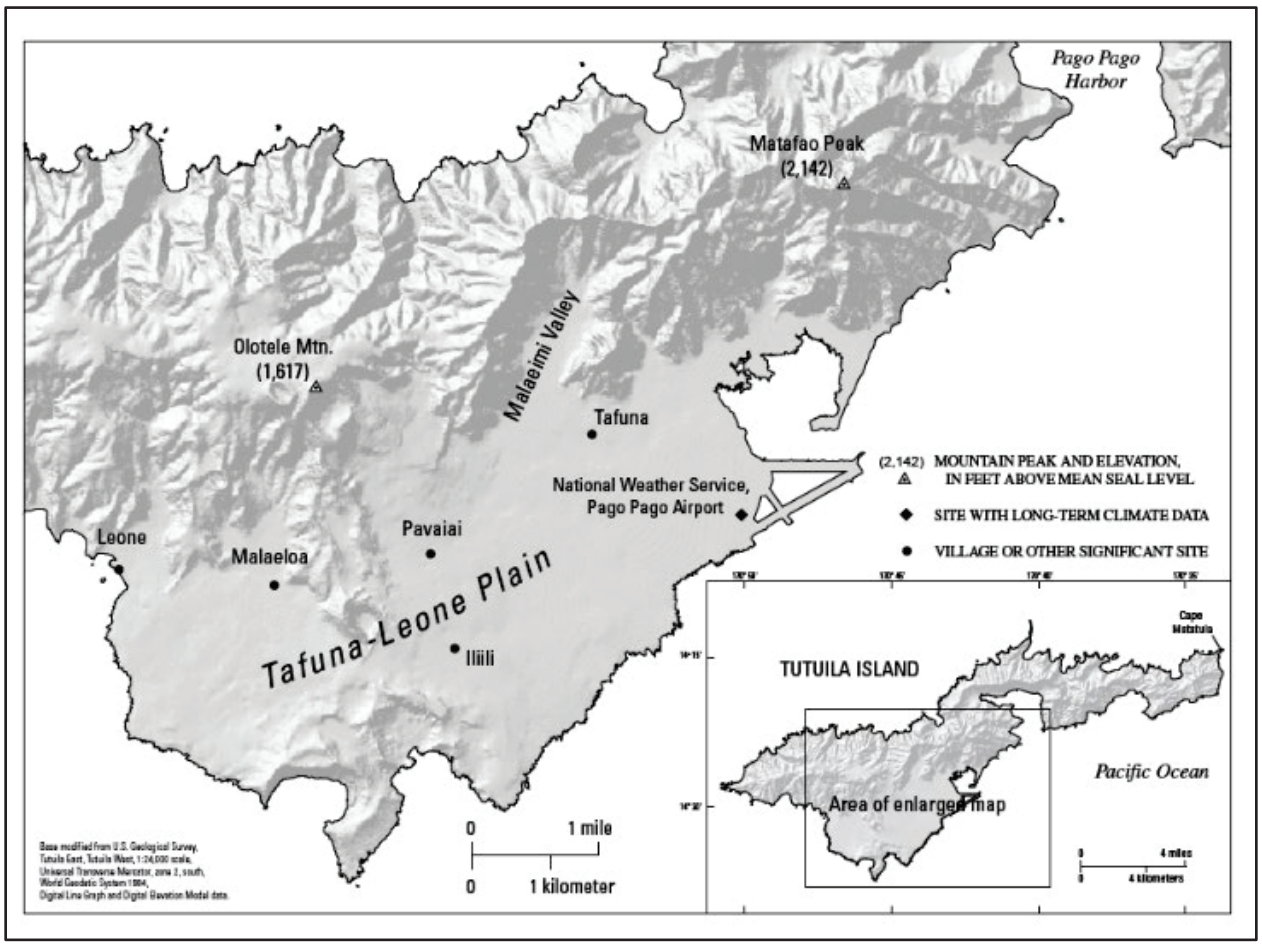
Prior Fish and Wildlife Service Studies and Reports

The Service has not undertaken any field studies or prepared any previous FWCA reports regarding this proposed action or dealing with the Vaitele Stream catchment. Due to travel restrictions occasioned by the currently ongoing global coronavirus pandemic, it has not been possible to travel to American Sāmoa to undertake any direct observations of the proposed project area. As such, the current report must be considered a desk study that utilizes existing information available from USACE briefing documents, the existing scientific literature, and internal Service work products.

The most important and comprehensive previous study of stream catchments on Tutuila and their associated biota was a report prepared by the USACE in 1981 (USACE 1981). This report summarized physical and biological information for 37 catchments, including that of Vaitele Stream. The biological information included lists of fishes, crustaceans, and mollusks, with 43 species recorded. Aquatic insects were not included in these surveys, although they exhibit greater local endemism than the other groups listed. The report also noted the relative absence of invasive, non-native aquatic species in Samoan streams, with only one species out of the 43 recorded, the poeciliid *Poecilia mexicana*, being considered non-native.

A more recent study by Polhemus (2020) analyzed the island of Tutuila on an individual catchment basis and ranked the catchments in regard to their species richness of freshwater fishes shrimps, crabs, mollusks and insects. The catchment units used in this report were congruent with those utilized by the Geographic Information Systems group at the American Sāmoa Community College in the community forestry analysis. As such, certain of these catchment units combine multiple catchments, particularly those of smaller size, and are not precisely the same as those used by USACE (1981). In particular, the Vaitele Stream catchment as treated by Polhemus (2020) lies within a Nu'uuli-Pala unit that combines all streams draining to the Pala

Lagoon. Some of these streams, such as Nu‘uuli, have high biological value, and as a result this unit ranked as one of the highest priority areas for stream conservation on the island of Tutuila. However, the species richness of the Vaitele Stream catchment is far lower than that seen in that of Nu‘uuli Stream, so the overall catchment unit ranking can give a false impression of the true biological resources present in the proposed project area.



DESCRIPTION OF THE PROJECT AREA

Vaitele Stream Catchment

The general study area for the proposed project encompasses drainage of the Vaitele Stream watershed (note, this catchment should not be confused with another similarly named Vaitele Stream catchment, also on the south side of Tutuila, lying to the east of Pago Pago harbor), including its major tributaries Taumata Stream and Leaveave Stream. The focused study area

extends concentrates primarily on the latter tributary, with lies furthest to the southwest and has produced the most substantial flooding impacts to residences and businesses over the past decades. Leaveave Stream confluences with Vaitele Stream not far about its seaward terminus in Pala Lagoon, and at the mouth the system is referred to as the Vaitele. However, for the purposes of this report discussion will primarily center on the Taumata and Leaveave branches, since this is where structural measures flood control measures are being proposed. Nomenclature for stream reach types within the system follows Polhemus et al. (1992).

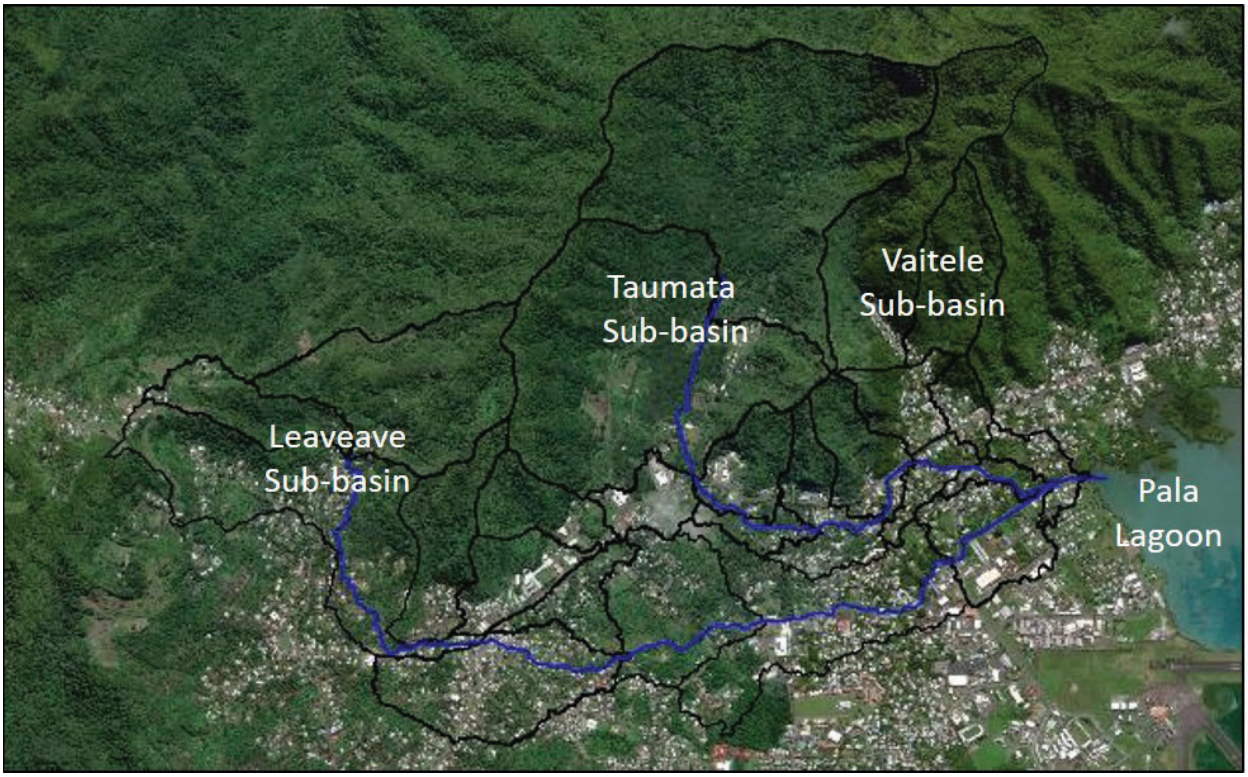


Figure 2. Map of the Vaitele Stream catchment, Tutuila, American Sāmoa with major watercourses and catchment sub-basins as discussed in the text (modified from USACE 2021).

The Vaitele River Stream watershed covers 3.85 square miles, or 2464 acres (U. S. Army Corps of Engineers project briefing materials) and is located southwest side of Tutuila to the west of the Pala Lagoon. The watershed consists of three discrete sub-basins separated by ridges, referred to herein, from east to west, as the Vaitele, Taumata, and Leaveave sub-basins (Fig. 2). The maximum channel length is approximately 3.4 miles, from the headwaters of the Leaveave tributary to the stream mouth at Pala Lagoon. The two eastern sub-basins form a U-shape, enclosing the north-south oriented ridge that terminates in Tau Mountain, with a terminal reach spur to the east of the confluence of the Vaitele and Taumata branches that leads to the seaward terminus at the head of Pala Lagoon. The western extension of the catchment is L-shaped, draining a broad valley surrounding Mapusaga village, then running nearly due east, parallel to and south of the course of the Taumata, before joining the combined Taumata and Vaitele just before the seaward terminus.

Vaitele Stream heads on the southwest slope of Leele Mountain at an elevation near 1400 foot (ft.), occupying a hanging catchment before passing over a waterfall at about 250 ft. elevation, and then entering a tighter valley with steeper walls, and occupied by housing built close to the stream channel. Although the Vaitele sub-basin represents high quality stream habitat, it is not considered in detail in this report, because the major flooding issues being addressed by the USACE originate from the Taumata and Lealeale sub-basins.

Taumata Stream has its headwaters on Taumata Mountain at approximately 1000 ft. elevation. The headwater reaches include several small tributaries, none of which are named on 1:24,000 scale topographic map of Tutuila prepared by the U. S. Geological Survey (USGS), and all of which descend steeply into a bowl-shaped valley with a relatively flat floor, lying between Taumata Mountain and Tuasivitasi Ridge. The stream then curves eastward around the base of Tau Mountain, passing through neighborhoods and small plantations, to join the Vaitele. This lower mid-reach section is low gradient and shallowly incised, passing over the relatively flat lavas of the Tafuna Plain, and as a result flood waters spread laterally from the channel during spates.

Lealeale Stream originates near 1200 ft. elevation on the west side of Tuasivitasi Ridge. The upper mid-reach initially trends southward, being joined from the east by two additional steeply dropping tributaries, the Puna and Mapusagatuai streams. The stream channel makes a sharp bend to the east at Mesepa village, and then follows a set of shallowly incised channels and swales, passing through neighborhoods, fields, plantations and light industrial areas surrounding Mapusaga, Lepine, and Tafunafou villages. Like the situation on Taumata Stream, the lower mid-reach of the Lealeale is low gradient as it traverses the Tafuna Plain, and its waters tend to spread and pool during flood events, causing inundation of adjacent properties.

The mid-reaches of the Taumata and Lealeale tributaries traverse relatively young lava flows which have high porosity, rendering these sections of the Vaitele catchment naturally interrupted as defined by Polhemus et al. (1992). Channels in this area appear to be devoid of flowing water during the drier months of the year, based on field reports from USACE staff. By contrast, the Vaitele tributary descends more steeply through more mature terrain, and is continuously perennial along its length.

The headwater reaches of all three sub-basins in the Vaitele Stream catchment are thickly covered with relatively undisturbed tropical rain forest, although such forest cover is now limited in the upper Leaveave sub-basin. This forest cover intergrades on the lower hill slopes into vegetative formations classified by the USACE in their project briefing materials as “Rhus Secondary Forest” and “Secondary Scrub.” At elevations below 300 ft. all the sub-basins have been extensively developed, falling into the land use categories of Agriculture, Urban Cultivated, and Urban Built-Up, although such development is more limited in the Vaitele sub-basin due to its precipitous bounding topography. Satellite imagery also indicates an area of land clearing and bare soil exposure in the far upper valley of the Taumata sub-basin, which is likely creating degraded water quality in reaches downstream. There are no areas of natural vegetation remaining within the proposed project area (Fig. 3).

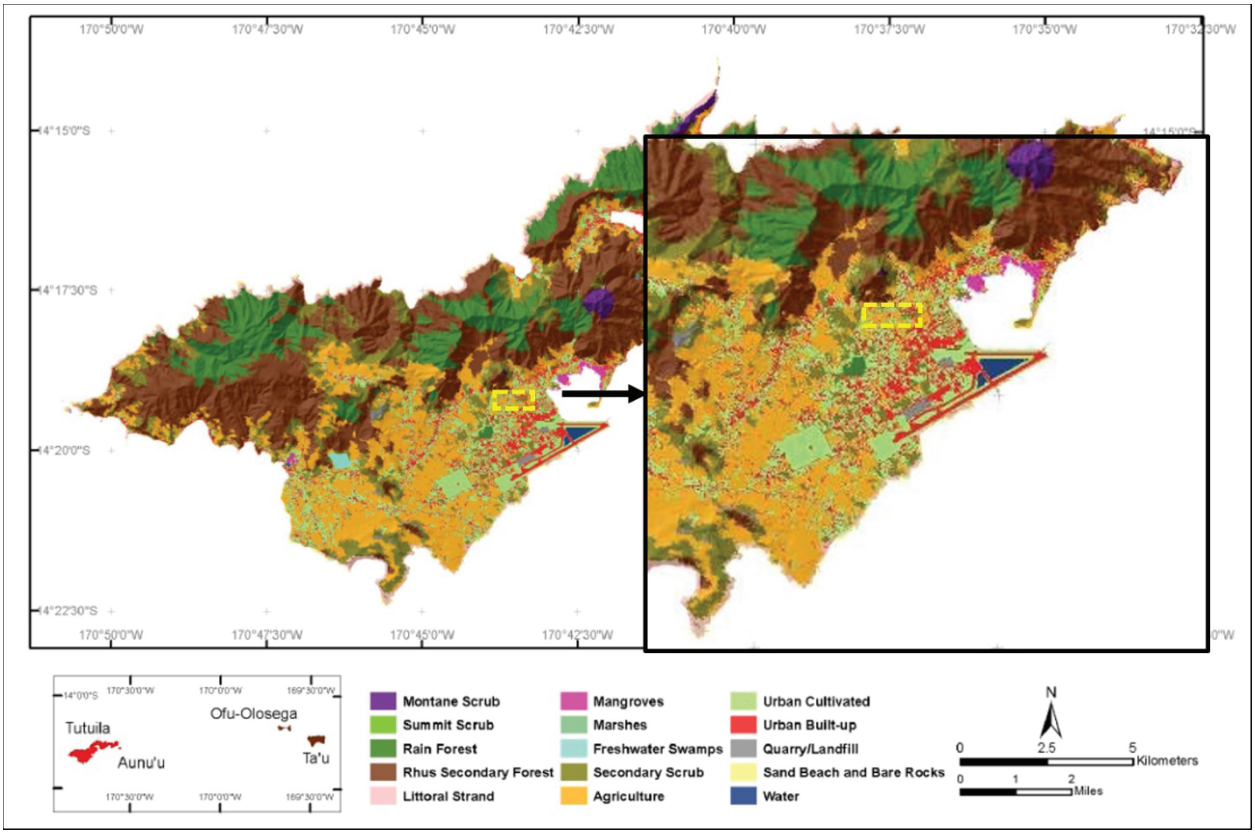


Figure 3. Map of general land use patterns on the western half of Tutuila island, American Sāmoa with an enlargement of the sector surrounding the proposed project area, indicated by the yellow-dashed rectangle (USACE 2021).

The previous report by the USACE (1981) notes that the stream and its tributaries are crossed by major roads in 5 places; that portions of the channel have straightened or re-aligned; and that a catchment and spillway are present 1.5 miles upstream. This latter feature is not evident on current satellite imagery. This study also noted that the stream terminal reach in 1981 was choked with California grass (*Brachiaria mutica*, a species native to Africa that does not occur in California).

The Vaitele Stream catchment as a whole is considered perennial under the classification of Polhemus et al. (1992), since it discharges continuously at its mouth, although certain mid-reaches, particularly those of Taumata and Lealeale streams, appear to be intermittent, going dry at certain times of the year (Wong 1996), and would therefore be considered naturally interrupted under this same classification.

Assessment of discharge patterns within this catchment is hindered by the fact that there are no currently active stream gauging stations anywhere in the Vaitele system, or on the island of Tutuila as a whole. In the past, the USGS had conducted stream gauging on the island of Tutuila since 1957, in cooperation with the Government of American Sāmoa, and a summary of analytical methods for calculating streamflow characteristics was provided by Wong (1996),

based on records from 11 continuous-record stations, 75 low-flow partial record stations, and 49 miscellaneous sites. Beginning in 1996, however, the number of maintained stream gauges on Tutuila declined substantially, and in 2008, due to a lack of funding, the USGS discontinued all hydrological monitoring in American Sāmoa, including precipitation and stream gauging. As a result, there is only a single stream gauge on the island of Tutuila has more than 35 years of record which is unaffected by upstream diversions, and it is not currently in operation.

At total of 10 different gauging sites were operated by the USGS in the Vaitele Stream basin from 1959 to 1989. Of these, 9 stations were low-flow partial-record stations where 8 or more base-flow discharge measurements were made over a given 3–4-year period to establish mean and median base flows, while the other station was a miscellaneous site where discharge measurements were not restricted to assessment of base flow. The stations involved in the three sub-basins were as follows (based on information presented in Wong (1996).

Vaitale sub-basin

USGS gauge 16937000, a low-flow partial record station, was located on Vaitele Stream near Lepine village, at 14°18’51”S, 170°43’35”W, 0.7 miles north of Lepine, and 1.1 miles upstream of the mouth. Based on a discontinuous period of record from 1959-1989, the stream at this site had a mean flow of 0.85 cubic feet per second (cfs), and a median flow of 0.67 cfs, with the lowest 7-day, 10-year flow being 0.18 cfs.

USGS gauge 16938000, a low-flow partial record station, was located on Vaitele Stream near Lepine village, at 14°18’57”S, 170°43’21”W, 0.7 miles northeast of Lepine. Based on a discontinuous period of record from 1959-1976, the stream at this site had a mean flow of 0.55 cfs, and a median flow of 0.26 cfs, with the lowest 7-day, 10-year flow being 0.05 cfs, and the highest recorded flow of 0.82 cfs.

Taumata sub-basin

USGS gauge 16939000, a low-flow partial record station, was located on Taumata Stream near Mapusaga village, at 14°18’23”S, 170°44’00”W, 1.6 miles north of Mapusaga village. Based on a discontinuous period of record from 1959-1974, the stream at this site had a mean flow of 0.20 cfs, and a median flow of 0.12 cfs, with the lowest 7-day, 10-year flow being 0.03 cfs, and the highest recorded flow of 0.25 cfs. It was noted by Wong (1996) that the stream goes dry at lower elevations during the drier months.

USGS gauge 16940000, a low-flow partial record station, was located on a tributary to Taumata Stream near Mapusaga village, at 14°18’27”S, 170°43’49”W, 1.6 miles northeast of Mapusaga village. Based on a discontinuous period of record from 1959-1974, the stream at this site had a mean flow of 0.30 cfs, and a median flow of 0.22 cfs, with the lowest 7-day, 10-year flow being 0.02 cfs, and the highest recorded flow of 0.55 cfs.

Leaveave sub-basin

USGS gauge 16919000, a low-flow partial record station, was located on Leaveave Stream near Aasu village, at 14°18’28”S, 170°45’01”W. Based on a discontinuous period of record from 1960-1976, the stream at this site had a mean flow of 3.46 cfs, and a median flow of 2.40 cfs, with the lowest 7-day, 10-year flow being 0.32 cfs. It is noted by Wong (1996) that there were no villages in this valley, which might account for the anomalously high base flow at this station, perhaps due to a lack of upstream diversions.

USGS gauge 16919200, a low-flow partial record station, was located on Leaveave Stream near Aasu village, at 14°18’21”S, 170°45’03”W. Based on a discontinuous period of record from 1960-1976, the stream at this site had a mean flow of 0.52 cfs, and a median flow of 0.40 cfs, with the lowest 7-day, 10-year flow being 0.09 cfs.

USGS gauge 16919400, a low-flow partial record station, was located on Leaveave Stream near Aasu village, at 14°18’24”S, 170°45’03”W. Based on a discontinuous period of record from 1960-1976, the stream at this site had a mean flow of 0.26 cfs, and a median flow of 0.21 cfs, with the lowest 7-day, 10-year flow being 0.05 cfs.

USGS gauge 16936000, a low-flow partial record station, was located on Leaveave Stream at Mapusagafou village, at 14°19’12”S, 170°45’00”W, 0.1 mile upstream from Puna Stream and 0.7 mile north of Mapusagafou. Based on a discontinuous period of record from 1959-1976, the stream at this site had a mean flow of 0.47 cfs, and a median flow of 0.37 cfs, with the lowest 7-day, 10-year flow being 0.05 cfs.

USGS gauge 16941000, a low-flow partial record station, was located on Mapusagatua Stream (a tributary to Leaveave Stream) near Mapusaga village, at 14°19’38”S, 170°44’48”W, 0.3 miles west of Mapusaga village. Based on a discontinuous period of record from 1959-1976, the stream at this site had a mean flow of 0.29 cfs, and a median flow of 0.23 cfs, with the lowest 7-day, 10-year flow being 0.05 cfs. It was noted by Wong (1996) that the stream channel was dry downstream of Mapusaga because of diversion by the village.

A USGS miscellaneous gauging site was located on Leaveave Stream near Mapusaga village, at 14°19’16”S, 170°44’58”W, immediately downstream of the confluence with the Puna Stream tributary, 0.7 miles northwest of Mapusaga. Based on a single year of record in 1971, the stream at this site had a mean flow of 1.23 cfs, and a median flow of 0.70 cfs. It was noted by Wong (1996) that the basin slope here was 3630 feet per mile, which is very steep.

The above data is sufficient to establish mean base flows along these systems, but does not provide information on total flows, such as the maximum discharges during spates triggered by high rainfall events, because none of the gauges involved provided continuous records. The mean base flows also indicate that all of the tributaries involved are losing systems, with base higher base flows in their upper mid-reaches than at gauging stations lower down, presumably due to percolation losses into the permeable lavas of the Tafuna Plain.

FISH AND WILDLIFE RESOURCE CONCERNS AND PLANNING OBJECTIVES

The Service's primary concerns with the proposed project are to determine any potential impacts to species formally listed as Threatened or Endangered under the ESA, as well as any other fish and wildlife trust resources and their habitats, from planned modifications to stream channels and adjacent riparian habitats. Specific Service planning objectives are to maintain and enhance existing significant habitat values at the proposed project site by (1) obtaining basic biological data for the site, (2) evaluating and analyzing the impacts of proposed-project alternatives on fish and wildlife resources and their habitats, (3) identifying the proposed-project alternatives least damaging to fish and wildlife resources, and (4) recommending mitigation for unavoidable project-related habitat losses consistent with FWCA and the Service's Mitigation Policy.

Under the authority of the ESA, the Department of the Interior and the Department of Commerce share responsibility for the conservation, protection, and recovery of federally listed endangered and threatened species. Authority to conduct consultations has been delegated by the Secretary of the Interior to the Director of the Service and by the Secretary of Commerce to the Assistant Administrator for Fisheries of the National Oceanic Atmospheric Administration (NOAA). Section 7(a)(2) of the ESA requires federal agencies, in consultation with and with the assistance of the Service or NMFS, to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitats. The Biological Opinion is the document that states the opinion of the Service or NMFS as to whether the federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The Biological Opinion is also a document separate from the current Planning Aid Report, prepared under the authority of FWCA.

The Service's Mitigation Policy (Service, 1981) outlines internal guidance for evaluating project impacts affecting fish and wildlife resources. The Mitigation Policy complements the Service's participation under NEPA and the FWCA. The Service's Mitigation Policy was formulated with the intent of protecting and conserving the most important fish and wildlife resources while facilitating balanced development of the nation's natural resources. The policy focuses primarily on habitat values and identifies four resource categories and mitigation guidelines. The resource categories are the following:

a) Resource Category 1: Habitat to be impacted is of high value for the evaluation species and is unique and irreplaceable on a national basis or in the ecoregion section.

b) Resource Category 2: Habitat to be impacted is of high value for the evaluation species and is relatively scarce or becoming scarce on a national basis or in the ecoregion section.

c) Resource Category 3: Habitat to be impacted is of high to medium value for the evaluation species and is relatively abundant on a national basis.

d) Resource Category 4: Habitat to be impacted is of medium to low value for the evaluation species.

Given the intermittent flow present in the lower mid-reach section of Taumata Stream where flood barrier construction is proposed, the absence of riffle and pool habitat in the reaches where non-structural flood control measures are proposed, and the degree of human existing human impact to the Vaitele Stream system as a whole, the habitat to be impacted by the proposed project is considered to represent Category 4.

EVALUATION METHODOLOGY

Existing Faunal Records

As noted previously, travel and public health restrictions related to the ongoing coronavirus pandemic precluded travel to American Sāmoa to conduct on-site field surveys of the proposed project area. As a result, the current evaluation was based on available information in the peer-reviewed scientific literature and government agency reports. The primary source of information used was a report by USACE (1981), which summarized information from biological surveys of 37 different stream catchments on Tutuila, including Vaitele Stream. This report listed 3 fish species, 2 shrimp species, and 1 mollusk species as occurring in the catchment, for a total of one introduced and 5 native taxa. Additional information was obtained from the Tutuila stream catchment prioritization study of Polhemus (2020). No surveys of aquatic insect have been conducted along Vaitele Stream or any of its tributaries, although native species are undoubtedly present. While the primary source of this information is dated, it represents the best available information. Additional information may need to be collected for the design and construction phase.

DESCRIPTION OF FISH AND WILDLIFE RESOURCES

Based on the studies described above, the following native aquatic species are recorded from the Vaitele Stream catchment. All these species are either resident within or periodically transit the stream reaches that would be impacted by the proposed flood control alternatives.

Fishes

The following native fish species has been recorded in the Vaitele Stream system. The previous survey of the system (USACE 1981) did not record any fishes at elevations above 40 ft., although small, inconspicuous native gobies are likely present in the rocky mid- and headwater reaches of the Vaitele sub-basin.

Family Carangidae

Caranx sp. undet. – Jack – The previous survey by the USACE (1981) recorded an undetermined *Caranx* species from the mid-reaches of the Vaitele Stream system. Multiple species of Carangidae are known to occur in the waters around Tutuila, including

Carangoides orthrogrammus (island trevally), *Caranx melampygus* (bluefin trevally) and *Caranx sexfasciatus* (bigeye trevally). Of these, only the latter is known to be itinerant in freshwater habitats, so it is assumed that this was the species previously recorded. It is widespread throughout the entire tropical and subtropical Indo-Pacific.

Family Gobiidae

Awaous guamensis – Pacific river goby – This is an insular Pacific species, occurring from Guam southward and eastward to New Caledonia, Vanuatu, Fiji, Sāmoa and Hawai‘i. Recent molecular studies suggest that cryptic species may be present across this range. The species is amphidromous, with the larvae developing in marine habitats, then recruiting to streams where they mature into adults in freshwater. Adults are omnivorous and may burrow into soft substrates with only the eyes visible. Although the species is harvested for food in Hawaii, it appears to be less favored for this use on Tutuila (USACE 1981).

Although not listed from current surveys, it is quite possible that additional goby species in the genera *Mugiligobius* and *Stenogobius* may occur in the estuarine terminal reach of the Vaitele Stream catchment. These species are relatively small and easily overlooked, and none are important food fishes. In addition, the rock flagtail, *Kuhlia rupestris*, is likely to be present in the lower reaches of the stream during certain wetter months of the year, since this species is nearly ubiquitous in perennial streams on Tutuila surveyed by the author in recent decades. It is a widespread species, ranging from East Africa through the Pacific islands to the Ryukyus, New Caledonia, and Sāmoa, and prefers estuarine waters, but may be itinerant in freshwater reaches up to the first major waterfall barrier. This species is omnivorous, feeding on smaller fishes and invertebrates, as well as figs that fall into the stream, and adults are harvested for human consumption.

Finally, there are three Samoan species of gobies in the genus *Sicyopteris* that favor headwater reaches, which have not been well sampled in the Vaitele Stream basin. Due to the limited number of surveys, and their concentration from the mid- and terminal reaches of the river, it seems likely that the true gobiid fauna of the Vaitele catchment is underestimated.

Decapods

The following two species of native prawns have been recorded from the proposed project area:

Family Atyiidae

Caridina tupaia – The taxonomy of the *Caridina* species in the *C. weberi* complex was recently revised by Mazancourt et al. (2019), who determined through a combined morphological and molecular analysis that the taxon in Sāmoa previously identified as *C. weberi* in fact represented an undescribed species, which they named *C. tupaia*. *Caridina weberi* was originally described from material taken on Flores Island, Indonesia, and based on this new interpretation does not occur in the Samoan Archipelago, therefore discussions of

this species in previous studies (USACE 1981, Resh et al. 1990, Stream Water Quality Group 2009, Polhemus 2020) in fact pertain to *C. tupaia*, which has a rather broad distribution in western Polynesia, extending from Sāmoa through the Cook Islands to the Society Islands of French Polynesia (Mazancourt et al. 2019).

A study by Resh et al. (1990) noted that this species was often sympatric with *C. pilipes*, a species which prefers faster waters at higher elevations and is not yet recorded from the Vaitele Stream catchment. *Caridina tupaia* is often found in association with leaf litter, aggregating on the bottoms of pools where organic detritus has accumulated. Such habitats appear to be common along the mid- and terminal reaches of Vaitele Stream.

Family Palaemonidae

Macrobrachium lar – Tahitian prawn – This species ranges from East Africa across the insular Pacific to the Marquesas Islands, and has also been introduced into the Hawaiian Islands. The species is amphidromous, with the larvae requiring euhaline water for development, then recruiting to streams where they mature into adults in freshwater. The very large adults are often found well up into stream headwaters, where they dwell in deep pools. This species is favored for human consumption, but attempts to raise it in aquaculture settings have so far not been successful.

Mollusks

A single species of native mollusk has been recorded from the proposed project area:

Family Thiaridae

Genus and species undetermined – Although not identified beyond family level in the previous survey data provided for the Vaitele Stream catchment (USACE 1981), the taxon in question is almost certainly a member of the genus *Melanoides*. This group is relatively species-rich in Sāmoa, with 12 native species (some with multiple subspecies) occurring across the archipelago as a whole, of which 4 are found on Tutuila. Of these latter, *Melanoides brenchleyi*, occurs only on the Samoan Islands and the adjacent Friendly Islands, and has a subspecies *Melanoides brenchleyi delicatula* known only from Tutuila, where it could be considered potentially endemic. As noted by Polhemus (2020), if this latter taxon is valid, and not merely a color form of *M. brenchleyi*, it would constitute the only endemic freshwater mollusk currently documented from American Sāmoa. The situation is taxonomically complicated by the fact that *M. brenchleyi* may be a synonym of *Melanoides lutosa*, a species also occurring on Fiji, but a change in the nominate taxon would not negate the current subspecies status of the Tutuila form.

Aquatic Insects

The following species of native aquatic insects have been recorded from the Vaitele Stream basin, based on surveys conducted by the author in 2009. All are widespread, and none are endemic to American Sāmoa. Because of their capacity for flight, they are not strictly dependent on the stream channel, so project-related disturbances would have discountable effects on their populations. The true aquatic insect biota of the Vaitele Stream catchment is undoubtedly richer than is indicated here, but has not been adequately sampled.

Order Odonata

Anax guttatus – This large dragonfly species is widely distributed across the Indo-Pacific islands, from the Seychelles eastward to Australia, Micronesia, and the Tuamotu Archipelago (Lieftinck, 1962). The species breeds in standing waters, such as a large pond immediately east of the American Sāmoa Community College, with the larvae occurring amid aquatic vegetation, and adults patrolling strong beats over open water.

Diplacodes bipuntata – This small, red-colored dragonfly is common on Tutuila, breeding in standing waters throughout the island, including roadside ditches in urban and suburban areas. It is a widespread species, occurring from eastern Indonesia eastward into the insular Pacific as far north as the Bonin Islands and as far east as Pohnpei.

Tholymis tillarga – This is another broadly distributed species, found from Madagascar through tropical Asia to Australia, the Philippines and the Mariana Islands. The adults, which are crepuscular fliers, can be recognized among the local dragonfly assemblage by the black and white patches on the hind wings. The immatures are found in standing water and have a degree of salinity tolerance.

Pantala flavescens – This pantropical species is the most widely distributed dragonfly in the world and has colonized many remote oceanic islands. It breeds in standing waters, and the immatures can tolerate a certain degree of mild salinity.

Ischnura aurora – Members of the genus *Ischnura* are small, widespread damselfly species that are common in lowland wetland habitats across the Indo-Pacific. Within this assemblage, *Ischnura aurora* is a very widespread species, occurring in coastal lowland habitats from India eastward through Southeast Asia to the islands of the Southwest Pacific as far as the Tuamotu and Marquesas groups. This species breeds in standing water habitats or slow-flowing stream pools, habitats which are abundant on the Tafuna Plain. Two other genera of damselflies, both endemic. are also known from the Samoan Archipelago, and have representatives on Tutuila, but neither has been recorded from the Vaitele Stream catchment, although there is a reasonable possibility that they are present in the headwater reaches.

The preceding analysis indicates that although the Vaitele Stream catchment supports a modest assemblage of native freshwater and estuarine species, most of these are taxa with broad ranges in the Indo-Pacific region, and none are endemic to the island of Tututila, or American Sāmoa.

ESA-listed Species

No aquatic species listed under the ESA as Threatened or Endangered occur in the proposed project area.

Non-native Species

In addition to the above native taxa, the following introduced aquatic species are recorded from the Vaitele Stream catchment. They are not treated in detail because the Service considers them pests, and therefore impacts to their populations from the proposed project are discountable.

Fishes

Family Poeciliidae

Poecilia mexicana – Guppy – Introduced for mosquito biocontrol, but ineffective, and a common species in the aquarium pet trade, which is little developed in American Sāmoa. Known to have detrimental impacts to native aquatic insect species in Hawaii.

DESCRIPTION OF ALTERNATIVES EVALUATED

The following alternatives were presented during a USACE informational briefing held on March 2, 2021.

Alternative A: No Action

Under the No Action alternative, no changes would result to the stream channels in the Vaitele Stream basin and their immediate surroundings.

Alternative B: Floodwall, Levee and Channel Conveyance

This alternative includes construction of a 2,400-foot floodwall with an average height of 7 feet along the south bank of the Taumata Stream mid-reach, where it bends around the base of Tau Mountain (Fig. 4). The precise design of the proposed flood barrier has yet to be finalized, but it should not result in the creation of any barriers to faunal passage in the stream channel for native diadromous species. The non-structural component includes dry floodproofing of 38 non-residential structures and elevation of 242 residential structures, which should be undertaken without any additional structural flood risk management measures or modifications to existing stream channels. Floodproofing has been determined to be the most effective non-structural solution given the frequency and depth of flooding.

Figure 4. The location of the floodwall along the mid-reach of Taumata Stream proposed in Alternative B (USACE 2021).

PROJECT IMPACTS

It is understood that the density and encroachment of suburban development along the banks of stream channels in the Vaitele Stream catchment presents a substantial constraint to development of project alternatives, while at the same time constituting the underlying need for the proposed flood control project. The potential impacts of the two alternatives still under consideration are discussed below, with reference to native aquatic species. Impacts to aquatic invasive species (AIS) not native to Tutuila do not constitute a cause for concern by the Service, since their reduction in numbers or eradication would be considered a beneficial outcome.

Alternative A: No Action

This alternative will result in no new additional impacts to native aquatic biota and needs no additional discussion.

Alternative B: Floodwall, Levee and Channel Conveyance

The construction of a 2,400-foot floodwall along the south bank of the Taumata Stream mid-reach, if done in accordance with the Best Management Practices recommended below, should have no direct impact on the stream channel, and should not create any permanent barriers to the passage of diadromous fish, crustacean, or mollusk species. The floodwall may increase the amplitude of flood pulses reaching the stream mouth by confining to the stream channel waters

that would previously have spread laterally across the adjacent flat lands of the Tafuna Plain. This increase in discharge may in turn result in increased deposition pulses of sediments, agrichemicals, animal waste from piggeries, and general garbage and litter into the nearshore marine waters of the Pala Lagoon. In the absence of more detailed information about land uses in the Vaitele Stream basin, however, such potential impacts are speculative. Any such pulses would be episodic rather than continuous, so are unlikely to have long-term deleterious effects to marine resources, given that similar flood pulses already originate along other more continuously perennial streams draining into the Pala Lagoon at locations east of the Vaitele Stream mouth, which have similar considerations in regard to land-based sources of sediment or pollution.

FISH AND WILDLIFE SERVICE RECOMMENDATIONS

The Service recommends that the following best management practices (BMPs) be applied to all activities pertaining to construction and maintenance activities for this project, in order to prevent construction impacts to riparian or marine ecosystems lying downstream.

Best Management Practices

(1) The permittee should make every effort to develop and implement a plan for conducting all anticipated work involving stream channels during the summer dry season. Work should be ceased and re-scheduled in the event of an out-of-season heavy rainfall;

(2) Avoid conducting construction or subsequent maintenance activities that will lead to mid- and long-term destabilization and exposure of bare sediment along the stream banks or in the stream bed;

(3) No debris, petroleum projects, or deleterious materials or wastes shall be allowed to fall, flow, leach, or otherwise enter any waters of the United States;

(4) All authorized activities shall be done in a manner to confine and isolate the construction activity and to control and minimize any turbidity that may result from in-water work. Silt curtains or other appropriate and effective silt containment devices approved by the USACE shall be used to minimize turbidity and shall be properly maintained throughout the entire period of any in-water work to prevent the discharge of any material to the downstream aquatic habitat. All sediment control devices installed as BMPs (i.e., fabric sandbags, silt curtains/screens, etc.) downstream or makai of the authorized work shall remain in place until the in-water work is completed and will be removed in their entirety and disposed of at an appropriate upland location once the water quality of the affected area has returned to its pre-construction condition;

(5) Return flow or runoff from upland dewatering site(s)/disposal site(s) shall be contained on land and shall not be allowed to discharge and/or re-enter any waters of the United States;

(6) No sidecasting or stockpiling of excavated materials in the aquatic environment is authorized. All excavated materials shall be placed above the ordinary high-water mark of any designated waters of the United States, or disposed of in an upland location. The permittee shall demonstrate that there is no reasonable expectation that disposal locations adjacent to high tide lines on the

ocean, or in floodplains adjacent to other rivers or streams, would result in the material being eroded into the nearby waterbody by high tides and/or flood events;

(7) Warning signs shall be properly deployed and maintained until the portion of the in-water work is completed and the affected area water quality has returned to its preconstruction condition and turbidity control devices have been removed from the waterway;

(8) Fueling, repair, and other activities with any potential to release pollutants will occur in a location where there is no potential for spills to have an effect on waters of the United States;

(9) When the USACE is notified that an authorized activity is detrimental to fish and wildlife resources, the USACE will issue a suspension order until all pertinent issues have been satisfactorily resolved. The contractors shall comply with any USACE-directed remedial measures deemed necessary to mitigate or eliminate the adverse effect.

Other Recommendations

In addition to the Best Management Practices noted above, if Alternative B is selected for future design and construction, then:

(1) Creation of any permanent barriers to faunal passage, such as overhanging drops from which water cascades without touching the underlying substrate, or long culverts that require transit of organisms through dark passages, should be avoided.

(2) As noted previously, there is uncertainty to the effects the 2400-foot floodwall would have on sediment transport into the nearshore waters of Pala Lagoon. Given this area is highly disturbed, effects may not be great, but some baseline data on sediment transport and turbidity within this region is warranted to consider during the design and construction phase. We recommend developing some basic characterization of water quality changes to these nearshore waters.

The Service and DMWR are available to work with the USACE to implement all of these recommendations.

Climate Change Considerations

Given current projections from the most recent report of the International Panel on Climate Change, sea level may rise up to 1 ft. above present levels over the next 30 years. Given the low gradient prevailing on the estuarine and terminal reaches of the Vaitele Stream system, this will be sufficient to move head-of-tide at the Mean Higher High Water (MHHW) mark inland by a significant distance. This could in turn force the freshwater table upward, as it floats on top of the intruding marine waters, creating additional future flood risk in the portions of the project area closest to the stream mouth. This possibility should be taken into account regarding the floodproofing component of the preferred alternative. Such effects are subject to future modelling, and are at this point speculative, but plausible, and to err on the side of caution the Service recommends that such modelling utilize RCP 8.5 as presented in the most recent IPCC report.

SUMMARY AND FISH AND WILDLIFE SERVICE POSITION

The project as currently proposed appears to pose minimal threat to aquatic trust resources occurring in the Vaitele Stream catchment, provided that the BMPs recommended in this report are followed during construction of all project elements. However, given the presence of native diadromous fish and prawn species in this system, there is the possibility of indirect impacts to trust resources due to interdiction of upstream or downstream faunal passage, particularly if obstructions to the stream channel are created during the course of floodwall construction, so care should be taken to avoid this.

The current FWCA Planning Aid Report is sufficient to cover the Feasibility Study phase of the current project. If the project progresses to design and eventual construction, the USACE should continue to coordinate with the Service in order to avoid or minimize any potential environmental effects once a Preferred Alternative is selected. If the project proceeds to the design stage, then it is recommended the supplementary faunal surveys be conducted, particularly in the headwater reaches of the Laeleale and Taumata sub-basins which may harbor diadromous goby species not recorded by previous surveys, and in the nearshore waters of the Pala Lagoon immediately seaward of the river mouth. The Service also notes that any changes to the proposed alternatives will also require additional coordination with the Pacific Islands Fish and Wildlife Office in Honolulu, Hawaii and the DMWR.

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SUPPLEMENTAL FIGURES

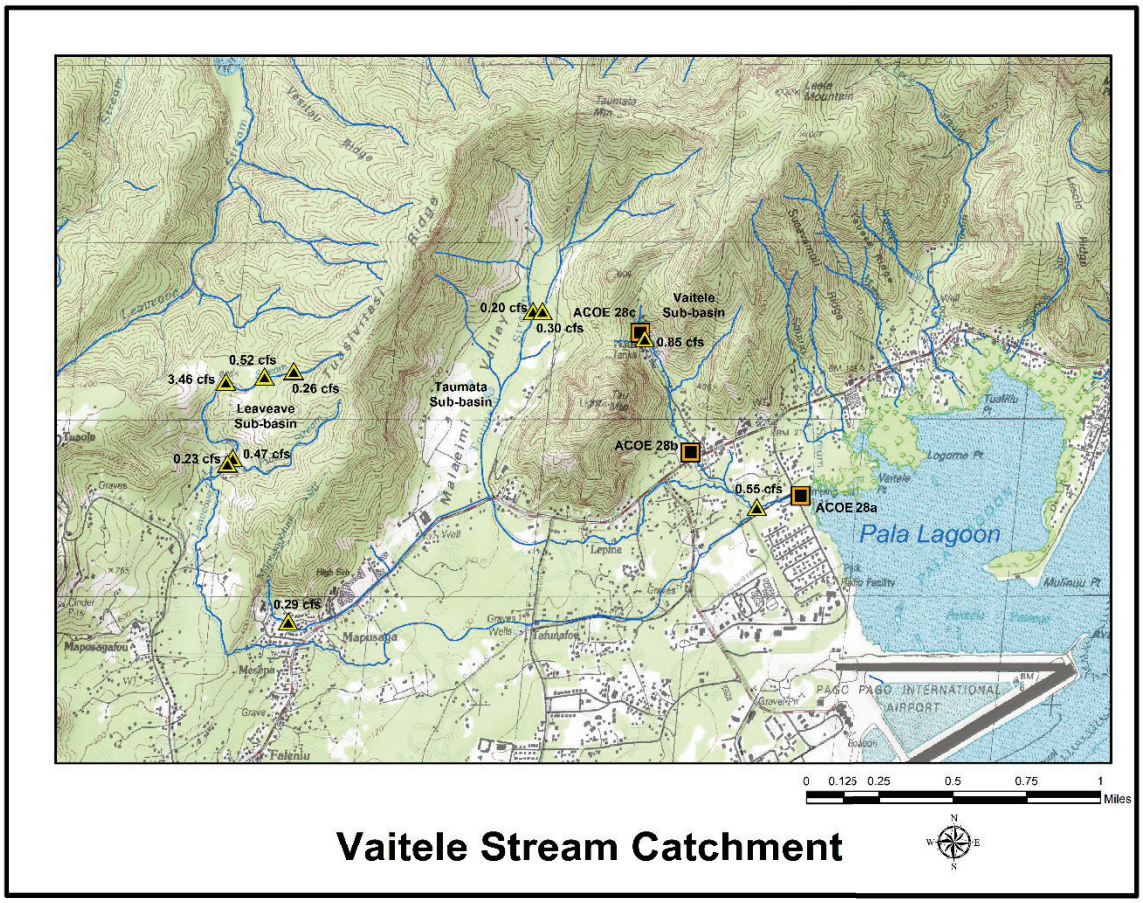

Figure 5. Map of the Vaitele Stream catchment, showing major features discussed in this report. Yellow-bordered triangles indicate the sites of former USGS gauging stations, with mean recorded flows indicated in cfs, demonstrating the loss of flow as one moves downstream, due to porous substrates. Orange-bordered squares indicate aquatic macrofaunal sampling sites sampled by a previous U. S. Army Corps of Engineers survey (USACE 1981), illustrating the lack of faunal information for the two western sub-basins.