US Army Corps of Engineers®
Honolulu District

DRAFT ENVIRONMENTAL ASSESSMENT FOR MODIFICATION TO THE IAO STREAM FLOOD CONTROL PROJECT WAILUKU, ISLAND OF MAUI, HAWAII

July 2021

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ACRONYMS AND ABBREVIATIONS

AECOS	AECOS, Inc.
AIS	Archaeological Inventory Survey
AMP	Archaeological Monitoring Plan
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic Feet Per Second
CH_4	Methane
CIA	Cultural Impact Assessment
CO	Carbon Monoxide
CO_2	Carbon Dioxide
County	County of Maui
CWA	Clean Water Act
CWRM	Commission on Water Resource Management
CY	Cubic Yard(S)
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DAR	Division of Aquatic Resources, State of Hawaii
dB(A)	Decibel (A-weighted scale)
DBEDT	Department of Business, Economic Development and Tourism
DLNR	Department of Land and Natural Resources
DOFAW	Division of Forestry and Wildlife
DOH	Department of Health, State of Hawaii
EA	Environmental Assessment
EDR	Engineering Documentation Report
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency, United States
ER	Engineering Regulation
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
fps	Feet Per Second
ft	Feet
FWCA	Fish and Wildlife Coordination Act
FY	Fiscal Year
GHG	Greenhouse Gas
HAR	Hawaii Administrative Rules
HRS	Hawaii Revised Statutes
IIFS	Interim Instream Flow Standard
MBTA	Migratory Bird Treaty Act
mgd	Million Gallons Per Day
MSA	Magnuson-Stevens Fishery Conservation and Management Act

NEPA	National Environmental Policy Act
NFS	Non-Federal Sponsor
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO	Nitrous Oxide
NO2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O3	Ozone
O&M	Operation And Maintenance
OEQC	State of Hawaii Office of Environmental Quality Control
OHA	Office of Hawaiian Affairs
PAL	Planning Aid Letter
PDT	Project Delivery Team
PL	Public Law
RS	River Station
SCS	Scientific Consulting Services, Inc.
SCS/CRMS	Scientific Consultant Services/Cultural Resource Management Services
SHPD	State Historic Preservation Division
SHPO	State of Hawaii Historic Preservation Office
SHWS	State Hazardous Waste Site
SPF	Standard Project Flood
SPS	Standard Project Storm
TMDL	Total Daily Maximum Load
TMK	Tax Map Key
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WQC	Water Quality Certification
WRDA	Water Resources Development Act

SECTION 1 - INTRODUCTION

This Environmental Assessment (EA) is a supplement to the U.S. Army Corps of Engineers' (USACE) 2017 Final EA for the Iao Stream Flood Control Project and is being prepared in accordance with the Council on Environmental Quality (CEQ) *National Environmental Policy Act (NEPA) Implementation Regulations,* Title 40 Code of Federal Regulations (CFR), Part 1500-1508, dated September 2020, and Engineer Regulation (ER) 200-2-2, *Procedures for Implementing NEPA*. The 2017 Final EA evaluated several alternatives to address ongoing flood hazards caused by design deficiencies and long-term damage to the existing flood control structures and included a description of the proposed action and alternatives, a description of the affected environment and evaluation of environmental effects, details compliance with environmental laws, regulations, plans and policies, listed agencies consulted and/or coordinated, preparers and references and concluded in a finding of no significant impact (FONSI).

This supplemental EA (SEA) will evaluate potential environmental impacts that may exist as a result of implementing the Proposed Action (Section 2) which includes a component of the 2017 Final EA preferred alternative. Information derived from the 2017 Final EA and used as a basis for the SEA analysis is denoted as such throughout this document.

1.1 Project Authorization

The Iao Stream Flood Control Project (FCP) was authorized and constructed by the USACE on August 13, 1968 under Section 203 of the Flood Control Act of 1968, Public Law (PL) 90-483 in accordance with the recommendations of the Chief of Engineers in House Document Number 151, 90th Congress. The original project, which consisted of enlarging, straightening, and stabilizing the channel and constructing levees, walls, and a debris basin, was completed in October 1981. Structural details about the authorized project are included in Section 1.2.2. The non-federal sponsor (NFS) is the County of Maui (County), represented by the Department of Public Works. The NFS is responsible for operation and maintenance of the Iao Stream FCP in accordance with the Local Cooperation Agreement between the NFS and USACE.

1.2 Background

1.2.1 Location

The Iao Stream FCP is located along the Wailuku River (formerly named Iao Stream) in the town of Wailuku on the northeast coast of the island of Maui, Hawaii (Figure 1-1). The Wailuku River is located within a drainage basin on the eastern slopes of the West Maui Mountains, near the north end of the isthmus connecting East and West Maui. The river is approximately 8 miles long and drains the steep Iao Valley, meandering eastward to the Pacific Ocean, through the town of Wailuku. The Iao Stream FCP is located in the lower reach of Wailuku River, extending approximately 2.5 miles upstream of the river mouth (Figure 1-2). The area of concern is primarily within a reach approximately 1.5-miles long upstream of Waiehu Beach Road. The Wailuku River can be described as four distinct reach segments:

1. Natural Upstream Reach;
2. Upper Concrete Channel;
3. Natural Reach; and
4. Lower Reach and Outlet.

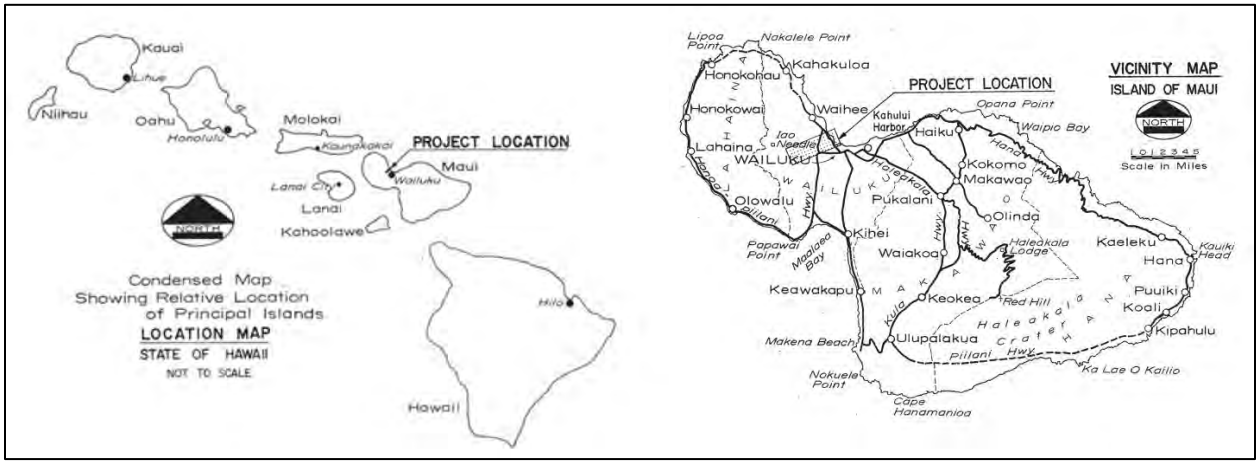

Figure 1-1. Study Area Map

Figure 1-2. Project Area

1.2.2 Description of the Authorized Project

The existing FCP was designed to provide a protection against the Standard Project Flood (SPF) which, under project conditions, would have a discharge of 26,000 cubic feet per second (cfs) at the upper limits of the project at the debris basin and 26,500 cfs at the mouth of Wailuku River. The floodplain between the channel improvements incorporates the 1,500 cfs discharge from the Happy Valley Flood Prevention Project for a total discharge of 27,500 cfs (USACE, 1976).

The completed project (Figure 1-3) consists of the following features included in each of the four reach segments described above:

1. *Natural Upstream Reach:* There are no federally authorized project features included in this reach.
2. *Upper Concrete Channel***:** The Federal project begins within this segment. A debris basin is located at the upstream end of the Federal project, approximately 2.5 miles upstream from the stream mouth. The debris basin is intended to prevent large boulders and debris from entering the lower reaches of the stream.
3. *Natural Reach***:** Project features in this reach include channel improvements extending 3,500 feet (ft) downstream from the debris basin, levees along the right bank[1], and levees and a designated floodplain along the left bank for 6,950 ft of natural stream channel.
   Project levees "A," "B," "C," "D," and "E" are intermittently situated upon the right bank of the stream; levees "F" and "G" are located on the left bank.
   This reach also includes Revetment X on both banks of the river between levees "C" and "B". Within the vicinity of Revetment X, the meandering natural channel was straightened and narrowed with boulder concrete lining as part of the original project.
   Finally, an area zoned for floodplain management is designated on the left bank within this reach. It is primarily used for agricultural purposes. The natural stream bed consists of boulders and scrub brush. The bed ranges in width from 40 to 60 ft and has an average slope of 2.6 percent.
4. *Lower Reach and Outlet***:** Features include stream realignment with channel improvements for a reach of 1,730 ft that extends to the downstream limit of the project located near the shoreline.

[1] Left bank refers to the left bank of Wailuku River when looking downstream. Right bank refers to the right bank when looking downstream.

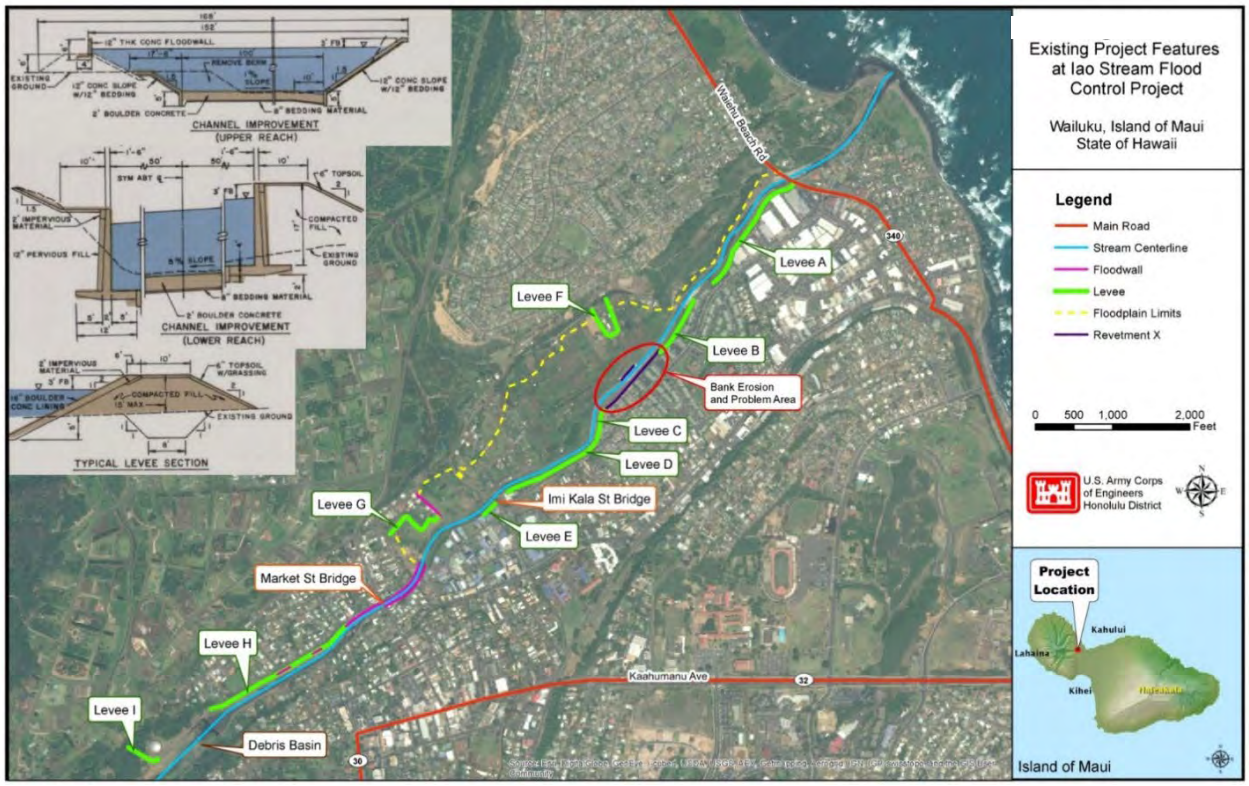

Figure 1-3. Existing Authorized Project

1.2.3 Proposed Action Background

The Iao Stream FCP was authorized for construction by the Flood Control Act of 1968 and was implemented after USACE completed an Environmental Impact Statement (EIS) with identified mitigation measures following approval of the EIS' Record of Decision (USACE, 1975). During the construction phase in January 1980, a flood occurred that caused extensive erosion of the sacrificial berm and undermined portions of the completed levees. To address this damage, the streamside slope of the levees was extended with a concrete riprap slope lining into the streambed. Considered to be a state-of-the-art design at the time, the toe of the cutoff walls was embedded 5 ft in depth.

Shortly after project completion, stream flows caused erosion of the stream bottom along an approximately 7,000-ft reach between the concrete channel and Waiehu Beach Road. The project levee was undermined with scour depths extending to a maximum of 6 ft below the existing boulder concrete slope lining. In July 1982, USACE Honolulu District requested approval of corrective work to extend the boulder concrete slope protection from the damaged portion to a minimum of 5 ft below the eroded stream bottom. The Office of the Chief of Engineers granted approval for this work in January 1983. The corrective work was completed in November 1983 under the Productive Employment Appropriation Act of 1983 and authorized under Section 205 of the Flood Control Act of 1948, PL 80-858, as amended. The stream channel has since eroded as much as 6 to 8 ft below the 1983 repair. USACE subsequently decided to conduct a reconnaissance study pursuant to Engineering Regulation (ER) 1165-2-119 (paragraph 7a) to investigate

solutions to the recurring problems that are slowly undermining areas of the levee. In March 1995, a report was submitted by USACE recommending modification to Wailuku River to replace the existing levee system with a 7,200-ft long trapezoidal concrete-lined channel.

A slope stability analysis was performed in 1997 to determine the stability of two areas identified as possible locations of levee failure. Stability analysis indicated instability could occur after flood waters recede at River Station (RS) 40+00, assuming that the 1996 slope geometry would be further eroded to steepen the slope and deepen the stream bottom. If an SPF occurred prior to any repairs, flood waters would be able to pass through this portion of the levee, further erode it, and enter adjacent housing areas.

The existing stream channel has a relatively narrow width of 40 to 60 ft and is boulder lined. Levees with a surface of grouted riprap are interspersed along the right bank. The channel has an average slope of 2.6%. This steep stream channel results in critical and supercritical flows in the stream. The average channel velocity through the unlined portion of the stream varies between 8 and 32 feet per second (fps) with an average velocity in excess of 20 fps during annual floods. These high velocities have eroded the channel bed and caused severe undermining of the existing levees.

During a storm event that resulted in heavy rains on September 15 to 16, 2016, significant damages to the existing levees occurred (USACE, 2016). A joint post-event inspection conducted by USACE and the NFS to verify and quantify the damages noted erosion of the earthen levees, levee toe erosion, and side slope failure at multiple locations along the right bank downstream of Imi Kala Bridge. At the time of the inspection, the NFS was making emergency repairs to the side slope between RS 66+45 and RS 64+35 which was in danger of failure. Proposed methods for temporary repairs included filter fabric, large toe stones, inclusion of a toe trench and the possibility of using cement slurry to tie the armor stones together.

The original flood control project was designed to provide protection against an SPF, i.e., a flood event based on estimates under the most severe combination of meteorological and hydrologic conditions which are reasonably characteristic of the project site, however, high velocity flows within the steeply sloped channel have severely eroded key portions of the Iao Stream FCP levees and channel invert. Failure or non-performance of the project could occur if continued erosion or headcutting causes a levee to breach and fail. .

The Iao Stream FCP is at risk of failure or non-performance due to deterioration and scour of the right bankand undermining of the levee toe resulting from changes in the streambed dynamic. In order for USACE to preserve the reliability of the existing flood control systems and address the design deficiency at the FCP, additional structures are needed to protect the Wailuku community.

In 2017, USACE completed an Engineering Documentation Report (EDR) and Final EA to address the continued deterioration and scour of the FCP. Under the 2017 EDR, six alternatives were evaluated to address the design deficiency. Compared to the original design deficiency recommendation of lining the entire channel with concrete, a less expensive, more environmentally sound design was identified through the 2017 EDR

process, including recommendation of a comprehensive plan to reconnect the floodplain to provide a more holistic response based on the engineering data available.

The alternative plan recommended in the 2017 EDR includes new features that were not included in the original authorized project, and the recommended plan was beyond the authority of the current authorized project. As such, the USACE Honolulu District was directed by USACE to complete a General Reevaluation Report (GRR) as the mechanism to receive Congressional authorization on a project with new flood risk management features.

The GRR was initiated in October 2018 by the execution of a Feasibility Cost Share Agreement between USACE and the NFS. However, updated modeling and engineering data found the previously recommended plan was no longer economically justified. The USACE Honolulu District was then directed to re-formulate and evaluate alternatives to address the design deficiency only, rather than more holistic flood risk management problems or opportunities.

USACE has reformulated alternatives with the objective to address the design deficiency justified based on safety and economic considerations. The final array of alternatives is presented below in Section 2.1. Alternatives eliminated from further consideration are presented in Section 2.2.

1.2.4 NEPA History

USACE's 2017 Final EA to the 2017 EDR was released in July 2017 and analyzed the following two alternatives to satisfy the project's purpose and need: 1) No Action, and 2) Alternative F (Preferred Alternative). The No Action alternative proposed no further action at the Federal project. Alternative F consisted of features intended to reconnect the mainstream channel to its floodplain to reduce damaging flows along the main channel and right bank levees. Alternative F also included bank stabilization along the right bank upstream of the proposed overflow channel and downstream of the outflow return location to prevent further erosion in these areas. In addition, an existing revetment (Revetment X) would be removed and either restored or replaced along both the left (RS 55+50 to 51+90) and right (RS 55+10 to 50+25) banks.

The draft EA was released for a 30-day comment period from June 23, 2015 to July 23, 2015. As part of the draft EA public review period, 64 parties were consulted, and comments from 23 parties were received and addressed as part of the 2017 Final EA analysis.

The 2017 Final EA is available for reference online at:
https://www.poh.usace.army.mil/Missions/Civil-Works/Civil-Works-Projects/Iao-Stream/

1.3 Purpose and Need

High velocity flows within the steeply sloped channel of the Wailuku River have severely eroded key portions of the Iao Stream FCP and resulted in undermining of the existing levees in several locations along the stream. High stream flows have resulted in

downcutting (i.e., downward/vertical erosion) of the natural streambed and erosion of the levees along the right bank of the river. Several residential and commercial structures along the right bank are in danger of being undercut if streambank erosion continues as demonstrated by the extensive damages to the right bank caused by the September 2016 storm event. The September 2016 storm event also revealed the vulnerability of the heiau erosion, located along the lower reach of the left bank.

The purpose of the Proposed Action is to address ongoing flood hazards and community safety risks caused by design deficiencies and long-term damage to the existing flood control structures suffered during repeated floods since their original construction in 1981. The Proposed Action is necessary to make the project function as initially authorized by Congress in a safe, viable, and reliable manner. Ultimately, the purpose of the Proposed Action is to correct the design deficiency.

1.4 Public Involvement

A Public Notice for the preparation of a supplemental EA was published to the USACE Honolulu District website on May 17, 2021 for a 30-day public comment period for this proposed action soliciting scoping comments (Appendix A). Two virtual public informational meetings were held on May 22 and 29, 2021. No comments were received in response to the public notice or at the virtual meetings during or after this time period.

In accordance with ER 200-2-2, USACE Honolulu District is releasing this draft SEA to the USACE Honolulu District website for a 30-day review period to solicit comments from concerned agencies, organization and the interested public to be incorporated into the final NEPA document. A listing of all notified agencies and individuals, including all comments received and documentation of USACE consideration and incorporation of comments on the draft SEA will be incorporated into any final NEPA document and the administrative record.

SECTION 2 - ALTERNATIVES

USACE formulated an array of alternatives focusing specifically on addressing the design deficiency at Iao Stream FCP. Alternatives were designed to reduce velocity, shear stress, and erosion in the channel, hence reducing the risk to community safety and other objectives. Alternatives were not formulated to provide flood risk management benefits (e.g., reduction in inundation, damages, etc.). Multiple iterations of the planning process resulted in formulation, evaluation, and screening of various arrays of management measures and alternatives, resulting in the final array of alternatives. The final array of alternatives described in Section 2.1 were carried forward for further consideration because they have been determined to be technically and economically feasible, they meet the purpose and need (Section 1.3) for the proposed action, and, where applicable, meet the goals of the applicant.they meet the purpose and need described in Section 1.3, above.

2.1 Final Array of Alternatives

The final array of alternatives to be analyzed in the draft EA includes:

- No Action Alternative
- Alternative 2: Remove Revetment X
- Alternative 6: Install Pre-Formed Scour Hole
- Alternative 11: Non-Structural Plan (Flood Warning System)
- Alternative 12: Combination Plan (Alternative 2 + Alternative 6 + Alternative 11)

The final array of alternatives is described below and shown in Figure 2-1.

Alternatives considered by USACE in the EDR that have been eliminated from further consideration are listed in Table 2-1.

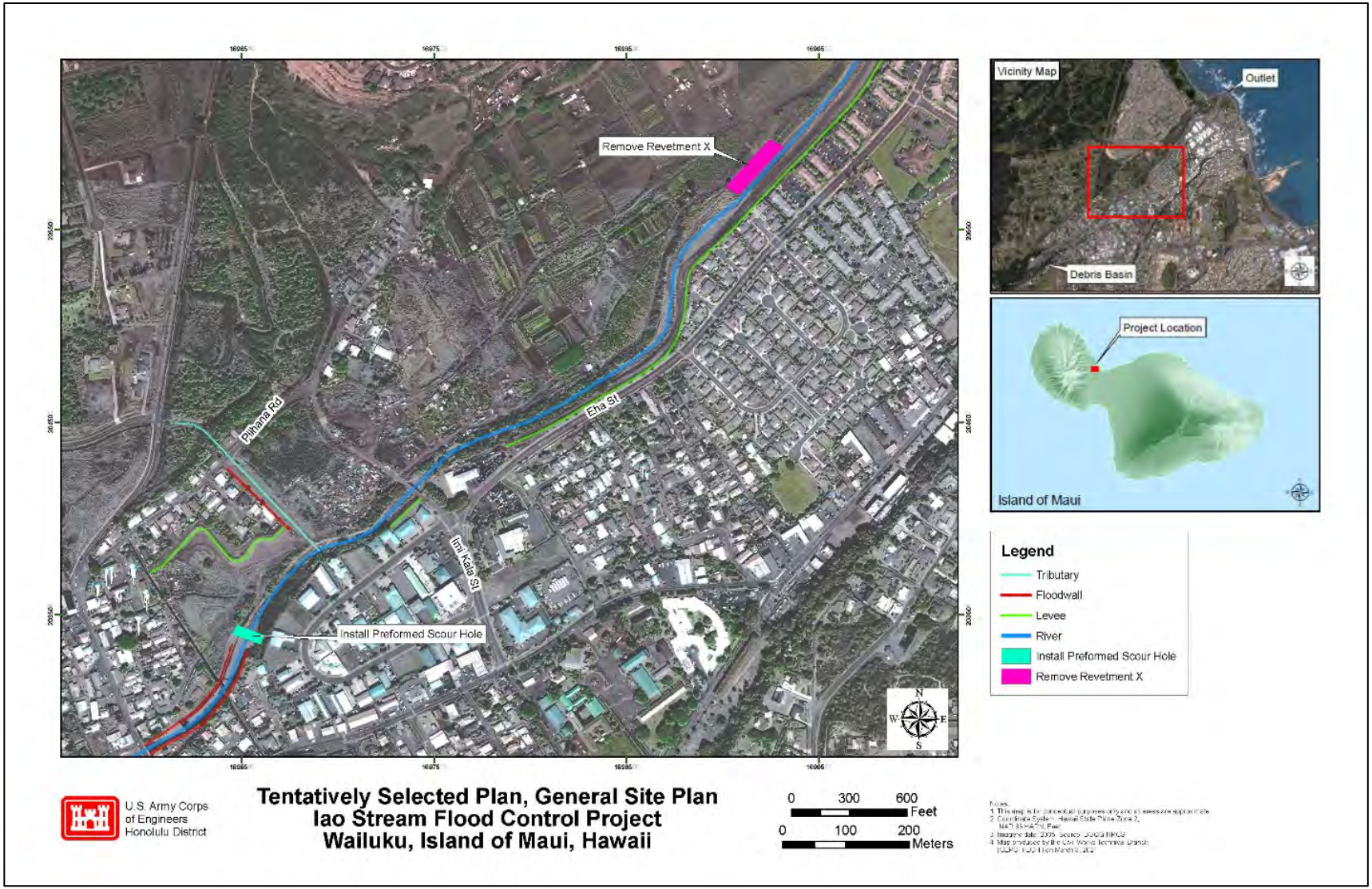

Figure 2-1. Preferred Alternative

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2.1.1 No Action

Under the No Action Alternative, USACE would not implement any repair or rehabilitation to address the design deficiencies and long-term damage of the Iao Stream FCP. Future flooding of Wailuku River would continue to result in undermining of the existing levees. High flows would further the downcutting of the natural streambed and erosion of the base of the levees along the right bank . Failure or non-performance of the Iao Stream FCP could occur if continued erosion or head cutting continues, resulting in increased risk to community safety.

The No Action Alternative does not meet the purpose and need to address the design deficiency at the Iao Stream FCP. However, it is presented as required by NEPA to set the baseline from which to compare all other alternatives.

2.1.2 Alternative 2: Remove Revetment X

Revetment X is located on both banks of the stream between RS 55+50 to 48+50. In this area, the meandering natural channel was straightened and narrowed with boulder concrete lining of the banks, thereby constricting flow, increasing velocities and causing undermining of the lining on both the left and right banks. The existing channel bottom is a natural channel bottom, particularly susceptible to downcutting.

A portion of Revetment X was damaged by the September 2016 event. USACE subsequently repaired the damaged sections under the Public Law 84-99 Rehabilitation and Inspection Program. Repairs included repair and reinforcement of the right bank lining and toe and removal of immediate hazards along the left bank to address safety concerns.

Alternative 2 would remove approximately 200 feet of the remaining portion of Revetment X along the left bank, widening the channel, allowing flows to dissipate across a wider area, and reducing velocity (Figure 2-2). Further stabilization of the left bank revetment is not proposed. No action is proposed along the right bank.

Figure 2-2 Revetment X, Photo taken from Right Bank, facing Left Bank and Upstream

With the removal of the revetment, USACE anticipates the Wailuku River would likely meander more in its attempt to lengthen the stream and achieve a shallower bed slope and possibly "bending" towards either the left or right bank. Removing the left bank revetment could increase erosion on the unprotected left bank, rather than the hardened right bank, allowing the stream to flow onto an undeveloped designated floodplain during high water events. USACE anticipates Removal of Revetment X will provide the river with more flexibility to meander, as needed, to achieve dynamic equilibrium. Post-removal, USACE will stabilize the exposed bank with vegetation and excess river rock, consistent with adjacent natural bank slopes upstream and downstream of Revetment X (Figure 2-3).

Figure 2-3 Photo taken upstream of Revetment X, facing Downstream

Note that the currently proposed action at the left bank of Revetment X (in addition to other previously proposed actions) was previously evaluated in the 2017 final EA as a component of "Alternative F". Under Alternative 2, USACE continues to pursue removal of the hardened portion of the left bank slope. Required interagency coordination and public involvement was completed under the 2017 final EA and USACE concluded a finding of no significant impact. The USACE assessment of the anticipated environmental effects of Alternative 2 is predominately documented in the 2017 final EA with relevant updates to supplement past evaluation in Section 3 of this draft SEA. The currently proposed action, herein described, is essentially identical to the description of the same proposed action in the 2017 final EA (Figure 2-4).

Figure 2-4 Alternative F (2017) Comparison to Alternative 2 (2021) Remove Revetment X Footprint

2.1.3 Alternative 6: Install Pre-Formed Scour Hole

In this reach of the Iao Stream FCP, located downstream of Market Street Bridge and vertical drop structure, the transition from the upstream boulder concrete lined invert to the downstream unlined channel has eroded and is undermining the structural stability of the FCP (Figure 2-5). Under Alternative 6, USACE would excavate the eroded channel invert and construct a "pre-formed scour hole" i.e., engineered stabilization of the scoured invert consisting of a boulder-concrete sloped toe with buried key and backfilled with natural material consistent with the existing channel bottom (see concept drawing at Figure 2-6). This alternative would repair existing erosion and prevent future, imminent erosion, thereby reducing downstream erosion and risk to community safety.

Figure 2-5 Proposed Location of Pre-Formed Scour Hole

Detail regarding construction means, methods and sequencing, best management practices and staging and access requirements is currently unavailable, pending authorization to fund the repairs and proceed to the design phase, wherein construction detailing will become available. The Iao Stream FCP was constructed with maintenance accessways intended to facilitate maintenance repair to and within the channel. The Corps assumes use of existing maintenance accessways to complete the proposed repairs.

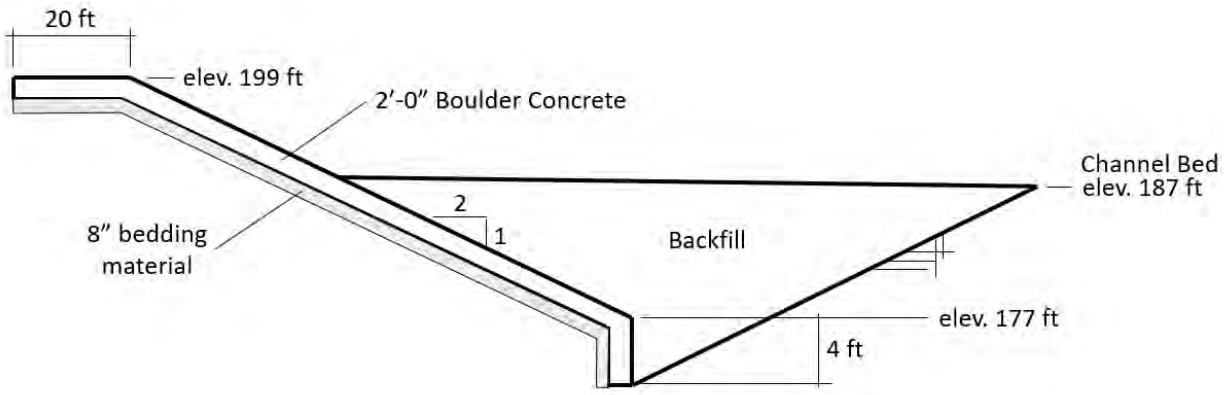


Figure 2-6 Cross-Section View of Proposed Pre-Formed Scour Hole Concept

2.1.4 Alternative 11: Non-Structural Plan (Flood Warning System)

Warning of impending floods can save lives and prevent extensive property damage. Installation of a stream gage would improve community safety by increasing community and regional understanding of the potential for flooding as well as increased communication of imminent flood events. A stream gage can provide valuable data to inform flood warning and evacuation plans, which contribute to improving life safety and community resilience for a relatively small cost.

Due to the flashy nature of the system, an automated warning system is recommended for Wailuku River. To establish a public warning system, USACE will coordinate directly with the County of Maui Emergency Management Agency to establish a central base station or field station with necessary communications equipment (siren / beacon lights), and software at the County Emergency Management Offices. No new construction is proposed. When rainfall or rising water levels reach set thresholds, the automated station will notify emergency personnel. Sirens can be automatically or remotely activated. In addition to the audible sirens, most public warning systems also often include visual flashing beacon lights to warn the community of the immediate hazard.

The stream gage and flood warning system are expected to significantly reduce the potential for life loss by providing real-time data to improve warning times for evacuation. Another beneficial impact associated with implementation of the project is heightened awareness of the flood-related risks including both an increased understanding of the overall potential for flooding based on dissemination of project-related information as well as increased communication of imminent flood events via improvements real-time data gathering via the stream gage. This is expected to translate to increased levels of preparedness, thus improving community safety.

2.1.5 Alternative 12: Combination Plan (Preferred Alternative)

Alternative 12 would be a combination of Alternatives 2, and 6. Alternatives 2 and 6 are discrete rehabilitation actions to address ongoing design deficiencies. These two alternatives are hydraulically independent of each other. In addition to Alternatives 2 and 6, a stream gage or other climate gage would be installed as an essential component of a public warning system. The recommended location for a stream gage or other climate gage would likely be the Iao Valley Road Bridge. Its location upstream of the federal project would provide early notice of rising flood conditions. The bridge is open (unaffected by piers) and resistant to erosion. Disadvantages of this location include the increased likelihood of being damaged by debris (boulders and logs) and poor cellular coverage. An alternate location would be where the lower USGS gage is currently installed, between the debris basin and Market Street Bridge. The concrete-lined channel below the debris basin would be somewhat secure and cellular coverage (or its ability to connect to satellites) would also be improved.

Table 2-1 provides construction details for each of the elements in Alternative 12 – Combination Plan. These construction details would also be applicable for each of the other alternatives.

Table 2-1: Preferred Alternative Construction Details

Element	Description
Revetment Removal	Removal of a 290 ft long portion of the revetment along the left bank between RS 55+50 to 48+50 and temporary stabilization of exposed earth embankment to be consistent with upstream and downstream bank slope conditions.
Pre-formed Scour Hole	At a two horizontal to one vertical (2H:1V) slope, the invert would lower approximately 22 feet, starting within the boulder-concrete lined channel at approximately 199 feet Mean Sea Level (MSL) and ending within the unlined channel at elevation 177 feet MSL. The slope from 199 feet MSL to 187 feet MSL will be exposed to form the channel invert. The slope from 187 feet MSL to 177 feet MSL will be buried and consistent with the unlined channel invert at this reach of the FCP. The existing channel width (120 feet) would be maintained. Approximately 120 linear feet of streambed would be impacted during construction.
Stream Gage or Other Climate Gage	Install stream gage or other climate gage as part of a public flood warning system at either Iao Valley Road Bridge or at the existing USGS gage between the Iao Stream FCP debris basin and the Market Street Bridge.
Staging/Site Access	Use of existing maintenance accessways built into the Iao Stream FCP.
Best management practices (BMPs) to be included during construction	Standard BMPs will be implemented throughout the duration of construction to avoid and minimize adverse impacts to natural resources. For example, silt fencing and other sediment erosion control measures to prevent inadvertent discharges to surface waters.
Types of construction equipment to be used	Excavator, front-end loader, and dump trucks.
Location of disposal of debris and excavated materials	Any excess excavated material (other than natural river rock) or construction debris and waste will be tested and disposed of at an approved upland disposal site in accordance with applicable federal, state and local regulations. No river rock will be removed from the Wailuku River system.
Construction duration	Approximately 10 months.
O&M	Sealing cracks in the concrete and removing vegetation, as needed at the pre-formed scour hole. Also includes annual inspections and testing of the stream gage. O&M will be completed by the NFS in accordance with the Local Cooperation Agreement for the Iao Stream FCP.

2.2 Alternatives Considered but Eliminated from Further Analysis

An array of alternatives was formulated to specifically focus on addressing the design deficiency at Iao Stream FCP, in particular the scoured channel at Revetment X and the toe scour at the transition from lined channel to unlined channel upstream of the Market Street Bridge. As part of the NEPA process, all potential alternatives must be evaluated. For alternatives to be considered reasonable, they must be affordable, implementable, meet the project purpose and need, and meet the established alternative selection criteria including meets objectives, avoids constraints, rough order of magnitude cost, environmental impacts, technical viability, and sponsor support. Generally, the alternatives listed below did not meet the purpose and need described at Section 1.3, above.

Alternatives developed during plan formulation and considered under the current EDR (EDR Section 4), but that USACE eliminated from further consideration are described in Table 2-2.

Table 2-2. Alternatives Considered but Eliminated

Alternative	Screening Results
Alternative 1 Install Fully Lined Channel	**Screened Out** *Cost prohibitive & not recommended in prior reports* *Does not avoid constraints* *Significant adverse environmental effects* *Does not meet purpose and need*
Alternative 3 Install Revetment Near Levee E	**Screened Out** *Sponsor to implement locally; increases future O&M* *Does not meet objectives* *Does not meet purpose and need*
Alternative 4 Remove Imi Kala Street Bridge	**Screened Out** *Not technically feasible* *Does not meet purpose and need*
Alternative 5 Create Sacrificial Berm	**Screened Out** *Not supported by sponsor; increases future O&M* *Does not meet purpose and need*
Alternative 7 Modify Detention Basin	**Screened Out** *Cost prohibitive* *Increases future O&M* *Adverse effects to cultural resources* *Does not meet purpose and need*
Alternative 8 Drop Structures	**Screened Out** *Cost prohibitive* *Not supported by sponsor; increases future O&M* *Does not avoid constraints* *Significant adverse environmental effects* *Does not meet purpose and need*
Alternative 9 Overflow Basin with Floodplain Reconnection	**Screened out** *Cost prohibitive* *Does not meet purpose and need*
Alternative 10 Deauthorize Project	**Screened Out** *Does not meet objectives* *Does not meet purpose and need*

SECTION 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

The environmental, social, and economic setting of the project site and the probable impacts of the final alternatives (No Action Alternative, Alternative 2, Alternative 6, Alternative 11 and Alternative 12 (preferred alternative)) are described in this section of the EA. Impacts may apply to the full range of natural, aesthetic, historic, cultural, and economic resources.

Impacts are described in relation to their significance. The CEQ regulations require analysis of the potentially affected environment and degree of the impacts of the action when determining the significance of an effect on a resource (40 C.F.R. § 1501.3(b)). Potentially affected environment means considering the extent of the effect such as in a national, regional, or local setting (40 C.F.R. § 1501.3(b)(1)). Several types of impacts should be considered, when considering the degree of the impacts as described below (40 C.F.R. § 1501.3(b)(2)). Impacts are described as either *beneficial* or *adverse*. Beneficial impacts result in a positive change in the condition of the resource when compared to the No Action Alternative. Adverse impacts result in a negative change in the condition of the resource when compared to the No Action Alternative. Impacts are also described in terms of duration. *Temporary* or *short-term impacts* would not persist for the duration of the management action or would only occur for a limited time after implementation of the action such as construction-related impacts (or both). *Long-term effects* would be permanent or continuous over the period of analysis.

The 2017 Final EA for the Modification to the Iao Stream FCP is supplemented with this draft EA (40 C.F.R. § 1502.9). Alternative F of the 2017 Final EA included and analyzed the removal of the revetment along the left back which in this SEA is called Alternative 2 – Remove Revetment X. The 2017 Final EA is incorporated by reference as part of this SEA, as appropriate, in accordance with 40 C.F.R. § 1501.12 and Environmental Regulation 200-2-2, *Procedures for Implementing NEPA*. Section 3.1 below captures a summary of the analysis and conclusions of the 2017 Final EA followed by further evaluation relevant to Alternative 6, Alternative 11 and Alternative 12, per resource.

The resources identified in Table 3-1 were evaluated in the 2017 Final EA against the formerly named, Alternative F. It is anticipated that the discrete repairs at Alternative 6, in combination with those previously evaluated at Alternative F (Alternative 2) and the addition of the public flood warning system at Alternative 11 to comprise Alternative 12 will result in similar impacts as evaluated and concluded in the 2017 Final EA. The following evaluation regards the currently proposed Alternative 6, Alternative 11 and Alternative 12 only, to supplement the evaluation completed in the 2017 Final EA. USACE determined that the alternatives would have no to negligible impacts to the following resources: geological resources; climate, air quality, and greenhouse gases; noise; land use, visual aesthetics; recreation resources; socioeconomics; public infrastructure and utilities; traffic and circulation; and solid and hazardous material and waste, as detailed in Table 3-1, and will not be evaluated further.

Table 3-1. Environmental Resources Not Evaluated Further

Environmental Resource	Explanation
Geological Resources: Geological resources typically consist of surface and subsurface materials and their inherent properties	During construction, all the proposed action alternatives would involve minimal ground disturbance within the existing, constructed footprint of a federal FCP. Geological resources temporarily and minimally disturbed during construction of Alternative 6 will be stabilized upon completion to prevent further and future erosion. No more than minimal temporary impacts to geological resources, if any, are anticipated for installation of the stream gage proposed under Alternative 11. Alternative 12 may result in negligible short-term impacts with no anticipated long-term impacts to geological resources.
Climate, Air Quality, Greenhouse Gases (GHGs): Climate is defined as long-term atmospheric patterns that characterize a region or location. Air quality at a given location is a function of several factors, including the quantity and type of pollutants emitted locally and regionally, as well as the dispersion rates of these pollutants. GHGs occur both naturally and anthropogenically (man-made) and include: water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO), and ozone (O_3).	Temporary minimal increase in fugitive dust and vehicle emissionsduring construction activities of Alternative 6 and the combined Alternative 12 would occur resulting in short-term negligible impacts. No long-term impacts would occur once construction is completed from the proposed action alternatives involving discrete repairs of an existing federal FCP. Alternative 11 proposes no construction activities and would have no impact to climate or air quality.
Noise: Noise is generally defined as unwanted sound.	With any of the proposed action alternatives, short-term construction related negligible impacts would occur over an estimated construction period of ten (10) months, likely during daytime hours throughout the duration of construction. The proposed action alternatives do not propose any atypical or noise-generating operations or activities of significance. The setting is dominated by vehicular and residential noise as well as natural noise emitted from the perennially flowing Wailuku River. No long-term noise impacts are expected. Alternative 11 proposes a flood warning system that would notify the public of impending flood conditions and may involve generating a sound for notification purposes only. The anticipated noise generated would seldom occur and otherwise would generate no unwarranted sound.
Land Use: Land use is the human use of land.	The proposed action alternatives are sited wholly within the boundaries of the federal Iao Stream FCP, owned and maintained by the NFS. None of the proposed action

	alternatives would temporarily or permanently change or alter current or future land use designations or characteristics.
Visual Aesthetics: Visual resources are defined as the natural and manufactured features that comprise the aesthetic qualities of an area.	The proposed action alternatives would have negligible short-term impacts to visual and aesthetic resources, occurring only during construction with the introduction of machinery, equipment and construction activities. Once construction is completed, the proposed action alternatives would be consistent with other structural elements of the FCP and are designed to blend into the existing highly modified riverine environment. The proposed action alternatives would not introduce any visual obstructions or other discernibly different aesthetic qualities in and around the FCP. Alternative 11 may propose a stream or other climate gage in the vicinity of the Wailuku River. The physical dimensions of the gage would be no more than minimal and would have a negligible effect on visual aesthetics. There are no visual resources such as parks, conservation areas or other areas of recreational, ecological, scenic, or aesthetic importance in the project area.
Recreational Resources: Recreation is comprised of terrestrial- and water-based activities associated with the local population or visitors to the island	The proposed alternatives would not affect recreational resources during construction or after completion since public access to the existing federal flood control system is prohibited due to pre-existing safety concerns. While some USACE projects provide recreational resources and access, this federal FCP does not. In addition, the project site is not adjacent to any public recreational areas.
Socioeconomics: Socioeconomics are defined as the basic attributes and resources associated with the human environment, particularly population and economic activity.	With the implementation of any of the proposed action alternatives, short-term negligible beneficial impact to the local economy may occur by creating temporary employment opportunities and materials spending during the construction phase of the project. The proposed action alternatives involving discrete repairs to the federal FCP and a non-structural flood warning system would not result in temporary or permanent adverse impacts to regional socioeconomics.
Public Infrastructure and Utilities: Public infrastructure and utilities comprise functional services provided to a facility by public agencies or by a facility to the community.	The proposed action alternatives would not affect any public infrastructure or utilities because no public infrastructure or utilities are located within the project area.
Traffic and Circulation: Traffic and circulation refer to the movement of vehicles throughout a road or highway network.	The proposed action alternatives would have negligible short-term construction-related impacts to traffic resulting from additional vehicle trips to and from the project site by construction workers and haul trucks. USACE anticipates use of existing maintenance accessways designated for such purpose, thereby eliminating potential impacts to local traffic

	and circulation from staging and access necessary for construction. Upon completion, any of the proposed action alternatives involving repairs to and within the federal FCP are not expected to generate any additional traffic and would have no long-term impacts on traffic or parking.
Solid and Hazardous Material and Waste: Solid Materials are substances that do not have strong physical properties of ignitability, corrosivity, reactivity, or toxicity. Solid Wastes are solid materials that do not pose substantial present or potential hazard to human health or to the environment. Hazardous materials are defined as substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity, which may cause an increase in mortality, serious irreversible illness, incapacitating irreversible illness, or pose a substantial threat to human health or to the environment. Hazardous wastes are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health or to the environment.	Any of the proposed action alternatives would result in no to negligible impacts to solid and hazardous material and waste. Minimal solid waste would be generated during construction of any of the proposed action alternatives and would be disposed of at an appropriate disposal location in accordance with local and federal laws and regulations. There could be the potential of petroleum spillage associated with construction vehicles and equipment; however, all Best Management Practices best suited to avoid or minimize such risk would be implemented. Within the project area, there are no possible environmental risk sites according to Federal and State databases as stated in the 2017 Final EA.
Relationship to Short-Term Uses and Long-Term Productivity (on all resources)	Long term productivity was not impacted.
Irreversible and Irretrievable Commitment to Resources (on all resources)	Fuel, materials, and manpower are the only resources of the proposed actions considered irreversible or irretrievable.
Relationship to Land Use Plans and Master Plans	The Project did not change or conflict with any land use or master plan.

3.1 WATER RESOURCES

Definition of Resource

Water resources analyzed in this study encompass surface water, groundwater, floodplains, and wetlands. Surface water resources include lakes, rivers, and streams and are important for a variety of reasons including ecological, economic, recreational, aesthetic, and human health. Groundwater comprises subsurface water resources and

is an essential resource in many areas as it is used for potable water, agricultural irrigation, and industrial applications. Floodplains are belts of low, level ground present on one or both sides of a stream channel and are subject to either periodic or infrequent inundation by floodwater. USACE defines wetlands as those areas that are inundated or saturated by surface or groundwater ata frequency and duration sufficient to support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

3.1.1 Existing Conditions

To summarize Section 3.4.3 of the 2017 Final EA, the project site is located on the Iao aquifer system of the Wailuku aquifer sector and the Wailuku River flows eastward through the Iao Valley, discharging into Kahului Bay. Wailuku River is about 12,000 ft in length from the sediment basin to the outlet into Kahului Bay, and about 30% is lined with existing concrete channels. The remaining portions of the stream are an alluvial channel where the stabilization problems occur. Currently, there is continuous flow of water through the proposed project area.

In accordance with the Navigable Waters Protection Rule at 33 CFR 328.3(a)(2), the perennial Wailuku River of the Iao Stream FCP with terminal discharge in the Pacific Ocean is a tributary to a navigable water and meets the definition of a water of the U.S. subject to the regulatory jurisdiction of the Clean Water Act.

Wailuku River and the receiving waters of Kahului Bay are listed on the State of Hawaii Department of Health (DOH) list of impaired waters Category 2, 3, and 5; the Total Daily Maximum Load (TMDL) Priority is listed as Medium (DOH, 2020). According to FEMA Flood Insurance Rate Maps, the project area is located within Regulatory Floodway (FEMA, 2009a; FEMA, 2009b). According to the U.S. Fish and Wildlife Service (USFWS) *National Wetlands Inventory*, the project sites for Alternatives 2, 6, and 12 occurs near areas designated as a freshwater emergent wetland (Figure 3-1), further classified as palustrine (i.e., nontidal wetlands dominated by emergent), and persistent (i.e., vegetation remains standing at least until the beginning of the next growing system) (2021).

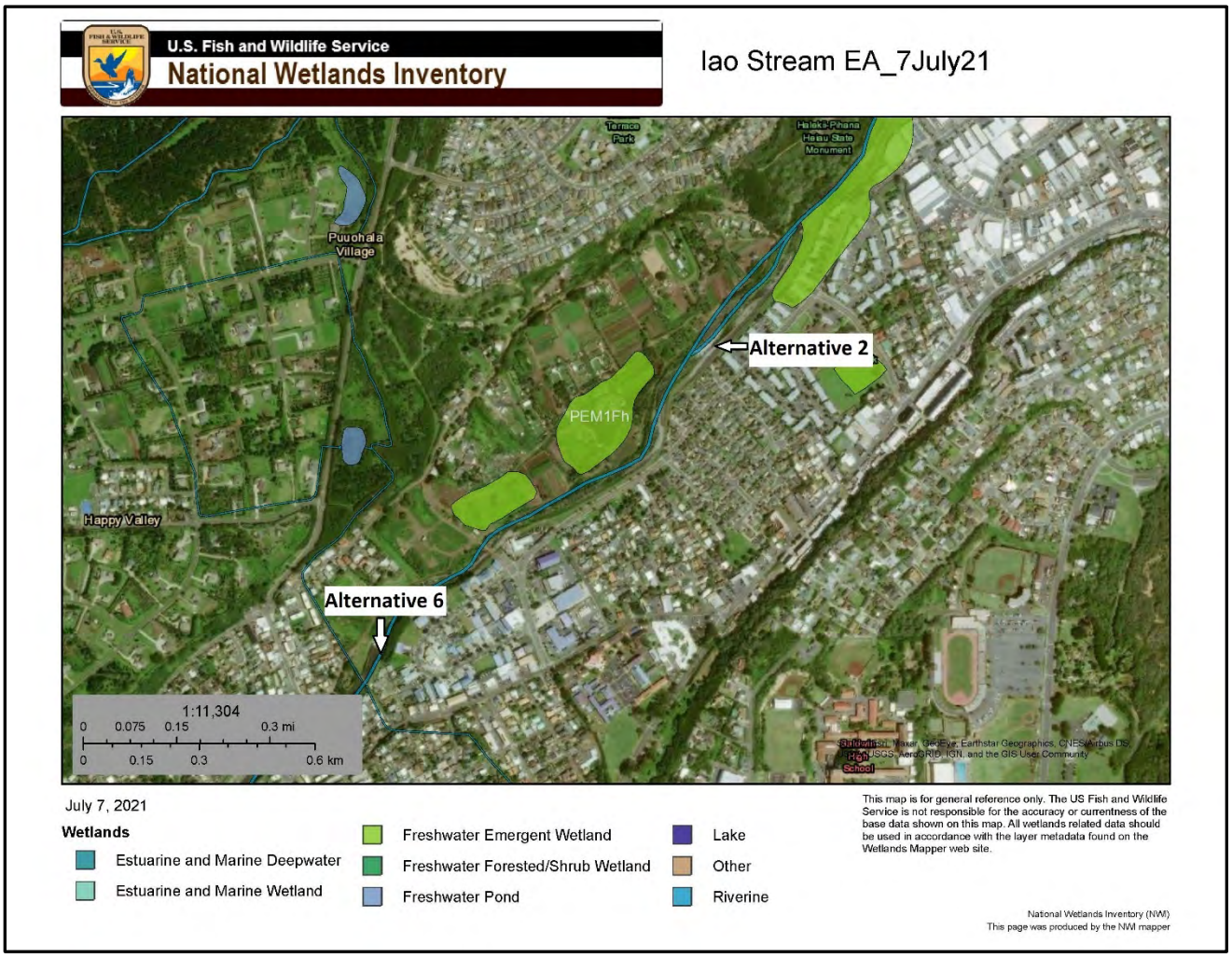


Figure 3-1. NWI Wetland in Project Area

Approach to Analysis

Impacts to water quality under the proposed alternative(s) were considered significant if the proposed alternative(s) would cause functional or chemical change to groundwater resources; or create significant sedimentation, pollution/runoff into surface water bodies, including any significant water body flow alteration. Impacts would be considered significant if they resulted in alteration, or incongruent development of a floodplain or wetland area. Significant impacts would occur if the proposed alternative(s) would result in non-compliance with applicable regulations and policies relating to water resources.

3.1.2 Environmental Consequences

3.1.2.1 No Action Alternative

Under the No Action Alternative, no action alternatives would be implemented and there would be continued impacts to the water quality of Wailuku River as well as nearshore waters in Kahului Bay due to continued erosion of the stream bank and channel during

storm events that deposits terrigenous sediments, organic matter and other pollutants into these surface waters. Since there would be no reduction in volume of sediment deposited into stream waters, there would be no improvement to water quality in the affected aquatic environment.

3.1.2.2 Alternative 2: Remove Revetment X

Alternative 2 is expected to result in similar or less impacts to groundwater, surface water, floodplain, and wetlands as Alternative F as described in Section 3.4 Water Resources of the 2017 Final EA and incorporated by reference in this draft SEA. The removal of the Revetment X left bank would not result in anticipated impacts to groundwater due to the estimated depth to groundwater. Less than significant impacts to surface water would occur to slightly altered stream flow during and after construction by allowing access to the floodplain on the left bank with the removal of the revetment. Alternative 2 does not propose constructed stabilization via structured reinforcement of the left bank post-removal, and instead proposes natural stabilization which may result in short-term erosion of the natural bank, until a natural homeostasis is reached. Alternative 2 would not alter the existing floodplain and would be implemented in order to reduce flood risk within Iao Valley. No impacts to wetlands would occur since there are no wetlands occur with the footprint of Alternative 2.

3.1.2.3 Alternative 6: Install Pre-formed Scour Hole

Impacts of the Alternative 6 are similar as the impacts described in Alternative 2, anticipating short-term adverse effects during construction that will be avoided and minimized to the greatest extent practicable via application of appropriate BMPs such as sediment-erosion control measures. Long-term impacts are not expected. In addition, implementation of Alternative 2 would decrease sedimentation from erosion, benefitting receiving surface waters through improved water quality.

3.1.2.4 Alternative 11: Non Structural Plan (Flood Warning System)

Alternative 11 proposes no new construction. Any stream or climate gage would be affixed to existing structures within the Iao Stream FCP and Wailuku River and any field or control center would be established in an existing building. Accordingly, Alternative 11 would have no effect on historic or cultural resources.

3.1.2.5 Alternative 12: Combination Plan (Preferred Alternative)

Impacts of the Preferred Alternative are similar as the impacts described in Alternatives 2, 6 and 11.

3.2 BIOLOGICAL RESOURCES

Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats in which they occur. Sensitive biological resources are defined as those plants and animal

species listed as threatened or endangered, or proposed as such, by USFWS, NMFS, the State of Hawaii Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW), or Division of Aquatic Resources (DAR).

3.2.1 Existing Conditions

A more detailed description of the existing conditions at the project area can be found in the 2017 Final EA, Section 3.5 Biological Resources and is incorporated by reference. Below is a brief summary of Section 3.5 of the 2017 Final EA.

Terrestrial Flora

Riparian and terrestrial vegetation in and around the project area can be characterized as coastal dry forest and consists of at least nine plants species: Bermuda grass (*Cynodon*), bristly foxtail (*Setaria verticillata* L.), finger grass (*Chloris* L.), *kiawe* (*Prosopis pallida*), klu (*Acacia farnesiana* L.), lantana or *lakana* (*Lantana camara* L.), *koa haole* (*Leucaena leucocephala*), sand bur (*Cenchrus* L.; endemic), and natal red top (*Rhynchely trum repens* Wild.). Many of the plant species found in the project area are non-native species and most are common weedy species that have established in highly disturbed banks and sand/mud bars that form in the concrete channel.

Terrestrial Wildlife Species

Common terrestrial wildlife species observed in the vicinity of the project area include introduced species such as cats, mice, rates, and mongoose. Game animals such as wild goats, pigs, and deer have been reported to occur in the forest reserve area, a mile upstream of the project site. Typical bird species in the general project area include barr doves, lace necked doves, pheasants, Franklin partridge, Kentucky cardinal, house finch, house sparrow, mockingbird, and mynah.

Aquatic Species

Native and indigenous freshwater gobies such as *Lentipes concolor*, *Sicyopterus stimpsoni*, and *Awaous guamensis* were observed in Wailuku River (USACE, 2017). Typical estuarine fishes such as mullet (*Mugil cephalus*), aholehole (*Kuhlia xenura*), kupipi (Abudefduf sordidus), and dusky frillgoby (*Bathygobius fuscus*) inhabit the estuarine reach located downstream of the project area. Two endemic amphidromous mollusks, hihiwai (*Neritina granosa*) and hapawai (*Neritina vespertina*), also inhabit the estuarine reach of the stream. During the 2016 survey, numerous *oopu nakea* (*Awaous stamineus*) were observed in the flood control channel.

Marine Species

The Revised Draft FWCA report (USFWS, 2006) noted the presence of coral reefs in the coastal ecosystem adjacent to the mouth of Wailuku River. The near shore coastal environment in Kahului Bay is also noted to support sport fisheries for jacks (*Carangidae*) including *Caranx melampygus* and *C. ignobilis* (called *omilu* or *ulua* as adults and *papio* as juveniles); *Selar crumenopthalmus* (called *akule* as adults and

halalu as juveniles); and goatfish *(Mullidae*) such as *Mullodichthys vanicolensis* (called *weke*as adults and *oama* as juveniles).

Threatened & Endangered Species

As documented in the 2017 Final EA, no threatened or endangered species were observed within the project area (USACE, 2017). The project area is absent of designated critical habitat or any ESA-listed species. Based on the geographic location of the Iao Stream FCP, the following listed species could occur or be affected by certain activities in this location (USFWS, IPAC, 2021):

- Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), Endangered
- Band-rumped Storm-petrel (*Oceanodroma castro*), Endangered
- Hawaiian Duck, Koloa, (*Anas wyvilliana*), Endangered
- Hawaiian Coot, (*Fulica americana alai*), Endangered
- Hawaiian Stilt (*Himantopus mexicanus knudseni*), Endangered

These species are within USFWS jurisdiction. Based on the geographic location of the discrete repairs in the riverine portion of the Iao Stream FCP, marine species under NMFS jurisdiction do not occur in the project area.Approach to Analysis

Determination of the significance of potential impacts to biological resources is based on 1) the importance (i.e., legal, commercial, recreation, ecological, or scientific) of the resource; 2) the proportion of the resource that would be affected relative to its occurrence in the region; 3) the sensitivity of the resource to proposed activities; and 4) the duration of ecological ramifications.

Impacts to biological resources are significant if species or habitats of concern are adversely affected overrelatively large areas, or if disturbances cause reductions in population size or distribution. Potential physical impacts such as habitat loss, noise, and impacts to water quality were evaluated to assess potential impacts to biological resources.

3.2.2 Environmental Consequences

3.2.2.1 No Action Alternative

Under the No Action Alternative, no action alternatives would not be implemented and there would be continued impacts to aquatic resources within the federal FCP and the downstream marine ecosystem caused by sediment runoff originating from erosion of the adjacent and upstream stream banks during storm events. Biological resources within the marine habitat within the vicinity of the stream mouth would continue to be impacted from sedimentation suspended in runoff waters.

3.2.2.2 Alternative 2: Remove Revetment X

Alternative 2 is expected to result in similar or less impacts to biological resources within the project area during and after the construction of Alternative F as described in Section 3.5 Biological Resources of the 2017 Final EA and incorporated by reference in this draft SEA. To summarize, removal of the revetment would result in less than significant short-term impacts on biological resources within the project area during the construction period. Displaced terrestrial flora and fauna would be expected to return to the project area following completion of construction activities. No long-term impacts to the existing biological resources within and in the vicinity of the project area are expected to occur. Since no threatened or endangered species or their designated critical habitat occur in the project vicinity, Alternative 2 would not affect any ESA species or their designated critical habitat.

3.2.2.3 Alternative 6: Install Pre-formed Scour Hole

Based on the discrete scope and location of the proposed repairs, impacts of Alternative 6 are similar as the impacts described above for Alternative 2. In addition, implementation of Alternative 6 would decrease sedimentation of surface waters from erosion, resulting in beneficial impact to riverine aquatic species and downstream marine species in nearshore waters of Kahului Bay.

3.2.2.4 Alternative 11: Non Structural Plan (Flood Warning System)

Alternative 11 proposes no new construction and accordingly would have no effect on biological resources.

3.2.2.5 Alternative 12: Combination Plan (Preferred Alternative)

Impacts of the Preferred Alternative are similar as the impacts described in Alternatives 2, 6 and 11.

3.3 HISTORIC AND CULTURAL RESOURCES

Definition of Resource

Cultural resources represent and document activities, accomplishments, and traditions of previous civilizations, and link current and former inhabitants of an area. Depending on their conditions and historic uses, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups.

Archaeological resources comprise areas where prehistoric or historic activity measurably altered the earth or deposits of physical remains (e.g., arrowheads, bottles). Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP), an inventory of culturally significant resources identified in the U.S.;

however, more recent structures, such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future. Traditional cultural resources can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Hawaiians or other groups consider essential for the persistence of traditional culture.

Regulatory Setting

Several Federal laws and regulations have been established to manage cultural resources, including the NHPA of 1966, the Archaeological and Historic Preservation Act (1974), and the Archaeological Resource Protection Act (1979). In order for a cultural resource to be considered significant, it must meet one or more of the following criteria for inclusion on the NRHP:

"The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and: (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or (b) that are associated with the lives or persons significant in our past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (d) that have yielded, or may be likely to yield, information important in prehistory or history" (CFR, Title 36, Part 60:4; 2004).

The DLNR State Historic Preservation Division (SHPD) works to preserve and sustain historical and cultural resources through three branches: History and Culture, Archaeology, and Architecture. The SHPD maintains the statewide inventory of Historic Properties and reviews development projects in order to lessen the effects of change on Hawai'i's historical and cultural assets. Administrative rules pertaining to historic preservation in Hawaii can be found in Hawaii Administrative Rules (HAR) Chapters 197-198, 275-284, and 300. Statutes pertaining to historic preservation in Hawai'i are found in Hawaii Revised Statutes (HRS) Chapter 6E.

Traditional cultural practices acknowledged in the State of Hawaii include rights of access and gathering. Traditional gathering rights have been codified in HRS 1-1 and 7-1, Article 12-7 of the Constitution of the State of Hawaii, and affirmed in various legal decisions. In order to exercise traditional gathering rights in the State of Hawai'i, an individual must establish the following: he/she must qualify as "native Hawaiian"; he/she must establish that their claimed right is protected as a customary or traditional native Hawaiian practice; AND he/she must prove that the exercise of that right will occur on undeveloped or "less than fully developed property" (SOEST, 2014).

Articles IX and XII of the State Constitution of Hawaii (Chapter 343, HRS) require government agencies to promote and preserve cultural beliefs, practices, and resources of native Hawaiian and other ethnic groups. The "Guidelines for Assessing Cultural

Impacts", adopted by the Environmental Council of the State of Hawai'i (1997), identifies the protocol for conducting cultural assessments.

3.3.1 Existing Conditions

Regional and Local History

The 2017 Final EA, Section 3.2 Historical and Cultural Resources, provides detailed description of existing historic and cultural resources. A summary of that description is provided herein. During the pre-Contact and early post-Contact periods, Iao Valley and the greater Wailuku area was a political and ceremonial center (USACE, 2017). Land Commission Awards granted in the mid-nineteenth century in lower Iao Valley indicate a substantial population was once present in the area and that the land was agriculturally very important.

Background research on land use history indicates that the project area contained *loi* (taro) patches during the pre-Contact and early historic periods. Over a century of sugarcane farming in the area has undoubtedly impacted remnant evidence of traditional *loi* and associated pre-Contact or early historic sites. The potential for encountering human burials or habitation sites is considered low due to previous disturbance by sugarcane agriculture, in addition to natural events that altered the landscape, such as the flood of 1916. Potential for other pre-Contact or early historic features associated with traditional agriculture is also considered low. However, if such features are extant in subsurface layers, they may be evidenced by stone and earthen terraces, alignments, walls, and *auwai*. Associated artifacts may include lithic artifacts such as basalt cores, adzes, flakes, or poi pounders.

Based on historic information, the project area may contain evidence of temporary, small scale habitations associated with *loi* or sugarcane fields. Evidence of traditional camps may be lithic artifacts (adzes, flakes, etc.), faunal remains, and charcoal associated with imu (traditional underground oven). Historic period camp sites may additionally include historic artifacts (metal, ceramic, and glass assemblages).

Archaeology

Numerous archaeological investigations have been conducted in Iao Valley. Previous work has included archaeological assessments, archaeological surface survey, archaeological inventory survey, archaeological subsurface testing, and archaeological monitoring (USACE, 2017). A few of these projects were carried out within or near the current project area. The following list itemizes projects conducted in the immediate vicinity of the project area and the survey results. A detailed summary of each project and description of the survey results is provided in the 2017 Final EA.

- In 1998, Scientific Consulting Services, Inc. (SCS) conducted an Archaeological reconnaissance surveys with subsurface testing, for the Iao Stream Flood Control Project. The reconnaissance surveys revealed only one site, SIHP No. 50-50-04-475 located in the vicinity, but outside of the current USACE APE.
- An archaeological inventory survey (AIS) was carried out in 2004 by SCS for the proposed Imi Kala Street and Neki Place Extensions (USACE, 2017). The AIS revealed SIHP No. 50-50-04-1508, 50-50-04-5564, 50-50-04-5565 and 50-50-04-5566, all located in the vicinity, but outside of the current USACE APE. No other traditional archaeological sites or features were identified.
- An AIS was conducted by Pacific Consulting Services, Inc. (PCSI) in May 2014. The subsurface survey revealed no SIHP sites within the current USACE APE.
- An oral history survey was conducted in November of 2003 by Social Research Pacific, Inc. (SRP), to obtain information regarding properties of cultural and historical significance and incorporated in a Cultural Impact Assessment (CIA) in accordance with National Park Service guidance (USACE, 2017). Based on the research and interviews incorporated into the CIA, there are no known TCPs within the current USACE APE, and traditional land uses of the project area have been discontinued.

Section 106 Coordination and Consultation

USACE has pursued several undertakings at the Iao Stream FCP. A detailed history of past Section 106 consultations is provided in the 2017 Final EA. USACE consulted SHPD, the Central Maui Hawaiian Civic Club, Hui Malama I Na Kupuna O Hawaii Nei, and the Office of Hawaiian Affairs in December 2016 as documented in the 2017 Final EA. The USACE Section 106 consultation related to the currently proposed undertaking and since the 2017 Final EA is based on the environmental consequences documented below and requiring USACE to consult with the SHPD and other consulting parties. USACE will initiate Section 106 consultation concurrent to publishing of this draft SEA to the USACE Honolulu District Website.

Historic/Cultural Resources

A total of 31 properties and historic districts are listed on the National Register of Historic Places (NRHP) for Maui County. Of the 31 listed properties, two (Iao Theater and Waialae Bridge) are located outside of, but within 0.5 miles of the APE.

A total of 64 properties and historic districts are listed on the Hawaii Register of Historic Places for Maui County. Three (Iao Theater, Waialae Bridge and Naniloa Drive Overpass Bridge) of the 64 properties are located outside of, but within 0.5 miles of the APE.

3.3.2 Environmental Consequences

3.3.2.1 No Action Alternative

Under the No Action Alternative, USACE would not pursue any undertaking. Further deterioration of structural elements of the Iao Stream FCP are anticipated. USACE would propose future undertaking(s) to repair structural damage(s) on an as-needed basis and to maintain the authorized level of flood protection for the Wailuku community. Future undertaking(s) would necessitate future consultation(s) pursuant to Section 106.

3.3.2.2 Alternative 2: Remove Revetment X

Revetment X is a constructed component of the Iao Stream FCP and is located in the middle of the dynamic Iao Stream, where presence of any cultural resource remains is highly unexpected. The historic natural stream was artificially straightened and constricted to its current alignment by USACE. Any subsurface historic or cultural resources are expected to have been impacted at that time, if they existed. Any cultural resource remnants contained in its entirety within the stream bed in its past or current alignment would have been washed away by stream flows including flooding events through the years. No cultural item is expected to withstand the constant barrage from such high velocity/energy flows. Hence, no cultural resource is expected to exist within the APE or be impacted by this alternative.

Note, detailed discussion regarding impacts to historic and cultural resources anticipated from the undertaking proposed under Alternative 2 was previously provided under the 2017 Final EA as a component of the former, “Alternative F”. Because the undertaking and footprint has not substantively changed, only the nomenclature from Alternative F to Alternative 2, USACE anticipates the same, no effect to historic properties to result from the proposed removal of Revetment X.

3.3.2.3 Alternative 6: Install Pre-formed Scour Hole

The undertaking proposed under Alternative 6 is similar in nature to the undertaking proposed under Alternative 2, involving maintenance repair to existing structural elements of the Iao Stream FCP. Repairs to the lined and unlined portions of the channel bed at its transition in the Iao Stream FCP would encounter previously, extensively modified subgrade during excavation occurring wholly within the stream channel. Similar to Alterative 2, presence of any cultural remains in the stream channel is highly unlikely. The proposed reinforcement of the stream bed would be predominately subgrade, with a buried toe, and the surface repairs would not introduce new visual elements that would not change substantively from the existing stream bed. The proposed repairs to the stream bed are to be consistent with the upstream lined stream bed. USACE anticipates no cultural or hisotirc properties to occur within or be affected by the proposed undertaking. No cultural resource is expected to be impacted by this alternative.

3.3.2.4 Alternative 11: Non Structural Plan (Flood Warning System)

Alternative 11 proposes no new construction. Any stream or climate gage would be affixed to existing structures within the Iao Stream FCP and Wailuku River and any field or control center would be established in an existing building. Accordingly, Alternative 11 would have no effect on historic or cultural resources.

3.3.2.5 Alternative 12: Combination Plan (Preferred Alternative)

This Alternative 12 consists of a combination of Alternatives 2, 6 and 11, above, under a single contract. Note the undertakings at Alternative 2, Alternative 6 and Alternative 11 are hydraulically and geographically disjointed and do not result in synergistic or cumulative impacts. USACE anticipates a similar effect determination of no effect to historic and cultural resources under the combined Alternative 12 undertaking.

3.4 Other Actions

Per 40 CFR 1508.1(g), effects or impacts are changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives.

Past Actions

Construction of the original Iao Stream Flood Control Project was completed in 1981 The constructed FCP has been successful at preventing an estimated $49.6 million in flood damage (as of Fiscal Year 2013). However, since completion, several large storm events have caused structural damage and highlighted structural vulnerabilities requiring various repair and reinforcement actions as described in Section 1.2.3 and subsequently changing the stream dynamic. Numerous activities have occurred within the streambed during the past 30 years, including ongoing upstream water diversion for agricultural uses, changes in the streambed dynamic due to natural processes, and upstream watershed use/development. Rapid expansion of urban development particularly within the lower watershed as well as agricultural expansion throughout the watershed has most likely caused extensive changes in the current dynamic of the Iao stream as compared to conditions at the time of the original construction of the flood control structures.

Present Actions

USACE and the NFS do not presently propose concurrent actions at the federal FCP in addition to the proposed action.

Reasonably Foreseeable Future Actions

The Proposed Action involves discrete repairs and modifications to existing FCP structural components expected to reduce the rate of erosion at and downstream of the repairs thereby reducing the possibility of further damage to the existing flood control structures. No additional concrete channel lining or change in the alignment of the stream are proposed under the Proposed Action; therefore, no changes to the dynamic of Wailuku River in addition to those caused by the construction of flood control structures in the past are anticipated. While the Proposed Action is not expected to not cause deterioration of stream functions or structural components of the federal FCP, it can be reasonably presumed that other large storm events may occur that could affect stream dynamics and/or damage structural components of the FCP that would require structural repair or modification. No such future repairs are identified at this time, however structural repairs in response to changes in stream dynamics or structural damage is reasonably foreseeable.

To the knowledge of USACE, there are no major public infrastructure or development projects planned within proximity to the project area at this time. There are various small private residential construction and renovation projects that are ongoing within the surrounding residential, commercial, and agricultural parcels. These projects are subject to Maui County zoning and permitting regulations, including the Maui County Rules for the Design of Storm Water Treatment Best Management Practices (Maui County, 2014g). As a result, these projects would not represent significant incremental impacts that would contribute to significant cumulative impacts.

SECTION 4 - COMPLIANCE WITH APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS

4.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) (42 U.S.C. §4321 et seq.) commits federal agencies to considering, documenting, and publicly disclosing the environmental effects of their actions. This SEA, prepared July 2021 is intended to achieve NEPA compliance for the proposed project. As required by NEPA, this Draft SEA describes existing environmental conditions at the project area, the proposed action and alternatives, potential environmental impacts of the proposed project, and measures to minimize environmental impacts. Before preparing this document, USACE posted a Public Notice for a 30-day public review period, May 17 – June 23, 2021, soliciting initial comments on the proposed action alternatives. A 30-day public review period on the draft SEA provides disclosure of the environmental effects of the alternatives to the public and solicits comments for USACE consideration and incorporation into the final NEPA document.

4.2 Endangered Species Act

The Endangered Species Act (ESA) established a national program for the conservation of threatened and endangered fish, wildlife and plants and the habitat upon which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with the USFWS and NMFS, the Services, as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their critical habitats. Section 7(c) of the ESA and the Federal regulations on endangered species coordination (50 CFR §402.12) require that Federal agencies prepare biological assessments of the potential effects of major actions on listed species and critical habitat. USFWS has jurisdiction over endangered and threatened terrestrial flora, fauna, and birds in the State of Hawaii. The National Oceanic and Atmospheric Administration (NOAA), through the NMFS, has jurisdiction over marine mammals, turtles (while in water), fish, and coral species.

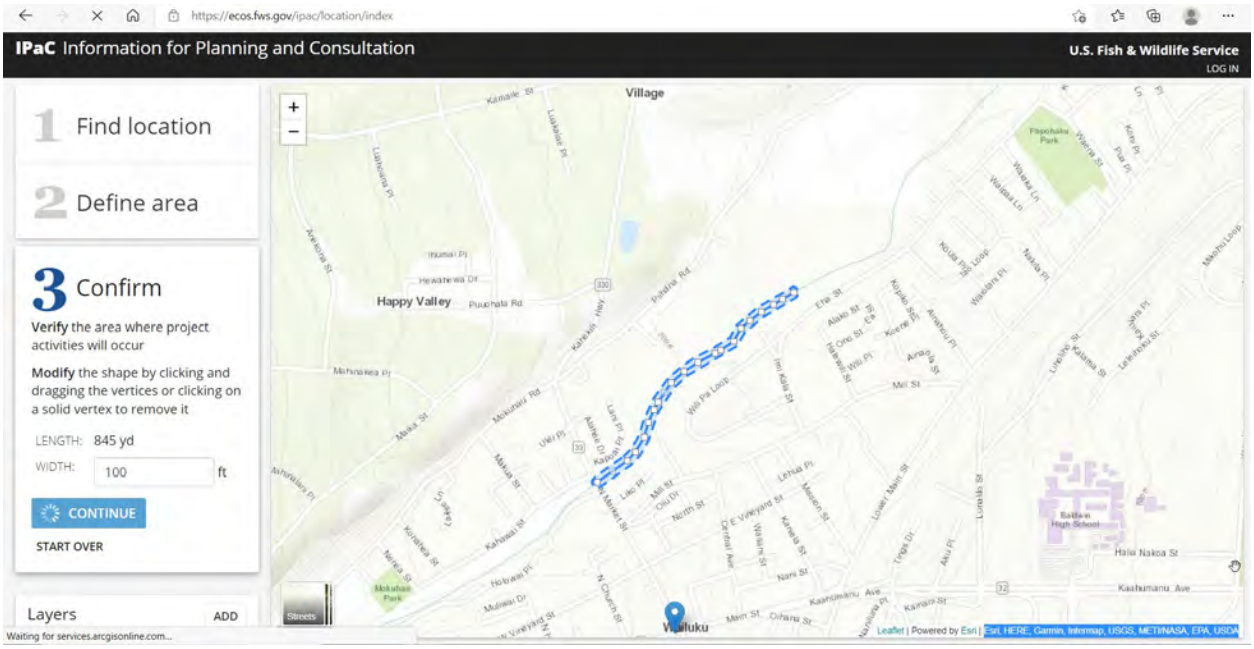


Figure 4-1 ESA Action Area

The preferred alternative proposes discrete repairs to existing structures within the confines of the Iao Stream FCP. The ESA Action area includes the stream channel from top of bank to top of bank and along the length of the repairs at Alternatives 2 and 6 and proximal existing maintenance accessways. The downstream end of the ESA Action area is approximately 1 mile inland of the shoreline. Based on the geographic location of the ESA Action area, the following listed species could either occur or be affected by certain activities in this location (USFWS, IPAC, 2021):

- o Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), Endangered
- o Band-rumped Storm-petrel (*Oceanodroma castro*), Endangered
- o Hawaiian Duck, Koloa, (*Anas wyvilliana*), Endangered
- o Hawaiian Coot, (*Fulica americana alai*), Endangered
- o Hawaiian Stilt (*Himantopus mexicanus knudseni*), Endangered

These species are within USFWS jurisdiction. The ESA action area is absent of listed marine species under NMFS jurisdiction. The ESA Action Area is absent of designated critical habitat for any of the aforementioned listed species.

The stream channel at both Alternative 2 and Alternative 6 project areas are vegetated with non-native shrubs and grasses opportunistically growing in the boulder-lined channel bed and banks and is absent of terrestrial habitat suitable for endangered bat roosting and nesting i.e., trees greater than 15-ft height and are absent of permanent aquatic habitat i.e., vegetated wetlands and mudflats suitable for waterfowl nesting and breeding. USACE anticipates the contractor will complete the work during daytime hours, not requiring artificial lighting.

Based on the nature of the discrete repairs to an existing structure that lacks suitable habitat for listed species and that will not require artificial lighting during construction, the USACE does not expect collocation in time or in place for any of the above listed species in the ESA Action area. For this reason, USACE has determined the proposed action alternatives would have no effect on listed species or designated critical habitat. Consultation with the Services under Section 7 of the ESA is not required and USACE has met its statutory requirement under the ESA for the proposed federal action.

4.3 National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966 as amended directs federal agencies to assume responsibility for all cultural resources under their jurisdiction. Section 106 of NHPA requires agencies to consider the potential effect of their actions on properties that are listed, or are eligible for listing, on the NRHP. The NHPA implementing regulations, 36 CFR Part 800, requires that the federal agency consult with the State Historic Preservation Officer (SHPO), Tribes and interested parties to ensure that all historic properties are adequately identified, evaluated and considered in planning for proposed undertakings.

The undertaking consists of a combination of two discrete repairs to the existing Iao Stream FCP, a). removal of exiting revetment X left bank and b). installation of the pre-formed scour hole within the existing Iao Stream FCP. Both these actions will be performed in its entirely within the existing channel flow confines and both locations will comprise the APE for the project. Because of the constant stream flow, it is very unlikely that any cultural resources will be present in either APE. USACE has determined the proposed undertaking would have no effect to historic sites and will initiate consultation with the State Historic Preservation Division pursuant to Section 106 and implementing regulations 36 CFR Part 800.

4.4 Clean Water Act

The Clean Water Act (CWA) of 1972 establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Section 401 of the Federal Clean Water Act requires that any Federal activity that may result in a discharge of dredged or fill material to waters of the U.S. must first receive a water quality certification from the state in which the activity would occur. Discharge of pollutants into surface waters of the U.S. are controlled under the NPDES program, pursuant to Section 402 of the Clean Water Act. Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the United States.

Section 401. Under Section 401 of the CWA, an activity involving a discharge into waters of the U.S. authorized by a Federal permit or license must receive a water quality certification (WQC) from the affected certifying agency or tribe. The issuance of a certification means that the activity will comply with the water quality standards and any established effluent limitations of the certifying agency or tribe. Thus, fill activities

not exempt from Section 404 require Section 401 certification from the state, EPA, or a 401 certification-authorized tribe.

For projects in the State of Hawaii, DOH is the certifying agency. Since the proposed project may generate discharges to State waters during construction of the federal action, a Section 401 WQC would be required prior to the start of construction. The feasibility level of conceptual design is inadequate to identify and describe all proposed discharges with sufficient detail to apply for and obtain a Section 401 WQC at this point. USACE proposes to apply for and obtain a Section 401 WQC from the DOH during the environmental permitting process of the Pre-construction, Engineering, and Design Phase.

On April 19, 2021, USACE hosted a coordination meeting with DOH, State of Hawaii Office of Planning, and USFWS regarding Section 401, CZMA, ESA and FWCA compliance. USACE will continue to coordinate with DOH to obtain a letter of confirmation acknowledging USACE's coordination on this project with DOH, DOH's potential preliminary findings, if available, and acknowledgement of USACE's plans to obtain a WQC at a later date, prior to implementation of the project.

Section 404. The Preferred Alternative would involve activities that could result in the discharge of fill and/or dredged material into waters of the U.S. as regulated under Section 404 of the CWA and subject to the provisions of Section 404 (b)(1) of the CWA. The 404(b)(1) analysis for Alternative 2 of the Preferred Alternative was done as part of the analysis of Alternative F as documented in Appendix C of the 2017 Final EA. USACE is currently preparing the 404 (b)(1) analysis for Alternative 6 of the Preferred Alternative and upon completion, will be included in any final NEPA document.

Section 402. Discharge of pollutants into surface waters of the U.S. are controlled under the National Pollutant Discharge Elimination System (NPDES) program, pursuant to Section 402 of the Clean Water Act. This program is administered by the DOH under HAR Title 11, Chapter 55 Water Pollution Control (October 29, 1992). This chapter requires submission of a NPDES application or a Notice of Intent (NOI) for NPDES General Permit coverage, for discharges of regulated pollutants, or for substantially altering the quality of any discharge, or for substantially increasing the quantity of discharge. The NPDES program requires construction site operators to obtain coverage under a NPDES permit for clearing, grading, and excavating activities that disturb an area of 1 acre or more to prevent any discharges associated with construction activities from entering the stream. The Preferred Alternative may involve cumulative disturbance to an area greater than 1 acre, requiring USACE to obtain a NPDES permit from DOH prior to the start of construction activities. The NPDES permit application process would be initiated during the design phase of the project when sufficient information regarding construction sequence, means and methods, etc. is available.

4.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972, as amended (16 U.S.C. 1451 et seq.), is administered in Hawaii by the State Office of Planning, CZM Office. Pursuant to Section 307 of the CZMA, Federal agency activities that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone (also referred to as coastal uses or resources and coastal effects) must be consistent to the maximum extent practicable with the enforceable policies of a State's Federally approved coastal management program.

The entire State of Hawaii is generally regarded as located within the coastal zone. The CZM program objectives and policies are to provide coastal recreational opportunities; preserve and protect historic, scenic and coastal ecosystem resources; provide economic uses; reduce coastal hazards; improve public awareness in coastal zone management; and manage development within the coastal zone.

USACE previously determined that Alternative 2, Removal of Revetment X is consistent to the maximum extent practicable with the State CZM program policies and objectives as a component of Alternative F of the 2017 Final EA and received federal consistency concurrence from the State CZM Office by letter dated June 2, 2017.

USACE has preliminarily determined that Alternative 6, Install Pre-formed Scour Hole of the preferred alternative, also is consistent to the maximum extent practicable with the State CZM program policies and objectives. USACE submitted its application, assessment form with substantiating documentation and request for federal consistency review to the State CZM Office on July 21, 2021. Concurrence from the State CZM Office on USACE's determination would satisfy the statutory requirements under Section 307 of the CZMA for the proposed action. Documentation of the State CZM Office's federal consistency review will be included in any final NEPA document.

4.6 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703-712) makes it illegal for anyone 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, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof except under the terms of a valid permit issued pursuant to Federal regulations. The migratory bird species protected by the Act are listed in 50 CFR 10.13. Since the Preferred Alternative would only include limited short-term disturbance of the affected environment during the construction period, and since close coordination with the USFWS would assure that the Preferred Alternative would not result in significant impacts to any migratory bird habitat, the Preferred Alternative would comply with the provisions of the MBTA.

4.7 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) of 1934, as amended (16 U.S.C. §§ 661–667e), provides authority for USFWS and NMFS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other development project features. It requires Federal agencies that construct, license, or permit water resource development projects to consult with the USFWS, NMFS, and state resource agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts when waters of any stream or other body of water are "proposed . . . to be impounded, diverted . . . or . . . otherwise controlled or modified . . ."

USACE will not pursue further coordination with the services on Alternative 12, which combines the actions under Alternatives 2, 6 and 11 based on the following FWCA coordination history: A Planning Aid Letter was issued dated April 22, 2014 for Alternative F of the 2017 Final EA which includes Alternative 2 of this draft SEA and can be found in Appendix F of the 2017 Final EA, documenting Alternative 2 compliance with the FWCA. With regard to Alternative 6 of the preferred alternative, USACE proposes discrete repairs e.g., maintenance of structural components of an existing federal project, therefore in accordance with the USFWS' Water Resources Development under the Fish And Wildlife Coordination Act dated November 2004 FWCA is not applicable; no FWCA coordination is required for Alternative 6. Alternative 11 does not propose to control or modify a body of water, likewise, FWCA is not applicable; no FWCA coordination is required for Alternative 11.

4.8 Magnuson-Stevens Fishery Conservation and Management Act

Section 305(b)(2)of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) mandates that federal agencies prepare an essential fish habitat (EFH) assessment to inform consultation with NOAA Fisheries regarding any of their actions authorized, funded, or undertaken that may adversely affect EFH. The Preferred Alternative is located within Wailuku River waters and stream bank; approximately 1.0 and 1.7 miles upstream from the river mouth. There are no EFH within or adjacent to the proposed project area and there would be no adverse effect on EFH as a result of implementing the Preferred Alternative; therefore, EFH consultation is not required.

4.9 Farmland Protection Policy Act

The purpose of the Farmland Protection Policy Act (FPPA) (7 U.S.C. 4201 et seq., implementing regulations 7 CFR Part 658, of the Agriculture and Food Act of 1981, as amended) "is to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland tononagricultural uses, and to assure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland." The Preferred Alternative does not include any activities, including new construction or acquisition of undeveloped land, which could potentially convert one land use to another. Land use within the affected area

would remain unchanged; therefore, the Preferred Alternative is in compliance with the FPPA.

4.10 Executive Order 11988 – Floodplain Management

This EO 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.

The Preferred Alternative consists of removing a damaged revetment and installing pre-formed scour hole and a stream gage. These actions would reduce the risk of further erosion by repairing the existing damaged flood control project. In addition, these actions would not change the current land use and would not likely induce development. Therefore, the Preferred Alternative would be in compliance with EO 11988.

4.11 Executive Order 11990 – Protection of Wetlands

EO 11990 states that each Federal agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for: (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. According to the USFWS National Wetlands Inventory accessed on June 21, 2021, no wetlands are present at the project site; however, potential pockets of wetlands are present between Alternatives 2 and 6. This draft SEA assesses impacts on wetlands in Section 3.2 and has determined the impacts would be negligible.

4.12 Executive Order 12898 – Environmental Justice in Minority Populations and Low-Income Populations

EO 12898 states that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health orenvironmental impacts of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Northern Mariana Islands.” The Preferred Alternative would repair an existing flood control project that would not result in any unacceptable human health or environmental impacts to either the general population at large or specifically to minority populations or low-income populations.

4.13 Executive Order 13045 – Protection of Children from Environmental Health and Safety Risks

EO 13045 applies to economically significant rules under EO 12866 that concern an environmental health or safety risk that EPA has reason to believe may disproportionately affect children. Environmental health risks or safety risks refer to risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to). During the construction period of the Preferred Alternative, access to the construction site would be restricted to the general public as a safety measure. Further, no locations of concentration of children (e.g., schools, playgrounds, daycare centers) are located near the project area; therefore, the Preferred Alternative is not expected to disproportionately affect the health and safety of children.

4.14 Executive Order 13089 – Protection of Coral Reefs

EO 13089 states that "all Federal agencies whose actions may affect U.S. coral reef ecosystems shall: (a) identify their actions that may affect U.S. coral reef ecosystems; (b) use their programs and authorities to protect and enhance the conditions of such ecosystems; and (c) to the extent permitted by law, ensure that any actions they authorize, fund or carry out will not degrade the conditions of such ecosystems."

The Preferred Alternative consists of removing a damaged revetment and installing pre-formed scour hole and a stream gage. These actions would reduce the risk of further erosion, potentially improving water quality. Improved water clarity and reduced sedimentation would have positive impacts on the coral species as well as the marine invertebrate species supported by the coral reef.

There would be no projected significant impacts to coral reef ecosystems under the Preferred Alternative since the construction activities would adhere to applicable BMPs and regulations, such as the CWA. Therefore, since the Preferred Alternative may enhance the conditions of coral reef ecosystems, its implementation would be compliant with EO 13089.

SECTION 5 - REFERENCES

DOH, 2020. 2020 State of Hawaii Water Quality Monitoring and Assessment Report: Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress Pursuant to §303(D) and §305(B), Clean Water Act (P.L. 97-117). July 30, 2020.

FEMA, 2009a. Flood Insurance Rate Map No. 1500030383E. Maui County, Hawaii. Accessed July 7, 2021. <https://msc.fema.gov >

FEMA, 2009b. Flood Insurance Rate Map No. 1500030391E. Maui County, Hawaii. Accessed July 7, 2021. <https://msc.fema.gov >

USACE, 1975. Final Environmental Statement, Flood Control and Allied Purposes, Iao Stream, Maui, Hawaii. April.

USACE, 1976. Design Memorandum No. 2, General Design Memorandum, Phase II – Project Design, Flood Control & Allied Purposes, Iao Stream, Wailuku, Maui, Hawaii.

USACE, 2017. Final Environmental Assessment for the Modification to the Iao Stream Flood Control Project, Iao Stream, Wailuku, Maui, Hawaii.

USFWS, 2006b. Revised Draft Fish and Wildlife Coordination Act Report for the Iao Stream Flood Control Project, Maui, Hawaii. U.S. Department of the Interior. November. Prepared for U.S. Army Corps of Engineers, Pacific Ocean Division, Honolulu Engineering District.

USFWS, 2021. National Wetlands Inventory. Accessed July 7, 2021. <http://www.fws.gov/wetlands/Data/Mapper.html>

USFWS, 2021. IPaC Information for Planning and Consultation Website. Accessed July 21, 2021. < IPaC: Getting Started - Draw on Map (fws.gov)>

SECTION 6 - APPENDICES

Appendix A – Public Involvement

Appendix B – DRAFT Finding of No Significant Impact Template

US Army Corps of Engineers
Honolulu District
BUILDING STRONG®

Public Notice of Preparation of an Environmental Assessment

Civil and Public Works Branch
Building 230
Fort Shafter, Hawaii 96858-5440

Public Notice Date: May 17, 2021
Expiration Date: 30 days
Corps Project: **Iao Stream Flood Control Project**

Interested parties are hereby notified that the Honolulu District, U.S. Army Corps of Engineers (Corps) is preparing a Supplemental Environmental Assessment (EA) to assess the significance of the potential impacts of the proposed action on the quality of the human environment in accordance with the Council on Environmental Quality's National Environmental Policy Act (NEPA) Implementing Regulations at 40 CFR Parts 1500 to1508, as amended, and the Corps' NEPA regulations at 33 CFR 230. The Corps has preliminarily determined that the proposed action is not likely to result in significant impacts on the human environment and an Environmental Impact Statement will not be prepared.

With this notice, the Corps seeks to involve the public as it prepares the draft EA for proposed repairs to an existing federal project, as a matter of due diligence. In addition, and in accordance with 33 CFR 230, the Corps will again seek public involvement and solicit comment on the completed draft Supplemental EA in July 2021. The Corps will consider comments received during the public comment period for the draft Supplemental EA in making a determination on a finding of no significant impact. Concurrent to involving the public, the Corps will pursue interagency coordination on the proposed action.

ACTION AGENCY: Ms. Rhiannon Kucharski, Chief, Civil and Public Works Branch, Honolulu District, U.S. Army Corps of Engineers, Building 230, Fort Shafter, Hawaii 96858-5440

LOCATION: River Station (RS) 55+50 to 48+50 and RS 91+50, Iao Stream Flood Control Project, Wailuku River, Wailuku, Island of Maui, Hawaii (Center coordinates: 20.899867N, -156.494564W and 20.893229N, -156.502358W, respectively.) See map attached to this notice.

DESCRIPTION OF THE FEDERAL PROJECT: The Iao Stream Flood Control Project (FCP) is located within the Wailuku River (formerly Iao Stream) in Wailuku, Hawaii and

was authorized in 1968 at a cost of $1.68 million. Construction of the project was completed in October 1981 and consists of a debris basin located 2.5 miles upstream of the stream mouth, a 3,500 feet (ft) long lined channel downstream from the debris basin, and levees along the left and right banks. The Iao Stream FCP was turned over to the County of Maui as the Non-Federal Sponsor, to operate and maintain.

DESCRIPTION OF THE PROPOSED ACTION: The Corps proposes discrete repairs at two locations wholly occurring within the lateral limits of the Iao Stream FCP channel, to improve public safety and reduce future maintenance requirements for the County of Maui, Department of Public Works. River Station (RS) 55+50 to 48+50 requires removal of the existing left bank revetment, "Revetment X", to allow the Wailuku River to meander and naturally slow velocities. Further upstream, at RS 91+50, construction of a "pre-formed scour hole" is required to rehabilitate the channel invert. See figures attached to this notice.

Removal of Revetment X. In this reach of the Iao Stream FCP, the natural channel was straightened and narrowed with boulder-concrete (grouted riprap) lining of the banks and a buried toe, to provide the congressionally authorized level of flood protection. The bed of the channel remains unlined.

Under the proposed action, the Corps will remove approximately 200 linear feet of the reinforced left bank of Revetment X, widening the channel to within the lateral limits of the FCP and reducing streamflow velocity. Further stabilization of the left bank is not proposed. No action is proposed along the right bank.

Note that the proposed action at Revetment X (in addition to other previously proposed actions) was previously evaluated in 2017 under the Corps' EA, including required interagency coordination and public involvement, and concluding in a finding of no significant impact. The currently proposed action, herein described, is identical to the description of the same proposed action in the 2017 EA (See Alternative F). The EA for the proposed action will supplement the 2017 EA. The 2017 EA is available for reference online at: https://poh.usace.army.mil/Missions/Civil-Works/Civil-Works-Projects/Iao-Stream/.

Pre-formed scour hole. In this reach of the Iao Stream FCP, located downstream of Market Street Bridge and vertical drop structure, the transition from the upstream boulder concrete lined invert to the downstream unlined channel has eroded and undermines the structural stability of the FCP at this location. Under the proposed action, the Corps will excavate the eroded channel invert and construct a "pre-formed scour hole" i.e. engineered stabilization of the scoured invert consisting of a boulder-concrete sloped toe with buried key using material consistent with the existing channel. The proposed channel invert rehabilitation will repair existing erosion and prevent future, imminent erosion.

Detail regarding construction means, methods and sequencing, best management practices and staging and access requirements is currently unavailable, pending

authorization to fund the repairs and proceed to the design phase, wherein construction detailing will become available. The Iao Stream FCP was constructed with maintenance accessways intended to facilitate maintenance repair to and within the channel. The Corps assumes use of existing maintenance accessways to complete the proposed repairs.

ALTERNATIVES: The reasonable alternatives under consideration by the Corps at this time include the following: 1) No Action, 2) Removal of Revetment X only, 3) Pre-formed scour hole only, and 4) the Proposed Action, as described above.

AUTHORITY(S): The Iao Stream FCP was authorized under Section 203 of the Flood Control Act of 1968 (Public Law 90-483). No further congressional authorization is required for the proposed action.

COMMENT AND REVIEW PERIOD: The Corps is soliciting initial comments from the general public, Federal, State and local agencies and officials, and other interested parties in order to consider and evaluate the impacts of the proposed action on the human environment. Any comments received will be considered. Only those comments received during the designated comment and review period will be considered by the Corps in preparation of the draft EA. All comments received will become a part of the administrative record.

Written comment on this public notice must be submitted via conventional mail or electronic mail (e-mail).

Comments sent by conventional mail should include your name, return mailing address, phone number, and reference to "Iao Stream Flood Control Project" and be sent to:

U.S. Army Corps of Engineers, Honolulu District
Civil and Public Works Branch (CEPOH-PPC)
Attn: Jessie Paahana
Building 230
Fort Shafter, Hawaii 96858-5440

Comments sent by e-mail may be sent to: CEPOH-Planning@usasce.army.mil. If using email, you must include reference to "Iao Stream Flood Control Project" in the subject heading of the email along with your name, mailing address and phone number. In order to be accepted, e-mail comments must originate from the author's e-mail account.

To be accepted, all comments, whether transmitted by conventional mail or e-mail, must be received by our office within **30 days** of the date of this notice.

VIRTUAL PUBLIC INFORMATION EVENT: The public is invited to attend a virtual information event hosted by the Corps on either of the following dates:

May 22, 2021 at 9:00am – 10:00am HST, and
May 29, 2021 at 9:00am – 10:00am HST.
The Corps will present the proposed action, accept public comment and answer questions to the best of our ability during this event. The same information will be presented at both meetings.

Access Information:
Join online webinar via Cisco WebEx platform at
https://usace1.webex.com/meet/jessie.k.paahana.
Access via this platform is interactive and includes both visual and audio transmittal.

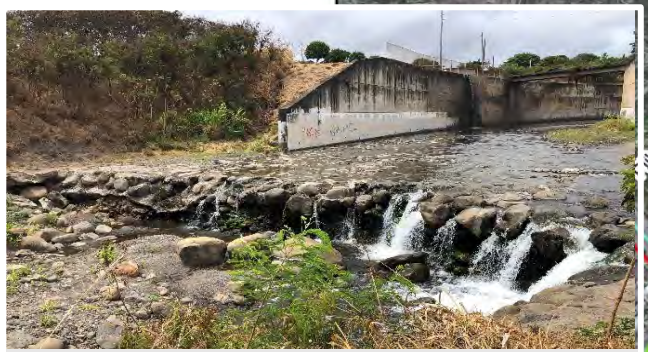
Join by phone, toll free at 1 (844) 800-2712. Access code: 199 533 9315.
Access via this platform is not interactive and includes audio transmittal only.

This event coincides with the comment and review period; comments received at this event will be considered in the preparation of the draft EA and will become a part of the administrative record. Comments submitted in response to, but not at this event, must follow the submittal procedures described above for written comments.

This public notice is issued by the Chief, Civil and Public Works Branch.

Attachment

Channel scour at Revetment X



Existing head cut at upstream lined channel; proposed location of pre-formed scour hole

Cross-Section View of Proposed Pre-Formed Scour Hole

U.S. Army Corps of Engineers
Honolulu District

Tentatively Selected Plan, General Site Plan
Iao Stream Flood Control Project
Wailuku, Island of Maui, Hawaii

0 300 600 Feet
0 100 200 Meters

Notes:
1. This map is for conceptual purposes only and all areas are approximate
2. Coordinate System: Hawaii State Plane Zone 2, NAD 83 HARN, Feet
3. Imagery date: 2005, Source: DOQQ NRCS
4. Map produced by the Civil Works Technical Branch (CEPOH-EC-T) on March 8, 2021

The following draft Finding of No Significant Impacts (FONSI) was developed based on existing information and analysis up to the date of this draft Environmental Assessment (EA). The findings are preliminary and should not be misconstrued as pre-decisional or as a final determination. Consultations are on-going and analysis will be complete prior to the publication of a final National Environmental Policy Act (NEPA) document. If conditions, analysis, or consultations change the status of this assessment proper documentation will be developed in accordance with Federal law and U.S. Army Corps of Engineers (USACE) policy.

DRAFT
FINDING OF NO SIGNIFICANT IMPACT

Modification to the Iao Stream Flood Control Project
Wailuku, Island of Maui, Hawaii

The USACE, Honolulu District has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The amended Engineering Documentation Report (EDR) and Environmental Assessment (EA) dated 12 August 2021, for the Modification to the Iao Stream Flood Control Project addresses design deficiency and flood risk reduction opportunities in the Wailuku community. The final recommendation is contained in both the EDR and EA dated *PENDING*.

The Final EDR and EA, incorporated herein by reference, evaluated various alternatives that would address design deficiency and reduce flood risk in the Wailuku community. The recommended plan is the National Economic Development (NED) Plan and includes:

- Removal of approximately 290 feet of the remaining portion of Revetment X along the left back,
- Excavation of the eroded channel invert and construction of a pre-formed scour hole, and
- Installation of a stream gage or other climate gage as part of a public flood warning system.

In addition to a "no action" plan, three alternatives were evaluated.[1] The alternatives are included in Section 2 of the SEA:

[1] **40 CFR 1505.2(b) requires a summary of the alternatives considered.**

- No Action Alternative
- Alternative 2: Remove Revetment X
- Alternative 6: Install Pre-Formed Scour Hole
- Alternative 11: Non-Structural Plan (Public Flood Warning System)
- Alternative 12: Combination Plan: Alternative 2 + Alternative 6 + Alternative 11 (Recommended Plan)

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aquatic resources/wetlands	☒	☐	☐
Fish and wildlife habitat	☒	☐	☐
Threatened/Endangered species/critical habitat	☐	☐	☒
Historic properties	☐	☐	☒
Other cultural resources	☐	☐	☒
Floodplains	☐	☐	☒
Land use	☐	☐	☒
Noise	☐	☐	☒
Public infrastructure	☐	☐	☒
Socio-economics	☐	☐	☒
Environmental justice	☐	☐	☒
Geological Resources	☐	☐	☒
Recreational Resources	☐	☐	☒
Solid and Hazardous Waste	☐	☐	☒
Visual Aesthetics	☐	☐	☒
Water quality	☒	☐	☐
Climate, Air Quality, Greenhouse Gases	☐	☐	☒
Traffic and Circulation	☐	☐	☒

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) as detailed in the EDR and EA will be implemented, if appropriate, to minimize impacts.[2] Standard BMPs will be implemented throughout the duration of construction to avoid and minimize adverse impacts to natural resources. For example, silt fencing and other sediment erosion control measures to prevent inadvertent discharges to surface waters.

No compensatory mitigation is required as part of the recommended plan.

[2] 40 CFR 1505.2(C) all practicable means to avoid and minimize environmental harm are adopted.

Public review of the draft EA and FONSI is ***ONGOING***. All comments submitted during the public review period will be responded to in the Final NEPA document.

OTHER ENVIRONMENTAL AND CULTURAL COMPLIANCE REQUIREMENTS:

ENDANGERED SPECIES ACT

Pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan would have no effect on federally listed species or their designated critical habitat. The Corps has satisfied statutory requirements for the proposed federal action under Section 7 of the ESA.

NATIONAL HISTORIC PRESERVATION ACT

INCOMPLETE Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommend plan would have no effect on historic properties including cultural resources. USACE consulted the State Historic Preservation Division and interested Native Hawaiian Organizations to seek concurrence on this determination. *INCOMPLETE, PENDING RESPONSE*

CLEAN WATER ACT SECTION 404(B)(1) COMPLIANCE

INCOMPLETE, PENDING USACE EVALUATION

CLEAN WATER ACT SECTION 401 COMPLIANCE:

INCOMPLETE, PENDING STATE REVIEW. A water quality certification pursuant to section 401 of the Clean Water Act will be obtained from the State of Hawaii Department of Health, Clean Water Branch prior to construction.

COASTAL ZONE MANAGEMENT ACT COMPLIANCE:

INCOMPLETE, PENDING STATE REVIEW. A determination of consistency with the Hawaii Coastal Zone Management (CZM) program pursuant to the Coastal Zone Management Act of 1972 will be obtained from the State Office of Planning, CZM Office prior to construction.

FINDING:

Technical, environmental, and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local

government plans were considered in evaluation of alternatives.[3] Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.[4]

_____
Date

UNSIGNED
Eric Marshall
Lieutenant Colonel, Corps of Engineers
District Commander

[3] 40 CFR 1505.2(B) requires identification of relevant factors including any essential to national policy which were balanced in the agency decision.
[4] 40 CFR 1508.13 stated the FONSI shall include an EA or a summary of it and shall note any other environmental documents related to it. If an assessment is included, the FONSI need not repeat any of the discussion in the assessment but may incorporate by reference.