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IN REPLY REFER TO:
HWY-DD 2.4062

April 7, 2017

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OFC. OF ENVIRONMENTAL QUALITY CONTROL

TO: SCOTT GLENN, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: FORD N. FUCHIGAMI
DIRECTOR OF TRANSPORTATION

SUBJECT: FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT
FOR KAPAA STREAM BRIDGE, KUHIO HIGHWAY
MAILIHUNA ROAD INTERSECTION PROJECT
PROJECT NO. HI STP SR56(1)
KAWAIHAU DISTRICT, ISLAND OF KAUAI
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 092 POR.; 4-7-003:001 POR.; 4-7-008:042 POR. AND KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHTS-OF-WAY

With this letter, the Department of Transportation hereby transmits the final environmental assessment and finding of no significant impact (FEA-FONSI) for the Kapaa Stream Bridge and Mailihuna Intersection Project for publication in the next available edition of the *Office of Environmental Quality Control (OEQC) Environmental Notice*.

We have included copies of comments and responses that were received during the 30-day public comment period on the draft environmental assessment and anticipated finding of no significant impact. Enclosed are a completed OEQC Publication Form, one hardcopy of the FEA-FONSI, a PDF file of the same, and the publication form in MS WORD.

Should you have any questions, please call Christine Yamasaki of our Design Section, Design Branch, Highways Division at (808) 692-7572 or email at christine.yamasaki@hawaii.gov and reference letter number HWY-DD 2.4062 as noted above.

Enclosures

c: Thomas Parker (FHWA-CFLHD), Kathleen Chu (CH2M HILL)

17-437

AGENCY
PUBLICATION FORM

Project Name:	Kapaa Stream Bridge, Kuhio Highway, and Mailihuna Intersection Project
Project Short Name:	Kapaa Stream Bridge and Mailihuna Intersection
HRS §343-5 Trigger(s):	Use of State lands and funds; use of land in a shoreline area; use of land classified as Conservation District
Island(s):	Kauai
Judicial District(s):	Kawaihau
TMK(s):	[4] 4-6-014:024 por., 033 por., 090 por., 092 por.; 4-7-003:001 por.; and 4-7-008: 042 por. and Kuhio Highway and Mailihuna Road rights-of-way
Permit(s)/Approval(s):	Sec 404/401, SCAP, Sec 106/HRS 6E Concurrence, Sec 7 Consultation, CZM Consistency Review, CDUP, SMA Use Permit, Shoreline Setback Variance, Community Noise Permit
Proposing/Determining Agency:	State of Hawaii, Department of Transportation
Contact Name, Email, Telephone, Address	Christine Yamasaki christine.yamasaki@hawaii.gov (808) 692-7572 601 Kamokila Boulevard, Room 609 Kapolei, HI 96707
Accepting Authority:	(for EIS submittals only)
Contact Name, Email, Telephone, Address	
Consultant:	CH2M HILL (under contract to Federal Highway Administration, Central Federal Lands Highway Division (FHWA-CFLHD)
Contact Name, Email, Telephone, Address	Kathleen Chu kathleen.chu@ch2m.com (808) 440-0283 1132 Bishop Street, Suite 1100 Honolulu, HI 96813

Status (select one)	**Submittal Requirements**
____ DEA-AFNSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
__X__ FEA-FONSI	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
____ FEA-EISPN	Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
____ Act 172-12 EISPN ("Direct to EIS")	Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
____ DEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.

____ FEIS	Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
____ FEIS Acceptance Determination	The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
FEIS Statutory Acceptance	Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions.
____ Supplemental EIS Determination	The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
____ Withdrawal	Identify the specific document(s) to withdraw and explain in the project summary section.
____ Other	Contact the OEQC if your action is not one of the above items.

Project Summary

The FHWA-CFLHD, in partnership with the Hawaii Department of Transportation, proposes improvements to the intersection of Kuhio Highway and Mailihuna Road and replacement of the Kapaa Stream Bridge. This project would reconfigure the existing intersection by constructing a roundabout and modifying an existing private driveway that is currently accessed at the intersection. A new sidewalk would be constructed on the *mauka* side of Kuhio Highway between the intersection and bridge. The bridge replacement would replace the existing two-span bridge with a single-span bridge that is longer and wider than the existing. This project would improve safety for pedestrians and bicyclists, improve operational efficiencies at the intersection, address existing bridge structural deficiencies, and meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches.

No significant long-term adverse social, economic, cultural, or environmental impacts are anticipated from the proposed project, pursuant to HRS Chapter 343 and the provisions of HAR 11-200-2. Because highway capacity would not increase, the project would not result in secondary or cumulative effects on land use or population growth. Short-term construction impacts, such as noise, dust, and erosion, would be mitigated through best management practices.

FINAL ENVIRONMENTAL ASSESSMENT

Kapaa Stream Bridge, Kuhio Highway, and Mailihuna Road Intersection Project Kawaihau District, Island of Kauai, Hawaii

Project No. HI STP SR56(1)

TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por.; [4] 4-7-003:001 por.; and 4-7-008:042 por.
Kuhio Highway and Mailihuna Road Rights-of-Way

Submitted Pursuant to Hawaii Revised Statutes, Chapter 343

State of Hawaii, Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, HI 96813

April 2017

KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
Project No. HI STP SR56(1)
Kauai, Hawaii

Final Environmental Assessment/ Finding of No Significant Impact

Submitted Pursuant to
Hawaii Revised Statutes, Chapter 343

State of Hawaii, Department of Transportation, Highways Division

4.6.17
Date of Approval

For State of Hawaii, Department of Transportation

Ford N. Fuchigami, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, HI 96813
Ph. (808) 587-2150

This Final Environmental Assessment (FEA) documents impact studies of proposed improvements to the intersection of Kuhio Highway and Mailihuna Road at Milepost 9.84 and replacement of the highway bridge crossing Kapaa Stream at Milepost 9.89 in the Kawaihau District on the island of Kauai.

The project would reconfigure the existing intersection by constructing a roundabout and modifying an existing private driveway that is currently accessed at the intersection. A new sidewalk on the *mauka* side of Kuhio Highway would connect the Mailihuna Road intersection with Kapaa Stream Bridge. The bridge replacement would remove the existing two-span bridge and construct a single-span bridge that is longer and wider than the existing. This project would improve safety for pedestrians and bicyclists, improve operational efficiencies at the intersection, address existing bridge structural deficiencies, and meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches.

No significant long-term adverse environmental, social, cultural, or economic impacts are anticipated. Because highway capacity would not increase, the project would not result in secondary or cumulative effects on land use or population growth. Short-term construction impacts, such as noise, dust, and erosion, would be mitigated through best management practices. Therefore, a Finding of No Significant Impact (FONSI) has been issued under HRS, Chapter 343.

FINAL ENVIRONMENTAL ASSESSMENT

Kapaa Stream Bridge, Kuhio Highway, and Mailihuna Road Intersection Project Kawaihau District, Island of Kauai, Hawaii

Project No. HI STP SR56(1)

TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por.;

[4] 4-7-003:001 por.; and 4-7-008:042 por.

Kuhio Highway and Mailihuna Road Rights-of-Way

Submitted Pursuant to Hawaii Revised Statutes, Chapter 343

Prepared for:
State of Hawaii, Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, HI 96813

Prepared by:
CH2M HILL
1132 Bishop Street, Suite 1100
Honolulu, HI 96813

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- Biological Assessment for Kapaa Bridge Project, July 2016
- Correspondence from National Marine Fisheries Service (October 24, 2016)
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D Final Archaeological Inventory Survey Report for the Kapaa Stream Bridge Replacement Project, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai, November 2016
E Historic Resource Inventory Form (Reconnaissance Level) for Kapaa Stream Bridge
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G National Historic Preservation Act Section 106 and HRS Chapter 6E Consultation Documentation
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- Areas of Potential Effects (USGS Map and Aerial Imagery)
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Acronyms and Abbreviations

°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
AADT	average annual daily traffic
AASHTO	American Association of State Highway and Transportation Officials
ACM	asbestos-containing material
ahupuaa	traditional land division
amsl	above mean sea level
APE	Area of Potential Effects
BMP	Best Management Practice
CAA	Clean Air Act
CE	Categorical Exclusions
CEQ	Council of Environmental Quality
CER	computerized environmental report
CFR	*Code of Federal Regulations*
CFLHD	Central Federal Lands Highway Division
CIA	Cultural Impact Assessment
CO	carbon monoxide
CSH	Cultural Surveys Hawaii
CWA	Clean Water Act
CZM	Coastal Zone Management
DAR	Division of Aquatic Resources
dBA	A-weighted decibels
DLNR	Department of Land and Natural Resources
DOT	U.S. Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FFY	Federal Fiscal Year
FHWA	Federal Highway Administration
FWCA	Fish and Wildlife Coordination Act
FWPCA	Federal Water Pollution Control Act
HAR	Hawaii Administrative Rules
HDOH	Hawaii Department of Health
HDOT	Hawaii Department of Transportation
HTL	high-tide line
HRS	Hawaii Revised Statutes
iwi kupuna	ancestral remains
KIUC	Kauai Island Utility Cooperative
kupuna	elder
LBP	lead-based paint

makai	oceanward
mauka	mountainward
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
MP	milepost
mph	miles per hour
MSAT	mobile source air toxics
n/a	not available
N/A	not applicable
NBIS	National Bridge Inventory Standards
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NHO	Native Hawaiian Organization
NHS	National Highway System
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OEQC	Office of Environmental Quality Control
OP	Office of Planning
$PM_{2.5}$	particulate matter <2.5 microns
PM_{10}	particulate matter <10 microns
ppb	parts per billion
ppm	parts per million
SHPD	State Historic Preservation Division
SHPO	State Historic Preservation Officer
SIHP	State Inventory of Historic Properties
SMA	Special Management Area
SO_2	sulfur dioxide
SPCC	spill prevention, control, and countermeasure
STIP	Statewide Transportation Improvement Program
SWCA	SWCA Environmental Consultants
TMK	Tax Map Key
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WOUS	Waters of the United States
WPA	Works Progress Administration
WQC	water quality certification

Project Summary

Table PS-1 contains a description of the project and applicable land-use designations.

TABLE PS-1
Project Summary

Project Name	Kapaa Stream Bridge & Mailihuna Intersection Improvements, Kuhio Highway (State Route 56), District of Kawaihau, Island of Kauai
Proposing/Determination Agency	State of Hawaii Department of Transportation
Tax Map Key(s)	[4] 4-6-014:024 (por.); [4] 4-6-014:033 (por.); [4] 4-6-014:090 (por.); [4] 4-6-014:092 (por.), [4] 4-7-003:001 (por.); [4] 4-7-003:002 (por.); [4] 4-7-008:042 (por.); Kuhio Highway right-of-way; Mailihuna Road right-of-way. See Figures 1-3 and 1-4.
Existing Uses of the Project Corridor	Roadway through mixed uses, including residential, vegetated, and adjacent to public facilities
State Land Use	Agricultural, Conservation, and Urban Districts
Special Management Area	Yes
Kauai General Plan	Urban Center and Park Designations
Zoning	Agriculture, Residential, and Open Districts
Proposed Project	Improvements to the Mailihuna Road intersection: The existing three-legged intersection on Mailihuna Road, which currently has stop control only, would be reconfigured to improve safety by constructing a roundabout. No change in the highway capacity or alignment is proposed. A walkway would be constructed on the *mauka* side of the highway extending from the intersection to the northern side of the bridge. Highway access would be modified for an existing private driveway that currently has direct access to the intersection. Replacement of the existing bridge, which conveys flows of the Kapaa Stream: The existing two-span bridge would be replaced with a longer and wider single-span bridge with no change in the highway alignment. The new bridge would continue to carry two travel lanes (one lane in each direction), with a typical section consisting of two 12-foot-wide lanes, shoulders on both sides, and crash-tested railings. A temporary two-lane bypass would be provide *makai* (oceanward) of the highway throughout the construction period. The project also includes scour protection measures, supporting walls and slopes, utility relocations, and temporary staging areas.
Anticipated Impacts:	No significant long-term environmental or community impacts are anticipated from the construction and operation of the proposed alternative. Construction activities are anticipated to have short-term noise, traffic, and air quality impacts that will be mitigated through implementation of Best Management Practices (BMPs). The project's relatively minimal footprint and scope would not result in substantial change to the landscape. Vehicular, bicyclist, and pedestrian access to the beach and park would be maintained and there would be no permanent impacts to beach and park access.
Determination:	Finding of No Significant Impact under Chapter 343, Hawaii Revised Statutes

Preface

The proposed project involves replacement of Kapaa Stream Bridge, which is located on Kuhio Highway, Route 56 in the Kawaihau District, County of Kauai. As the proposed project would involve the use of State funds and State lands (comprising the Kuhio Highway right-of-way, under the jurisdiction of the State of Hawaii Department of Transportation), land within a shoreline setback area, and land in the Conservation District, compliance with Hawaii Revised Statutes (HRS) Chapter 343 is required. This Draft Environmental Assessment (EA) has been prepared pursuant to HRS Chapter 343 (as amended), and Hawaii Administrative Rules (HAR) Title 11, Chapter 200.

The project would also use Federal funding provided by the U.S. Department of Transportation Federal Highway Administration (FHWA). Use of Federal funds subjects the project to environmental documentation requirements set forth under the National Environmental Policy Act (NEPA) of 1969, (42 U.S. Code Section 4321), the Council of Environmental Quality Regulations, 40 *Code of Federal Regulations* (CFR) Parts 1500-1508, and 23 CFR Parts 625, 640, 712, 771, and 790, Environmental Impact and Related Procedures. To comply with NEPA, the FHWA is preparing environmental documentation for their records, which will be consistent with the findings of this EA.

SECTION 1

Introduction

1.1 Proposing Agency and Action

The State of Hawaii Department of Transportation (HDOT), proposes improvements to (1) the intersection of Kuhio Highway and Mailihuna Road and (2) the Kapaa Stream Bridge on the island of Kauai. The environmental review for this project is being conducted in accordance with Chapter 343 of the Hawaii Revised Statutes (HRS) and Hawaii Administrative Rules (HAR) 11-200.

This project would reconfigure the intersection by constructing a roundabout. The existing two-span bridge would be replaced with a slightly longer and wider single-span bridge along the same alignment. This project would improve safety for pedestrians and bicyclists, improve operational efficiency at the intersection, improve mobility for highway users, address existing structural deficiencies, and meet current bridge design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches.

1.2 Project Overview

The project is located along Kuhio Highway (Route 56) at Milepost (MP) 9.8 (see Figures 1-1 and 1-2). The bridge and highway are under the jurisdiction of HDOT, while Mailihuna Road is under the jurisdiction of the County of Kauai. Kapaa Stream Bridge crosses the Kapaa Stream, which flows into the Pacific Ocean. Tax Map Key (TMK) information for the affected properties is shown on Figures 1-3 and 1-4, and project site photos are provided as Figure 1-5.

Mailihuna Road is a two-lane undivided collector with a total roadway width of approximately 24 feet and a posted speed of 25 miles per hour (mph) (15 mph in the school zone). The intersection of Kuhio Highway and Mailihuna Road is three-legged, with stop controls only on Mailihuna Road. *Makai* (oceanward) of the intersection, an unpaved driveway provides public access to the shore from Kuhio Highway. The unmarked beach access crosses Ke Ala Hele Makalae (a shared-use path) and is wide enough to accommodate traffic heading to and from the beach. In addition to public roads, there is a private driveway on the *mauka* (mountainward) side of the intersection.

Kapaa Stream Bridge, built in 1953, is a two-lane, two-span bridge, 150 feet long and 38.5 feet wide. Concrete piers and abutments on timber piles support the concrete deck, with an asphaltic concrete driving surface. The concrete bridge rail transitions to a metal guardrail on both sides of the roadway.

Kuhio Highway is classified as an urban principal arterial and is listed on the National Highway System (NHS). Within the vicinity of Mailihuna Road, Kuhio Highway is a two-lane, undivided road with paved shoulders and a posted speed of 40 mph. Average annual daily traffic (AADT) is approximately 12,600 vehicles. For long-range planning purposes, AADT in the 2036 design year is estimated at approximately 15,000 vehicles.

Kuhio Highway is the primary route to the Anahola, Kilauea, and Princeville areas. The highway provides the only regional access for all of Kauai's East and North Shore communities, a route that is vital for economic development, emergency response and safety, and general welfare. The highway also provides connectivity to other modes of transportation, including Lihue Airport and Nawiliwili Harbor.

In addition to being a regional highway, Kuhio Highway is the main corridor for local circulation in the town of Kapaa. The highway is used by bicyclists, pedestrians, and bus riders. Mailihuna Road serves as a primary access route for Kapaa Elementary School and Kapaa High School.

1.3 Project Purpose and Need

The purpose of the project is to improve (1) the intersection of Kuhio Highway and Mailihuna Road and (2) the Kapaa Stream Bridge. Improvement of both components are required to maintain a safe and functional regional transportation system for highway users.

Intersection of Kuhio Highway and Mailihuna Road. The project is needed because the intersection experiences traffic operations, safety, local access, and drainage deficiencies.

The intersection has the following deficiencies:

- Northbound traffic on Kuhio Highway must bypass delays at the intersection (caused by vehicles turning left onto Mailihuna Road) by encroaching on the paved shoulder and unpaved driveway. After bypassing the delay, vehicles merging back onto the paved roadway cause potential conflicts with vehicles from Mailihuna Road turning left onto Kuhio Highway.
- Non-motorized modes of transportation, such as pedestrians and bicyclists, experience unsafe conditions while trying to cross Kuhio Highway at the intersection. The lack of marked crosswalks, signage, or lighting may result in poor visibility of non-motorized modes, especially at night.
- Multiple turning movements occurring in the same area also contribute to unsafe conditions for roadway users. Kapaa High School is in the vicinity and creates a large number of pedestrians accessing the beach, which requires crossing Kuhio Highway.
- Peak-hour traffic causes long delays along Mailihuna Road and queues during after-school and evening peaks.
- Heavy rains cause flooding on the shoulder of Kuhio Highway.

Kapaa Stream Bridge. The existing bridge also does not meet the current (2014) American Association of State Highway Transportation Officials (AASHTO) structural and design standards for load capacity, bridge railing and transitions, and bridge approaches. The U.S. Department of Transportation requires that bridges are inspected every 2 years. The National Bridge Inventory Standards (NBIS) inspection produces a "sufficiency rating," which is a single number that can vary from a high score of 100 to a low score of 0, with scores higher than 50 indicating that a bridge meets current engineering design standards. Ratings do not imply that the bridge is unsafe to operate, only indicate whether improvements are needed. Based on the most recent 2013 bridge inspection report, the Kapaa Stream Bridge has a sufficiency rating of 45.2 and is considered structurally deficient.

The existing bridge has the following deficiencies:

- The service life of the existing bridge has expired.
- The inventory load rating (daily carrying capacity) is 30.8 tons, which is below the minimum standard of 36 tons.
- Pavement at the approaches exhibit signs of distress in the form of longitudinal and transverse cracks.
- HDOT identified the Kapaa Stream Bridge as scour critical, where removal of streambed material by swiftly moving water around bridge abutments and piers could potentially affect structural stability.

1.4 Purpose of the Environmental Assessment

This Environmental Assessment (EA) discloses the environmental and cultural impacts that may result from the project's implementation, and commits to specific mitigation measures. The EA has been prepared to satisfy the requirements of HRS Chapter 343 and Hawaii Administrative Rules (HAR) Title 11, Chapter 200, Environmental Impact Statement (EIS) Rules, and other environmental compliance requirements. The

proposed project triggered the rules and regulations for environmental review because the project occurs on State lands and uses State funds, and uses land in a shoreline area and classified as Conservation District.

1.5 Public Comment on the Environmental Assessment

The Office of Environmental Quality Control (OEQC) officially announced the availability of the Draft EA on July 23, 2016, which intiated a 30-day review and comment period that ended on August 22, 2016. Comments were received from 12 agencies, organizations, and individuals during the review period. Correspondence is summarized and included at the end of Chapter 7.

1.6 Permits, Approvals, and Compliance Required or Potentially Required

The following requirements must be met to implement the proposed project:

1.6.1 Federal

- National Environmental Policy Act (NEPA)
- Department of the Army Permit (Section 10 of the Rivers and Harbors Act; Section 404 of the Clean Water Act [CWA]), U.S. Army Corps of Engineers (USACE)
- Section 106 Consultation (National Historic Preservation Act [NHPA]), Hawaii Department of Land and Natural Resources (DLNR), State Historic Preservation Officer (SHPO)
- Section 7 Consultation (Endangered Species Act [ESA]), U.S. Fish and Wildlife Service (USFWS); National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Services (NMFS)
- Essential Fish Habitat Consultation (Magnuson-Stevens Fishery Conservation and Management Act), NMFS
- Section 4(f) (U.S. DOT Act), FHWA

1.6.2 State

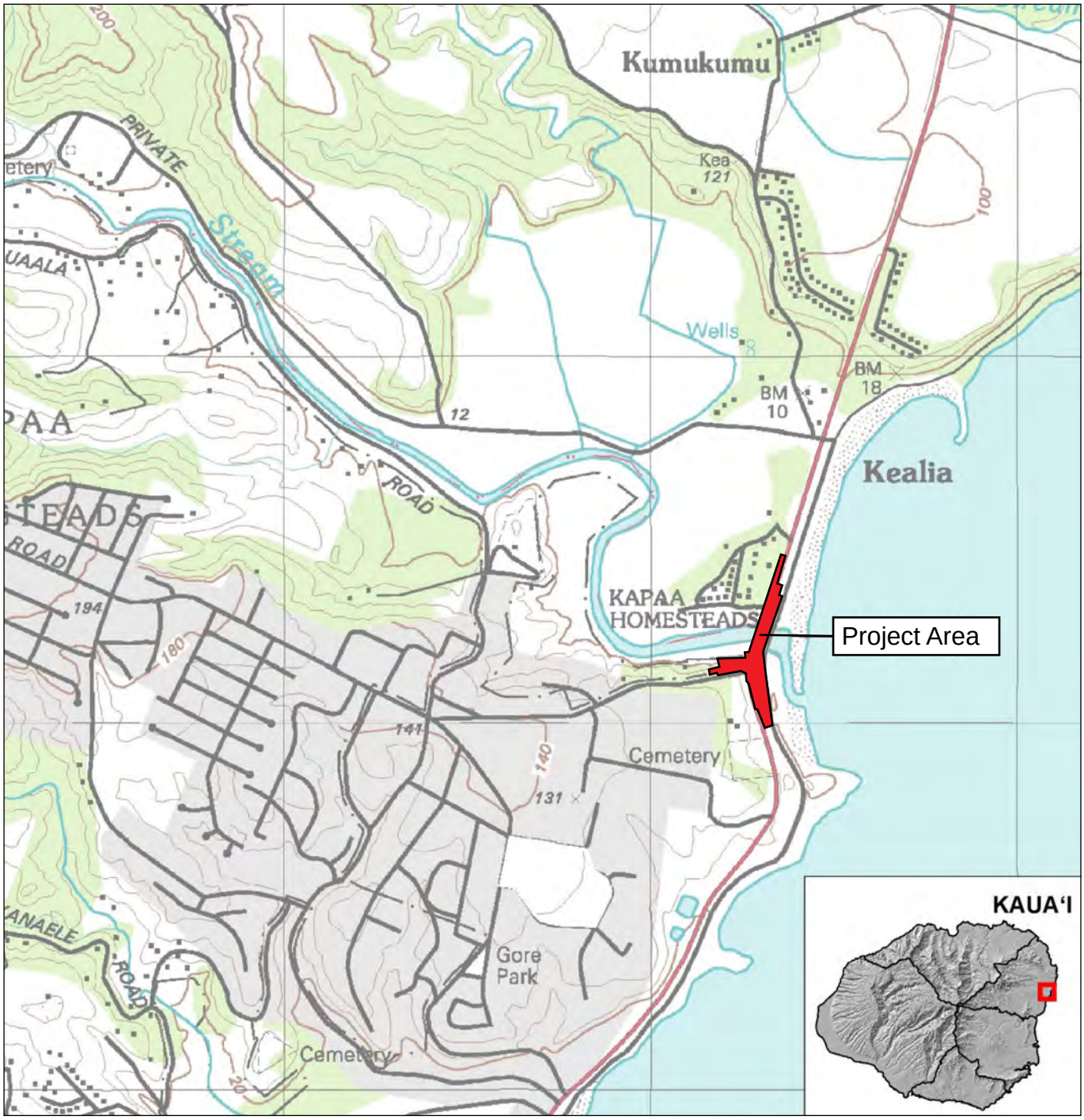
- Section 401 CWA Water Quality Certification, State of Hawaii Department of Health (HDOH)
- Section 402 CWA National Pollutant Discharge Elimination System (NPDES) Permit, HDOH
- Stream Channel Alteration Permit, DLNR Commission on Water Resource Management
- Coastal Zone Management (CZM) Federal Consistency Review, Office of Planning, Hawaii Department of Business, Economic Development, and Tourism
- Conservation District Use Permit (HAR §13-5), DLNR
- Historic Preservation Review (HRS Chapter 6E), DLNR State Historic Preservation Division (SHPD)
- Americans with Disabilities Act Review (HRS §103-50), HDOH, Disability and Communication Access Board
- Community Noise Permit/Variance, HDOH

1.6.3 County

- Special Management Area (SMA) (HRS Chapter 205A), Kauai Planning Department
- Compliance with floodplain management requirements, Kauai Department of Public Works
- Grading, grubbing, and stockpiling permits, Kauai Department of Public Works

1.7 References

American Association of State Highway and Transportation Officials (AASHTO). 2014. *AASHTO LRFD Bridge Design Specifications, Customary U.S. Units, 7th Edition, with 2015 Interim Revisions.*



Source: CSH, 2015
Base Map: USGS Topographic Mapp, Kapaa (1996) Quadrangle

North

0 1,000 2,000
Approximate scale in feet

LEGEND

Project Area

FIGURE 1-1
Project Location
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

Source: Archaeological Reconnaissance Report for the Kapa‘a Stream Bridge, Kapa‘a and Keālia, Kawaihau, Kaua‘i
Base Map: Google Earth Aerial Imagery (2013)
Data Sources: CSH

LEGEND

Project Area

North

0 200 400

Approximate scale in feet

FIGURE 1-2
Project Area Map
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

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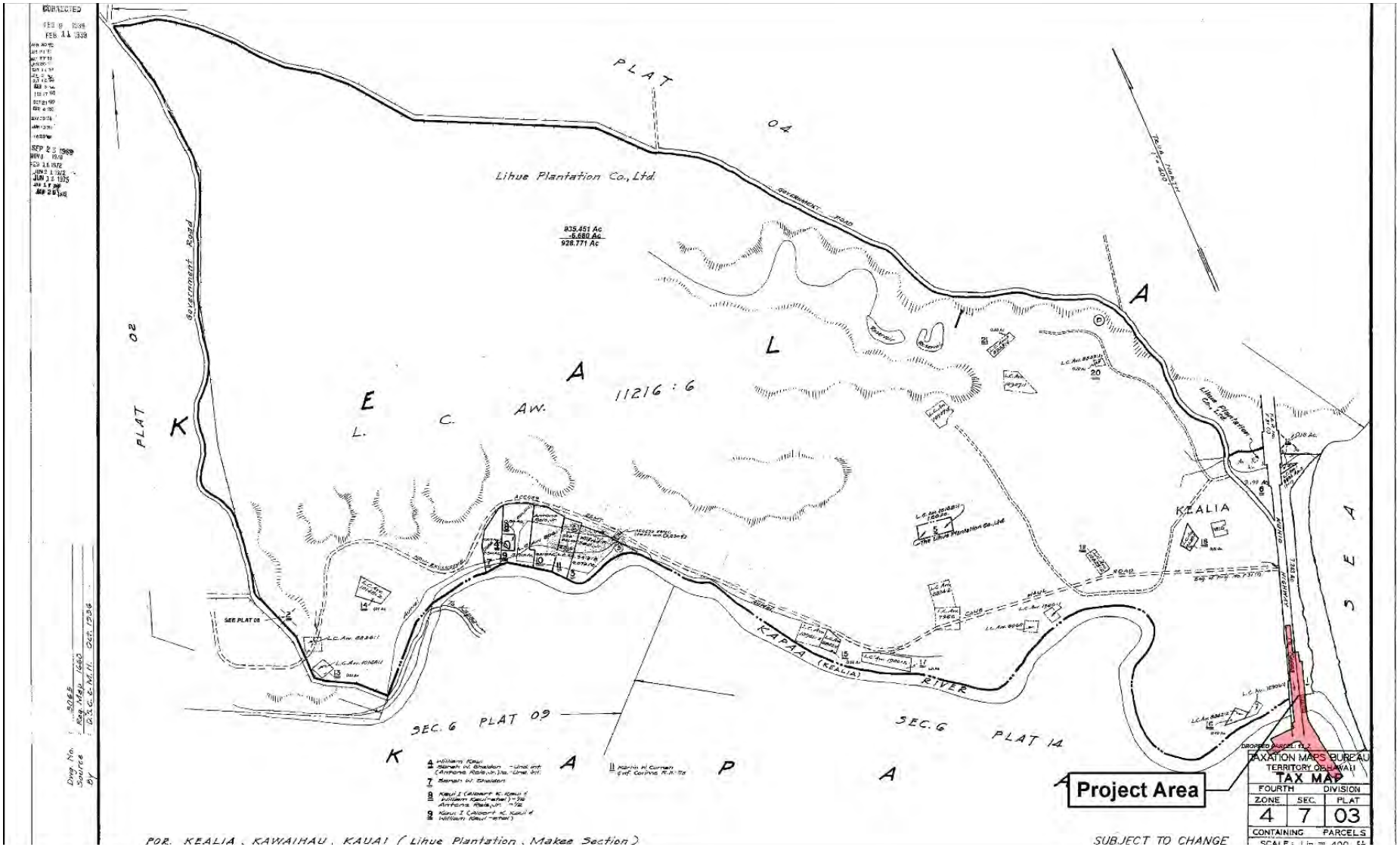

Source: Hawai'i TMK Service; Archaeological Reconnaissance Report for the Kapa'a Stream Bridge, Kapa'a and Keālia, Kawaihau, Kaua'i
Base Map: Tax Map Key [4] 4-7-03
Data Sources: CSH

LEGEND

Project Area

North

0 1,000 2,000

Approximate scale in feet

Note: TMKs: [4] 4-6-014: (various parcels), 4-7-003:001 por., and 4-7-008:042 por.

FIGURE 1-3
Tax Map Key 1
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

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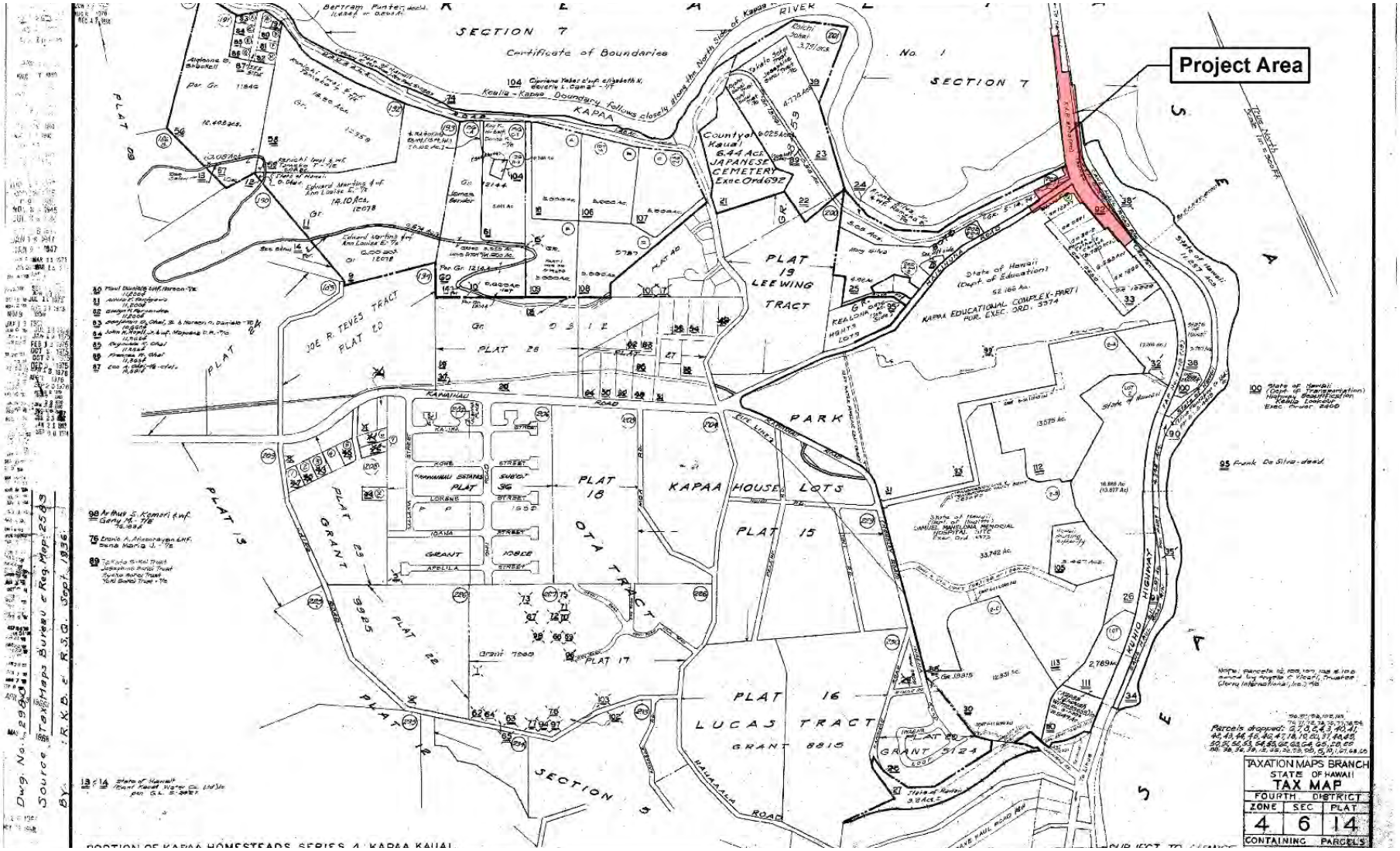


Source: Hawai'i TMK Service; Archaeological Reconnaissance Report for the Kapa'a Stream Bridge, Kapa'a and Keālia, Kawaihau, Kaua'i
Base Map: Tax Map Key [4] 4-6-14
Data Sources: CSH

LEGEND

Project Area

North

0 1,000 2,000

Approximate scale in feet

Note: TMKs: [4] 4-6-014: (various parcels), 4-7-003:001 por., and 4-7-008:042 por.

FIGURE 1-4
Tax Map Key 2
Kapaa Stream Bridge
Hawaii Bridges Program -
Central Federal Lands Highway Division and
Hawaii Department of Transportation

CH2MHILL.

TR0603151048RDD Fig1-4_103_HDOT_TaxMapKey2_V3.ai cmont 04/20/16

Kapaa Bridge on Kuhio Highway looking northeast.

Mauka side of Kapaa Bridge looking east.

FIGURE 1-5
Project Area Photos
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

SECTION 2

Project Description

2.1 Project Location

The Mailihuna Road intersection and Kapaa Stream Bridge are located on Kuhio Highway (Route 56), at MP 9.8 in the Kawaihau District on the island of Kauai (see Figure 1-1). Kuhio Highway is an urban principal arterial and is listed on the NHS, and serves as the primary route to the northern areas of Kauai, including Anahola, Kilauea, and Princeville. Mailihuna Road is under the jurisdiction of the County of Kauai; Kapaa Stream Bridge and Kuhio Highway are under the jurisdiction of HDOT. Figure 2-1 shows the limits of the proposed project.

2.1.1 Surrounding Land Uses

The project is located on the eastern coast of Kauai in an area of moderately narrow stretches of beach. The land surrounding the project area is not substantially developed. The largest establishment near the project area is a complex of athletic fields belonging to Kapaa High School—soccer field, track, and baseball diamond—located approximately 980 feet to the southwest. Both the main high school campus and Kapaa Elementary School are located upslope from the project area. St. Catherine Cemetery lies immediately to the south, on the *mauka* side of the highway.

There is one private property to the northwest of the intersection, which is currently being used as a residence. The private property runs northwest from the intersection, in between the Mailihuna Road right-of-way and Kapaa Stream property. A second private property owner is located to the southwest of the intersection. The northern portion of the property is undeveloped while the southern portion is occupied by St. Catherine Cemetery. A third private property is located immediately north of the bridge, on the *mauka* side of the highway, which is currently undeveloped.

Recreational uses predominate on the *makai* side of the highway. Ke Ala Hele Makalae, the bicycle and pedestrian shared-use path, runs parallel to Kuhio Highway and crosses Kapaa Stream approximately 70 feet downstream from the highway bridge. Kealia Beach Park is located on the northern side of the stream, with an unnamed beach located to the south. Both the shared-use path and Kealia Beach Park are under the jurisdiction of the County of Kauai while the unnamed beach to the south of the stream is under the jurisdiction of the State of Hawaii.

To the north and northwest of the project area, the land is primarily used for agricultural purposes. The land owner, Kealia Properties, LLC, is in the conceptual stage of developing a 235-unit housing project to the east of Kealia Store. An environmental impact statement is being prepared for the project.

2.1.2 Other Nearby State and County Projects

The HDOT Statewide Transportation Improvement Program (STIP) report for 2015 through 2018 identified proposed construction activities by the County of Kauai on Mailihuna Road as part of its Kawaihau Road (Route 5860), Hauaala Road (Route 5865), and Mailihuna Road (Route 5870) Complete Street and Safety Improvements project. This project includes sidewalk construction, crosswalk improvements, and construction of a roundabout at the intersection of these three roads. Planning, design, and construction activities are anticipated to be performed from 2016 to 2018.

2.2 Existing Conditions along the Project Corridor

2.2.1 Right-of-Way and Surrounding Elevations

Kuhio Highway is owned by HDOT and the existing ROW is 100 feet wide, adjacent to the existing bridge. Permanent bridge widening would occur within the existing ROW. However, improvements to the

intersection would extend beyond the existing ROW. Kapaa Stream Bridge is at an elevation of 18 feet above mean sea level (amsl).

Mailihuna Road is owned and maintained by the County of Kauai and the existing ROW is 40 feet wide just west of the intersection. The roadway rises up from the coastal area, cutting up the side of the plateau that Kapaa High School sits on. There are extreme grades on both sides of the roadway with steep embankments dropping to the Kapaa Stream on the north and steep cuts up to the plateau on the south. The plateau is at an elevation of 100 feet amsl and the coastal area is at 20 feet amsl.

2.2.2 Roadway Dimensions, Approaches, and Operation

Kuhio Highway is a two-lane undivided highway with 12-foot-wide lanes and shoulders of varying widths (approximately 4 to 8 feet) on each side. Mailihuna Road meets Kuhio Highway at the intersection, with a stop sign only on Mailihuna Road. There is a private driveway at the northwestern corner of the intersection. Mailihuna Road is a two-lane undivided road with a total width of approximately 24 feet. Mailihuna Road's approach to Kuhio Highway is straight and steep, with a downgrade of approximately 7 percent. There is also a steep fill slope on the northern side and steep cut slope on the southern side of the road. The posted speed is 40 mph on Kuhio Highway, and 25 mph on Mailihuna Road.

2.2.3 Bridge Structure and Approaches

Kapaa Stream Bridge, built in 1953, is a two-lane, two-span bridge that is approximately 150 feet long and 38.5 feet wide. The concrete deck, with an asphaltic concrete driving surface, is supported by concrete piers and abutments on timber piles. The bridge has a 2-foot, 6-inch-high, reinforced concrete parapet consisting of two 10-inch-high horizontal concrete rails with a 10-inch space between them. On the top surface of the top rail, two horizontal metal rails have been added to give an overall height of 3 feet, 8 inches. Inboard of each concrete parapet is a 4-foot-wide sidewalk. Each sidewalk has an added thrie beam guardrail at the curb, where the guardrails extend past the ends of the bridge.

2.2.4 Utilities

Providers with utilities or services within the project area include the following:

- Kauai Island Utility Cooperative (KIUC)—Electric/Power
  - Overhead double 57-kilovolt lines on the *mauka* side that run parallel to the bridge and power poles
  - 12-kilovolt conduit attached to the bridge
- Hawaiian Telecom—Telecommunications
  - Duct underground and conduit attached to the *mauka* side of the bridge
- Sandwich Isles Communications—Telecommunications
  - Fiber optic cable/duct underground and conduit attached to the *mauka* side of the bridge
- Oceanic Time Warner Cable—Telecommunications/Cable
  - Cable television distribution system underground and conduit attached to the *mauka* side of the bridge
- HDOT—Street Lighting

2.3 Proposed Project

The proposed project would reconfigure the Kuhio Highway and Mailihuna Road intersection to improve safety. Two alternative designs were evaluated in the Draft EA: (1) an alternative to add full traffic and pedestrian signals and crosswalks with new turn lanes and (2) an alternative to construct a single-lane roundabout. The roundabout was selected as the preferred alternative based, in part, on the comparative assessment in the Draft EA, which found no substantial differences in environmental impacts between the

two alternatives, and anticipated no significant adverse impacts on environmental and cultural resources in either alternative. Both the roundabout and signalized intersection were expected to deliver comparable levels of service in terms of traffic flow, improve turning movements by vehicles, and provide safer accommodations for pedestrians and bicyclists. The roundabout was estimated to have a higher initial capital cost ($2.4 million) compared to the traffic signals ($1.3 million); however, maintenance of mechanical signaling equipment was estimated to be higher over the long term. The roundabout will increase the highway right-of-way by approximately 0.25 acre compared to less than 0.10 acre for the signalized intersection. Despite the larger space requirement, the roundabout is seen as a highway component that is visually more congruent with the coastal environment. Feedback from the County of Kauai Department of Public Works and Planning Department, Kauai Path, and adjacent property owner indicated their preference for the roundabout.

As part of the intersection improvements, ingress and egress to a private property at the northwestern corner of the Mailihuna Road intersection will be modified. The private driveway may be relocated approximately 110 feet further *mauka* on Mailihuna Road or tied in to the roundabout directly. A new walkway is proposed on the *mauka* side of the highway from the intersection and across the bridge, where it will connect to an existing sidewalk.

The proposed project would also replace the deficient Kapaa Stream Bridge with a single-span bridge. Figure 2-2 shows a preliminary plan of the intersection improvement, and Figure 2-3 shows the proposed driveway relocation plan. Figure 2-4 shows proposed typical roadway and approach sections, while Figures 2-5 and 2-6 show (1) the proposed bridge plan and (2) preliminary design, respectively. The project limits extend beyond the intersection and bridge to include the approach roadways and potential staging areas (see Figure 2-1). Along Kuhio Highway, the length of the project limits is approximately 1,600 feet, while its width extends beyond the HDOT right-of-way. Along Mailihuna Road, the project limit for the roundabout would extend approximately 350 feet on Mailihuna Road, and would require additional right-of-way for the County of Kauai. Where Kapaa Stream crosses beneath the bridge, the project limits would extend approximately 60 to 80 feet *mauka* and *makai* of the bridge, to include considerations for construction and hydraulics. Section 2.3.4 discusses the acquisition of temporary and permanent easements.

HDOT and AASHTO standards and regulations govern the design criteria and construction methods and procedures for the proposed project. The design is based on both HDOT and AASHTO criteria (see Table 2-1). The posted speed limits of 25 mph on Mailihuna Road (decreasing to 15 mph in the school zone near Kapaa High School) and 40 mph along Kuhio Highway would remain. The final design would meet or exceed AASHTO criteria (see Table 2-1). A design exception would be triggered only if AASHTO minimum criteria are not met.

TABLE 2-1
Project Design Criteria

Design Criteria	Existing Conditions	Standards		Proposed
		AASHTO	State	
Design Speed	Posted speed = 40 mph min	Rural 30 mph (minimum)	Urban 25 mph (minimum)	Design speed = 40 mph Posted speed = 40 mph
Travel Way Width (feet)	12	10	11	12
Shoulder Width (feet)	4-8	8	10	8 (roadway) Bridge shoulders not yet designed
Bridge Width (feet)	38.5	Match approach roadway width	N/A	42.3 (includes bridge rail)

Note:
N/A = not applicable

HDOT's *Design Criteria for Bridge and Structures* (2014) and AASHTO's *Implementation for Load and Resistance Factor Rating of Highway Bridges* (6th Edition) (2014, including all subsequent revisions) would be followed for structure design.

The project would use HDOT's *Design Criteria for Highway Drainage* (HDOT, 2010) to govern the hydraulic evaluation, analysis, and design. The project would consider incorporating low-impact development concepts, such as directing stormwater drainage into grass swales adjacent to the bridge and highway.

The approach travel lanes and shoulders would be designed to AASHTO and HDOT guidelines (*A Policy on Geometric Design for Highways and Streets* [AASHTO, 2011] and *Hawaii Statewide Uniform Design Manual for Streets and Highways* [HDOT, Highways Division, 1980], and all subsequent amendments).

2.3.1 Intersection Improvements—Roundabout

Kuhio Highway would be modified by constructing a single-lane roundabout in the location of the existing Mailihuna Road intersection (Figure 2-2). The preliminary design includes a single circulating lane that would be 18 feet wide. The inscribed circle diameter would be approximately 130 feet, although a reduction is possible if design criteria can be met with a smaller circle. The roundabout would include splitter islands and marked crosswalks. Dimensions may be adjusted during final design.

The roundabout would seek to alleviate congestion and reduce delay on the eastbound stop-controlled approach by providing yield-control on all legs. Its design would eliminate conflicting left-turn movements from northbound Kuhio Highway and from eastbound Mailihuna Road, because only right turns are made into and out of the roundabout.

The roundabout would require substantial reconstruction of Mailihuna Road for the approach to tie in vertically at an 8 percent maximum profile grade, including retaining walls or cut slopes.

The installation of drainage infrastructure, such as catch basins, grated drain inlets, drain manholes, pipe culverts, and an outlet, at the intersection would prevent flooding and control runoff during heavy rains, thereby improving traffic operations and safety.

2.3.2 Driveway Relocation

There is an existing residential driveway which accesses the Kuhio Highway adjacent to the Mailihuna Road intersection in a configuration that is considered nonstandard with respect to current access control guidelines. The driveway services residential properties in the valley, on the south side of the Kapaa Stream. The project proposes to modify the driveway so that ingress and egress occurs at a location approximately 110 feet *mauka* of the intersection. This component of the project would include construction of the paved driveway, walls needed to retain slopes because of the steep grade, and replacement guardrails on Mailihuna Road with a break for the new driveway (see Figure 2-3). Alternatively, with selection of the roundabout for intersection improvement, the driveway may be designed such that there is a direct tie-in to the roundabout. The specific design will be determined during the project's final design phase. The areas of potential effect and environmental impacts of both design options have been assessed in this EA.

2.3.3 Replacement Bridge

The existing Kapaa Stream Bridge would be demolished and replaced with a single-span bridge with a total length of approximately 190 feet, a deck width of 42.3 feet, and a superstructure depth of 6 feet. The specific bridge profile would be determined during final design. Each of the two travel lanes is expected to have a width between 11 and 12 feet. Shoulders would be provided on both sides, with width varying depending on the design of pedestrian accommodation. The proposed design would comply with roadway width and bridge standards, live load and seismic requirements, and applicable crash test requirements for bridge railings (see Figures 2-4 through Figure 2-6).

The foundation is anticipated to consist of drilled shafts (approximately 4 feet in diameter), offset behind the existing abutment footing. The top portion of the existing abutment would be removed to allow the new

girders to extend between the new abutments. The remainder of the existing abutments would be left in place to serve as a retaining/channel wall, a secondary role that they are currently performing. New bridge abutments would be designed for the estimated total scour depths with appropriate scour protection. The existing center pier would be cut at the mudline to reduce obstruction to stream flow and improve hydraulics. The remaining structure of the center pier would be abandoned in place. Unlike the existing bridge, the replacement would be designed as a clear span with no in-stream pier.

To protect the stream bank and as a countermeasure against the potential for scour, riprap would be placed between the existing and proposed bridge abutments and along the embankment adjacent to the abutments on both sides of the stream. Riprap would consist of large rocks layered to a depth that is stable when subject to hydraulic forces. All riprap would be located above the High Tide Line (HTL).

The new bridge would be designed to meet the current AASHTO loading requirements. Bridge railings would consist of a concrete beam and post with metal rail. Both the bridge railings and transitions would meet the standard for crashworthiness of TL-3, that is, be able to withstand the impact of a car or light truck traveling 62 mph (AASHTO, 2009). This bridge rail meets all the safety requirements and closely resembles the existing bridge rail.

Conventional concrete retaining walls would need to be installed on the *mauka* side of the bridge at both approaches because of a grade difference between the roadway elevation and surrounding natural flood area.

2.3.4 Mauka Walkway

The existing Kapaa Stream Bridge has a 4-foot-wide sidewalk on each side of the bridge structure in the space between the concrete bridge railings and guardrails. The replacement structure would include a wider, 6-foot-wide walkway on the *mauka* side of the bridgethat would continue along Kuhio Highway to the Mailihuna Road intersection (see typical sections in Figure 2-4). The walkway would tie into the existing concrete sidewalk on the north side of the bridge which extends to the Kealia Road intersection. The design of the walkway would comply with the Americans with Disabilities Act. There would be no walkway on the *makai* side of the replacement bridge. Pedestrians traveling on the *makai* side of Kuhio Highway would be able to use Ke Ala Hele Makalae, the parallel shared use path.

2.3.5 Construction Activities

2.3.5.1 Construction

The proposed projects would involve typical roadway and bridge construction activities, including the following:

- Install temporary erosion control measures
- Install temporary roadways and bridge
- Relocate utilities
- Installation and Removal of temporary In-Water BMPs
- Demolish existing bridge structure
- Erect structural members such as beams and columns
- Pour concrete
- Excavate, place fill, grade, and pave
- Construct retaining walls
- Install traffic signals or the roundabout
- Install permanent erosion control measures
- Install highway appurtenances such as signing, roadside barriers, and pavement markings

Construction equipment anticipated to be used in the construction of the bridge foundations, abutments, and superstructure include the following:

- Bulldozers
- Pile drivers

- Augers for possible drilled shaft construction
- Excavators
- Cranes
- Dump trucks
- Hydraulic rams
- Dewatering pumps and hoses

Additional equipment will be used as necessary. The majority of the construction materials would likely come from within the state of Hawaii. In addition, materials for the bridge superstructure (such as girders and reinforcement) and temporary bridges would likely come from Honolulu.

The proposed project would construct the new bridge and demolish the existing in three stages. The first would install erosion and sedimentation control measures in stream/land, construct the temporary bypass road and stream crossing, and route traffic to that temporary bypass. The second would demolish the existing bridge and construct the new bridge and roadway approaches. The third would route traffic to the new bridge, remove the temporary bypass road and stream crossing, and complete permanent erosion control measures.

A temporary, 24-foot-wide, two-lane bypass road and temporary bridge would be used to direct traffic around the bridge replacement site. The bypass road and temporary bridge would be constructed between the Kapaa Stream Bridge and Ke Ala Hele Makalae, the shared use path (see Figure 2-7). The bypass road would provide a 10-foot-wide lane in each direction, 2-foot-wide shoulders, and barriers, as needed. The posted speed of the temporary bypass road would be 25 mph.

Following the completion of the temporary bypass bridge and rerouting of traffic, the existing Kapaa Stream Bridge would be demolished. Demolition would include the metal guardrail, concrete railings, concrete deck slab, concrete girders, and the single pier foundation. The abutments would be partially removed to an elevation which would accommodate the placement and clearance of the new bridge superstructure (girders). The pier foundation (including column and footing) would be removed to the mud line to accommodate future navigation and minimize hydraulic affects within the channel.

The demolition process is often called reverse construction. The deck elements (railings, deck slab) would be removed by saw-cutting it into manageable sections that could be handled by deck supported equipment and placed into trucks to be hauled away. Concrete would likely be chipped into smaller pieces using a hoe-ram attachment on a backhoe or similar equipment. Concrete and other debris would be removed with backhoes and dump trucks. Reinforcing steel would be removed with cranes, backhoes and dump trucks. Cranes will be used for reach across the river to lift bridge girders and deck for removal, and precautions will be taken to avoid debris falling into the stream during demolition. Removal of the pier foundation (including column and footing) would require an isolation and confinement structure sized as needed to dewater the demolition area.

The demolition of the bridge would require existing utilities to relocate to the temporary bridge or overhead. Coordination of the relocation of all utilities will continue through the final design and construction progress of the project.

Demolition plans and specifications would be developed as part of construction in accordance with applicable agency regulations. Demolition debris would require disposal at an approved landfill. Recycling of demolition debris may be considered, as appropriate.

The location of new bridge drilled shaft foundations and abutments would be beyond the existing bridge abutments, away from the Kapaa Stream. It is anticipated the construction would occur in the dry and typical temporary erosion and sedimentation control measures would be implemented. However, if work is necessary within the stream or (HTL, an isolation and confinement structure (cofferdams or similar) would be constructed where needed for dewatering below the HTL and would be sized as needed to dewater the bridge construction area. The size and location of the isolation and confinement structure will account for

tidal fluctuations anticipated during the construction window. The isolation and confinement structure would be removed immediately after it is no longer needed.

The Kapaa Stream Bridge replacement construction would involve work within the streambed, which is considered part of the Waters of the U.S. (WOUS). All or portions of the bridge construction area would be dewatered before in-stream work using an isolation and confinement structure or other method, as appropriate for the location. The area to be disturbed below the HTL and detailed dewatering plans would be determined before application for the CWA Section 404/401 and other required permits. Disposal of any dredged material and water from dewatering activities would require approval.

2.3.5.2 Maintenance of Traffic During Construction

Temporary traffic control plans would be developed and implemented to keep the Kuhio Highway open to road users during the majority of construction activities. Two-way travel would be accommodated on the existing road or temporary roadways during construction. Temporary stream crossings would be sized and placed over the stream channel to accommodate the 5-year flood flow.

Periodically, construction activities may necessitate restricting the road to one lane of travel. Road use would be maintained by implementing an alternate one-way movement of travel through the construction area. Provisions would be made for this alternate one-way movement using such methods as flagger control, a flag transfer, a pilot car, or traffic control signals. Provisions would be made to restrict these alternate one-way movement of travel conditions to the extent possible.

Full closure of Kuhio Highway may be needed for brief periods during certain construction activities. Provisions would be made to restrict these full closures to when road use is minimal, such as nighttime periods, although no nighttime work would occur between September 15 and December 15, the seabird peak fallout period. Provisions would also be made to restrict these full closures to the extent possible. The public would be notified well in advance of all closures. Emergency and incident responders would be allowed access through the construction area at all times. The Ke Ala Hele Makalae would remain open to continue to allow for foot and bicycle traffic through the project area.

Provisions to accommodate pedestrian traffic at the intersection as it is reconstructed would be part of the temporary traffic control planning strategies, as described in the FHWA Manual of Uniform Traffic Control Devices (2009).

2.3.5.3 Construction Staging Areas

Personnel and equipment would be staged within the project limits. A potential staging area is located in a grassy area along the northern approach to the bridge, *mauka* of the highway. This potential staging area is approximately 25 feet in width and 450 feet in length.

2.3.6 Properties Affected by the Project

The proposed project would require the temporary and permanent acquisition of property outside of the existing right-of-way.

Table 2-2 shows affected properties for bridge replacement and intersection improvements. The project would require six construction parcels (or temporary easements) for the temporary bypass, construction staging, and construction work zones. In aggregate, the construction parcels would cover a total of 1.2 acres and temporarily affect four property owners: the County of Kauai, State of Hawaii, and two private property owners. Construction parcels would be coordinated through HDOT. For access to maintain retaining walls, permanent easements would be needed for 0.18 acre of land that is owned by the State of Hawaii and two private property owners. The existing highway right-of-way would need to be expanded by 0.29 acre to accommodate the roundabout and retaining wall. Acquisition of additional right-of-way would affect the State of Hawaii and two private property owners.

TABLE 2-2
Affected Properties

Tax Map Key (TMK)	Property Owner	Land Use	Estimate of Area Needed (Acres)	Project Requirement
(4) 4-7-003: 001	County of Kauai	Undeveloped	0.20	Construction Parcel (Temporary Bypass)
(4) 4-7-003: 002	Kealia Properties, LLC	Undeveloped	0.16	Construction Parcel (Construction, Staging)
(4) 4-6-014: 031	State of Hawaii	Undeveloped	0.01	Permanent Easement (Retaining Wall Maintenance Access)
(4) 4-6-014: 031	State of Hawaii	Undeveloped	0.03	Right-of-Way (Intersection)
(4) 4-6-014: 024	Ralph G. Oswald	Sidewalk	0.05	Permanent Easement (Retaining Wall Maintenance Access)
(4) 4-6-014: 024	Ralph G. Oswald	Undeveloped/ Driveway	0.34	Construction Parcel (Driveway Work, Intersection Construction)
(4) 4-6-014: 033	Roman Catholic Church	Undeveloped	0.12	Permanent Easement (Intersection Construction and Retaining Wall Maintenance Access)
		Undeveloped	0.07	Right-of-Way (Intersection and Retaining Wall)
(4) 4-6-014: 092	State of Hawaii	Undeveloped	0.19	Right-of-Way (Intersection)
		Undeveloped	0.28	Construction Parcel (Intersection Construction)
		Undeveloped	0.08	Construction Parcel (Temporary Bypass, Intersection Construction)
(4) 4-6-014: 090	State of Hawaii	Undeveloped	0.14	Construction Parcel (Temporary Bypass, Intersection Construction)

2.4 No Action Alternative

The No Action Alternative would not modify the intersection and retains the existing bridge with no changes. The intersection would not be improved to increase operational efficiency and safety. The bridge would not be replaced to meet current design standards for roadway width and load capacity. Deficiencies in bridge railings, transitions, and bridge approaches would not change.

Under the No Action Alternative, environmental impacts resulting from the intersection improvement and bridge replacement activities would continue as under current conditions; intersection improvement and bridge replacement costs would not be incurred by HDOT. However, the intersection would continue to experience vehicular accidents associated primarily with vehicles turning left from Mailihuna Road onto the northbound lane of Kuhio Highway. Unsafe conditions for pedestrians and bicyclists trying to cross Kuhio Highway at the intersection would continue. Furthermore, the existing bridge would continue to deteriorate, requiring regular inspection and increasing maintenance to maximize its useful lifespan. Eventually, the bridge may no longer provide a safe support for highway traffic and could face load restrictions and closure.

2.5 Intersection Alternatives Considered and Dismissed

2.5.1 Add Turn Lanes

This alternative would shift a portion of the northbound lane in the *makai* direction to create a left-turn pocket on Kuhio Highway before it intersects Mailihuna Road (Figure 2-8. This alternative would also add a northbound merge lane after Mailihuna Road to assist motorists accelerate and merge into the northbound

through lane. The lane merge is constrained by the distance to the existing bridge. This distance is substandard according to AASHTO guidelines, which call for a 300-foot-long merge distance at a design speed of 40 mph (AASHTO, 2011). To meet the AASHTO guidelines, the bridge would need to be further widened to accommodate an auxiliary lane. Adding a receiving lane would benefit the intersection by allowing one or two vehicles to wait for a safe gap before merging into northbound traffic. This space would be used by northbound traffic only; southbound vehicles entering the beach access driveway would be restricted.

On Mailihuna Road, a slight dip in the road *mauka* of Kuhio Highway would be filled in to improve the efficiency of inbound and outbound traffic. When vehicles approach this dip, they slow down slightly to maneuver the change in pavement elevation. Addressing this dip would improve sight distance and traffic flow safely leaving Mailihuna Road.

To address pedestrian and bicycle safety, this alternative would modify the existing pavement markings in and out of Mailihuna Road by adding crosswalks on Mailihuna Road and on the northern leg of Kuhio Highway. Raised or striped islands would be provided for pedestrian refuge at the crosswalks. Mailihuna Road would remain stop-controlled, and Kuhio Highway would remain uncontrolled.

This alternative was dismissed because there are no improvements to pedestrian and bicyclist safety on the southern leg of Kuhio Highway, which is in closer proximity to Kapaa High School, a primary source of pedestrians accessing the beach. Furthermore the alternative does not substantially address the need to minimize unsafe conditions to pedestrians as a result of existing turning movements at the intersection. Lastly, this alternative would not address the need to improve traffic delay for left-turning vehicles from Mailihuna Road onto Kuhio Highway.

2.5.2 Traffic Signals with Existing Lane Channelization

This alternative is similar to the alternative presented in the Signalized Intersection alternative in Section 2.3.1, in that it provides full traffic and pedestrian signals and crosswalks. However, this alternative would not construct turn lanes on Kuhio Highway—neither a left-turn pocket on the northbound side nor a right-turn pocket on the southbound side (Figure 2-9). A traffic analysis found that intersection operations would experience improvements similar to the proposed project without dedicated turn lanes.

This alternative was dismissed because vehicles waiting to make the left turn onto Mailihuna may still delay northbound through traffic on Kuhio Highway and cause motorists to bypass the delay by encroaching on the paved shoulder and unpaved driveway. Therefore, the alternative does not address this deficiency.

2.5.3 Signalized Intersection Alternative

This alternative proposed improvements to the intersection at Mailihuna Road and Kuhio Highway by adding full traffic and pedestrian signals and crosswalks (see Figure 2-10). A left-turn pocket would be added to the northbound side of Kuhio Highway before Mailihuna Road, providing approximately 180 feet of storage for vehicles waiting to turn. In addition, a right-turn pocket, approximately 150 feet in length, would be added to the southbound side of the highway. The right-turn lane would allow greater separation between vehicles that are traveling at different speeds as vehicles decelerate before making the right turn.

Marked crosswalks and pedestrian push buttons would be provided on all approaches, and improved signage and street lighting would be installed, addressing the need to improve safety and mobility for non-motorized modes crossing Kuhio Highway.

The installation of drainage infrastructure (such as catch basins, grated drain inlets, drain manholes, pipe culverts, and an outlet) at the southwestern corner of the intersection would prevent flooding and control runoff during heavy rains, thereby improving traffic operations and safety.

The signalized intersection alternative was evaluated in the Draft EA in comparison to the roundabout alternative. Both intersection types were found to be appropriate in terms of safety improvements, traffic operations, and ability to accommodate future capacity. Neither alternative would result in significant

adverse environmental impacts. This alternative was dismissed in favor of the roundabout option based, in part, on input received during the Draft EA public review period and the expectation that a different type of intersection feature would be better suited to the varied modes of transportation generated by the nearby schools and the beach park.

2.6 Bridge Alternatives Considered and Dismissed

2.6.1 Rehabilitation

Bridge rehabilitation was considered as an alternative to replacing the existing bridge. This alternative would include widening the existing bridge to accommodate two 12-foot-wide travel lanes and two 8-foot-wide shoulders. This would require strengthening the existing girders using fiber reinforced polymer, demolishing the existing sidewalks and deck overhang, and constructing a new deck extension with bridge railings, new paving, new expansion joints, and composite blocking behind girders for seismic retrofit.

The current condition and capacity of the existing timber piles that support the abutments and center pier are unknown so the adequacy of the existing foundations cannot be determined. A retrofit to the existing foundation would be required to make this a viable option. The center pier foundation would need to be extended with a concrete cap on both the upstream and downstream sides and would be connected to new drilled shafts. This would require driving sheet piles in the stream to provide an isolation and confinement structure, such as a cofferdam. Such a structure would need to be sealed at the base using a chemical grout to provide a dry environment for the foundation work. The abutment foundations would also require the addition of drilled shafts using a construction process that would likely require excavating the entire approach roadway.

Although this alternative would create a wider bridge cross section, it would not increase hydraulic capacity because the span would not be lengthened or raised. Because the new footing enlarges and encapsulates the existing pier footing, hydraulics capacity would be decreased by the larger obstruction within the stream. This alternative was dismissed because of substantially higher costs related to addressing scour and existing condition of the center pier's support, greater anticipated environmental impacts, and inability to meet hydraulics design criteria compared to the proposed project.

2.7 Temporary Bypass Alternatives Considered and Dismissed

2.7.1 Single-lane Bypass Road with Signal

This bypass alternative involves a single-lane temporary bypass road and bridge, located adjacent to the highway with a traffic signal to allow alternating traffic. Based on a preliminary traffic analysis, a single-lane temporary bypass road with signal could be a viable option for an AADT of approximately 8,000. However the Kapaa Stream Bridge is located on a portion of the highway where the current AADT exceeds 10,000 vehicles (see Section 1.2) and a capacity of 8,000 vehicles is not sufficient. Therefore, this option was considered unfeasible.

2.7.2 Phased Construction

Phased construction with a single-lane temporary bypass road would involve cutting the slab bridge and continuing to provide one travel lane on the existing bridge, while a portion is demolished and reconstructed. A second travel lane would be provided by a temporary bypass road. Phased construction was dismissed because it would impact the traveling public and substantially increase the construction duration and cost of the project.

2.8 Statewide Transportation Improvement Program

The STIP provides a multiyear listing of State and County transportation projects and identifies those projects slated for Federal funding. It is a multimodal transportation improvement program that is

developed using existing transportation plans and policies, as well as current highway, transit, and transportation programming processes. The STIP delineates the funding categories and the Federal and local share required for each project. Although projects are on the STIP, that does not necessarily mean those projects would be planned, designed, or constructed within the fiscal period because of unforeseen occurrences such as project readiness or project priorities.

The current STIP covers the period from Federal Fiscal Year (FFY) 2015 to FFY 2018 (and FFY 2019 to FFY 2020, for information purposes only); Revision 8 has an effective date of January 20, 2017. The Kuhio Highway (Route 56) Mailihuna Road Intersection Improvements and Kapaa Stream Bridge Project is listed on the STIP as a Safety project.

2.9 Preliminary Cost and Schedule

The estimated construction cost is $11.7 million for the replacement bridge and $2.4 million for the roundabout. Construction is anticipated to begin at the end of 2017, with a duration of 22 months. The construction schedule would be updated and refined as the project progresses through design and permitting.

2.10 References

American Association of State Highway and Transportation Officials (AASHTO). 2009. *Manual for Assessing Safety Hardware, First Edition.*

American Association of State Highway and Transportation Officials (AASHTO). 2011. *A Policy on Geometric Design for Highways and Streets.*

American Association of State Highway and Transportation Officials (AASHTO). 2014. *Implementation for Load and Resistance Factor Rating of Highway Bridges, 7th Edition.*

County of Kauai Planning Department. 2000. *The Kaua'i General Plan.* Kawaihau Planning District Land Use Map. November.

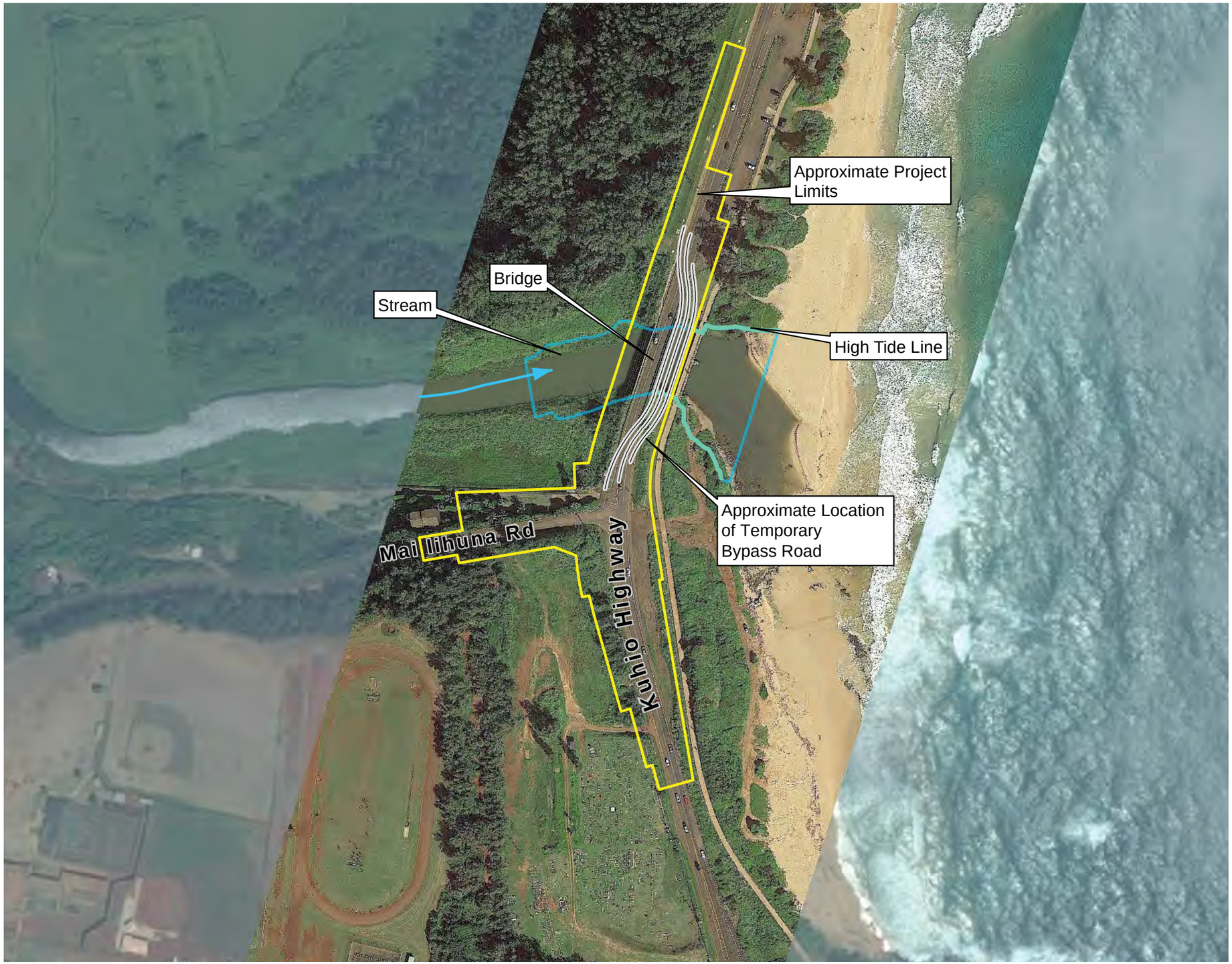
Federal Highway Administration (FHWA). 2009. *Manual on Uniform Traffic Control Devices for Streets and Highways*. 2009 Edition with Revision Numbers 1 and 2.

State of Hawaii Department of Transportation (HDOT). 1980. *Hawaii Statewide Uniform Design Manual for Streets and Highways*. Highways Division. October.

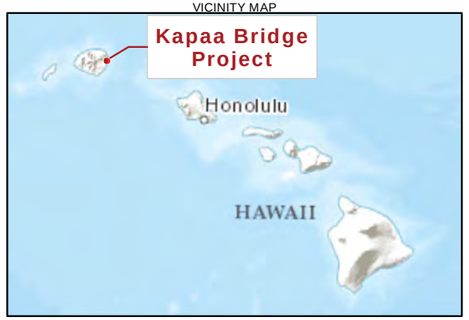
State of Hawaii Department of Transportation (HDOT). 2010. *Design Criteria for Highway Drainage*. October 1.

State of Hawaii Department of Transportation (HDOT). 2014. *Design Criteria for Bridge and Structures*. January 7.

University of Hawaii. 2013. School of Ocean and Earth Science and Technology - Coastal Geology Group. Available at http://www.soest.hawaii.edu/coasts/publications/hawaiiCoastline/kauai.html. March 28, 2013. Accessed October 2014.



VICINITY MAP



LEGEND

- Approximate Project Limits
- Approximate Location of Temporary Bypass Road
- High Tide Line
- Waters of the U.S. and Flow Directions

Notes:
1. High-Res Imagery Source: Google Earth 12/16/2013
2. Low-Res Imagery Source: Digital Globe 08/26/2011
3. Imagery base map is not orthorectified; therefore project features may not properly align with the imagery.

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Feet

FIGURE 2-1
Project Limits
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

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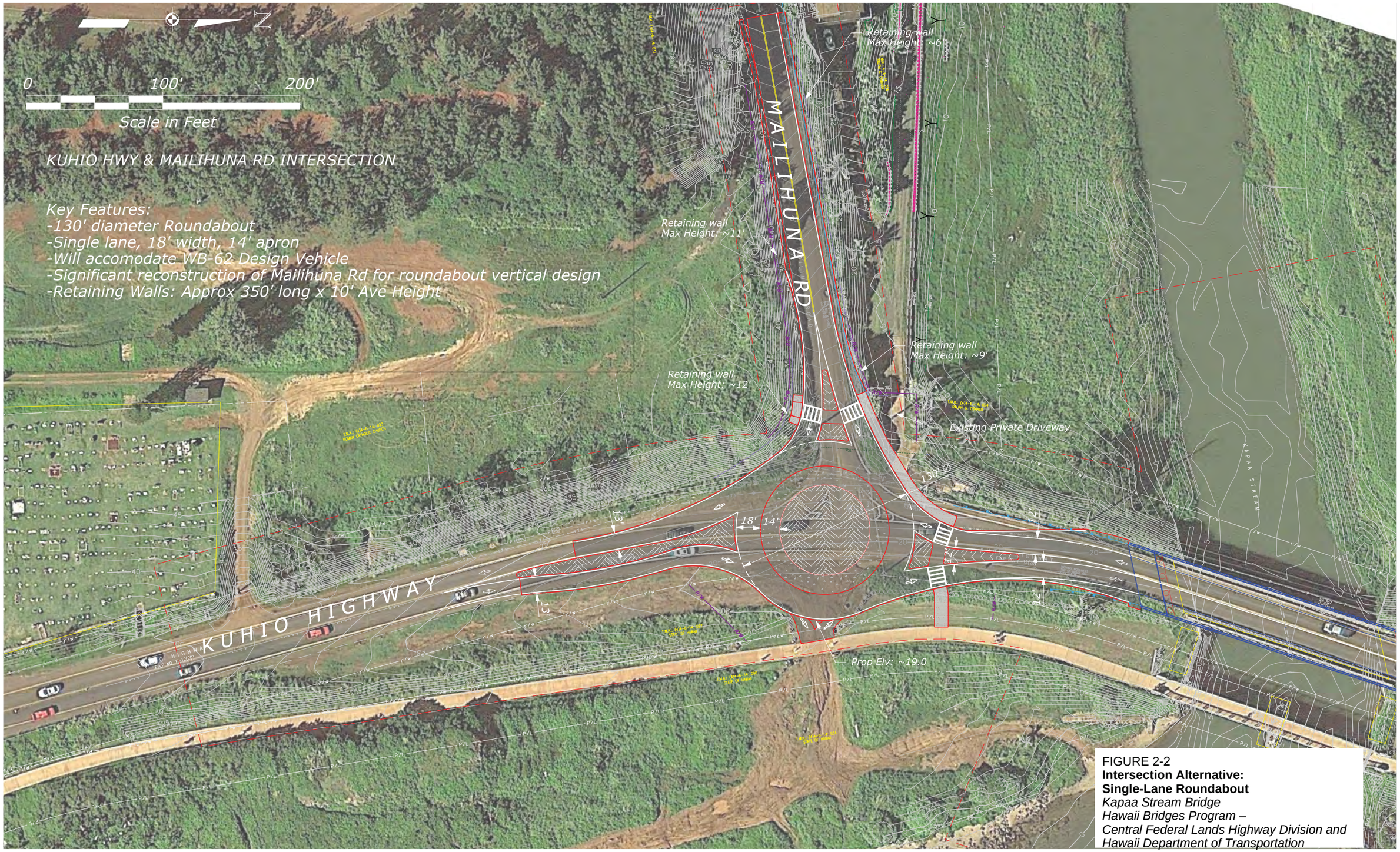

FIGURE 2-2
Intersection Alternative:
Single-Lane Roundabout
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

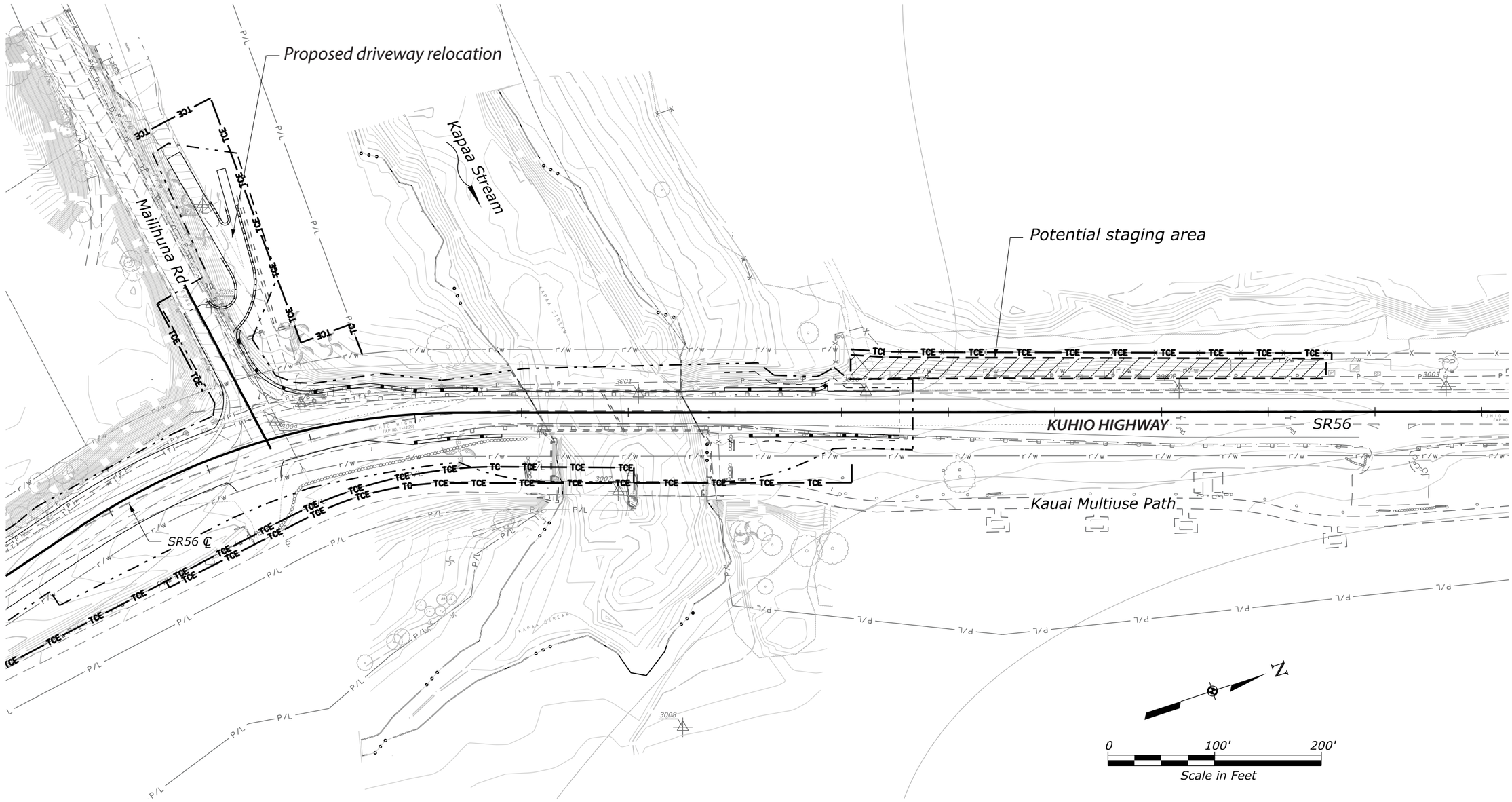

FIGURE 2-3
Driveway and Staging Area
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

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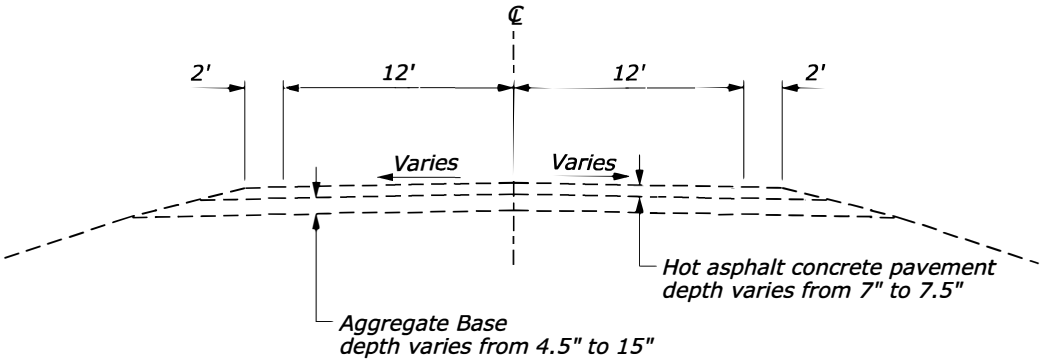
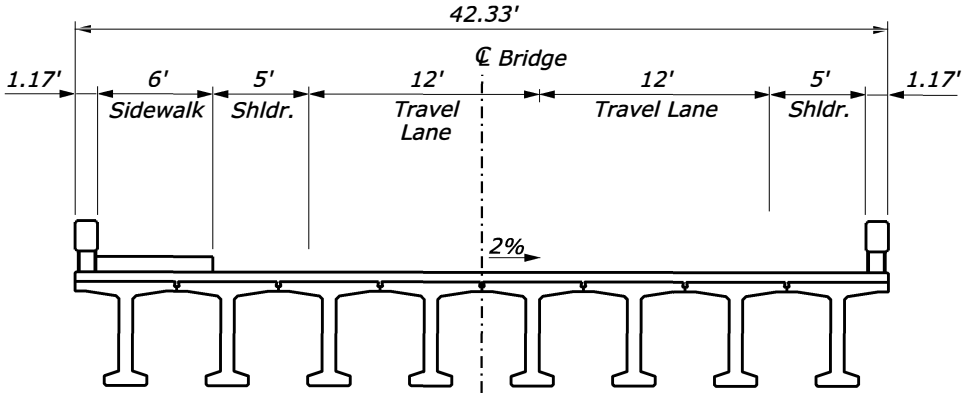
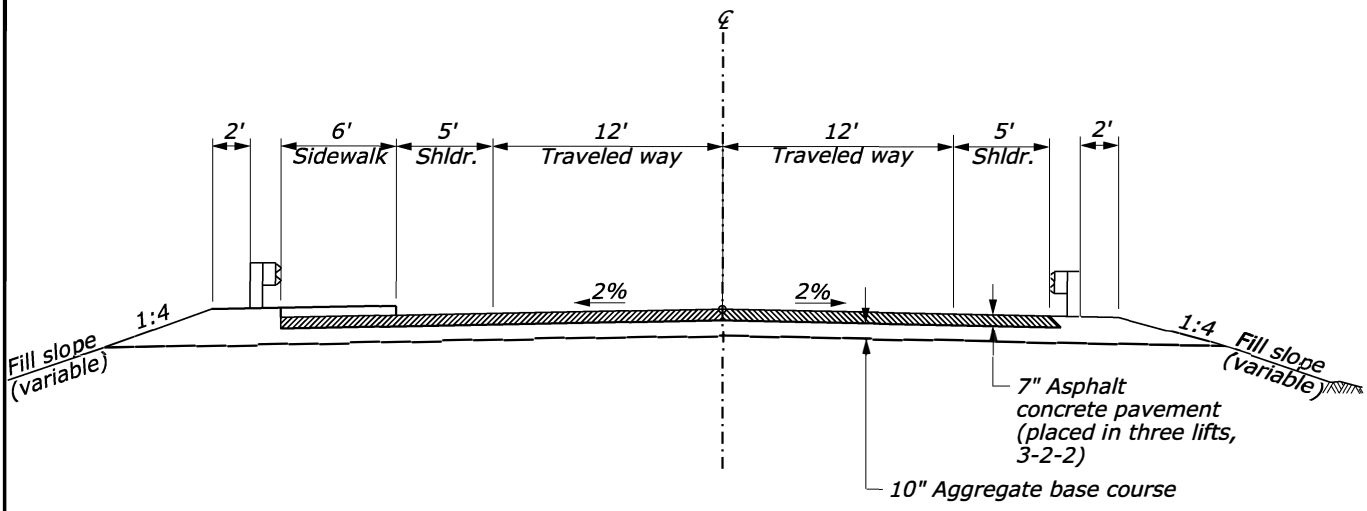


EXISTING TYPICAL SECTION



PROPOSED BRIDGE TYPICAL SECTION



PROPOSED APPROACH TYPICAL SECTION

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FIGURE 2-4
Typical Sections (Bridge and Approach)
Kapaa Stream Bridge
Hawaii Bridges Program -
Central Federal Lands Highway Division and
Hawaii Department of Transportation

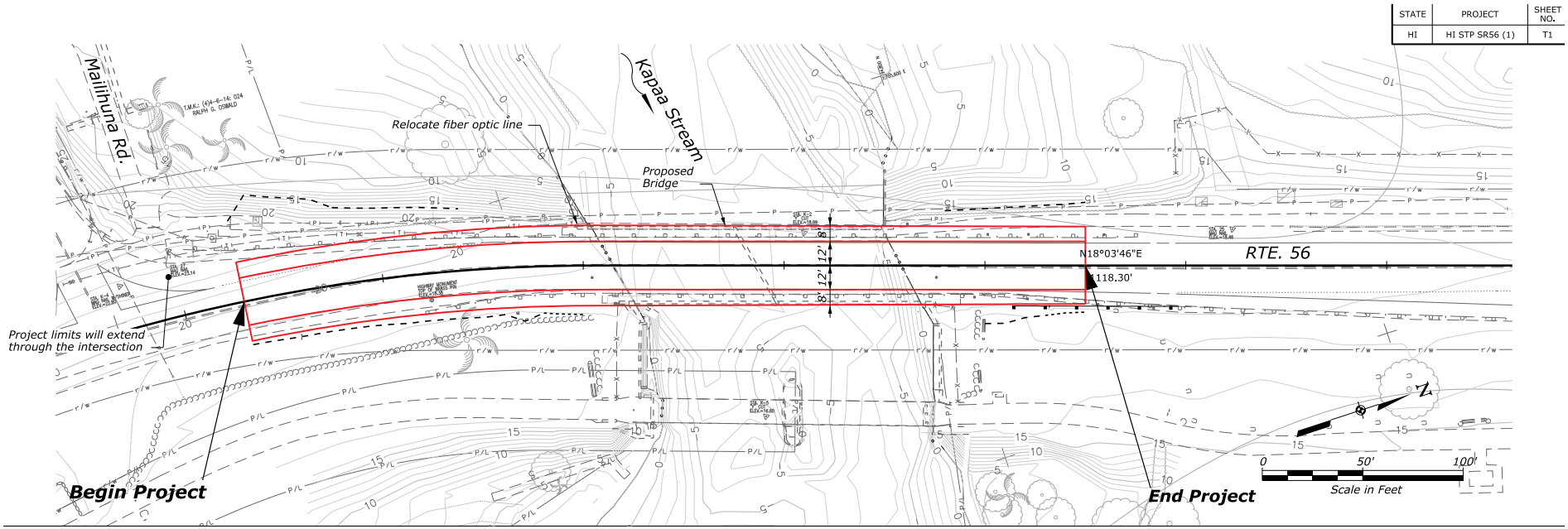

FIGURE 2-5
Plan
Kapaa Stream Bridge
Hawaii Bridges Program -
Central Federal Lands Highway Division and
Hawaii Department of Transportation

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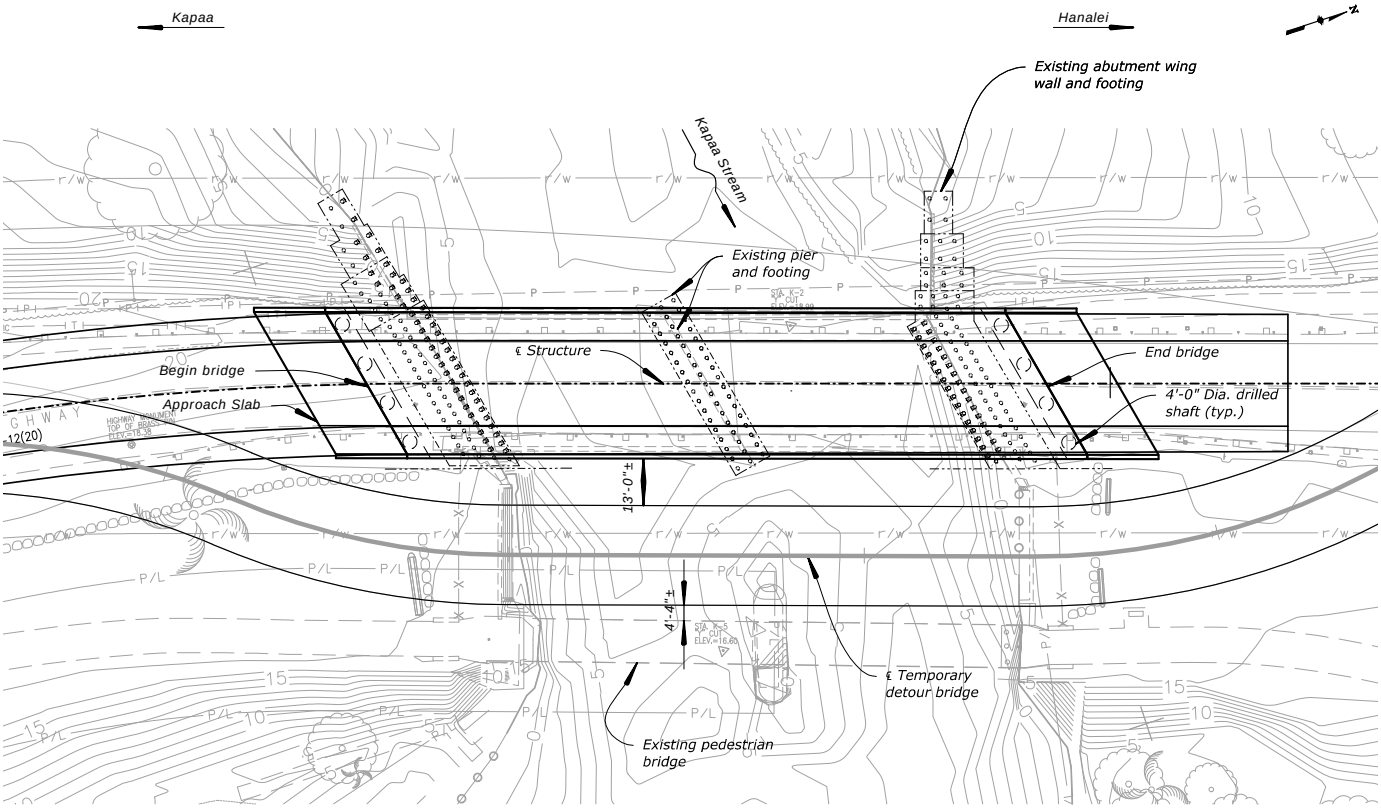
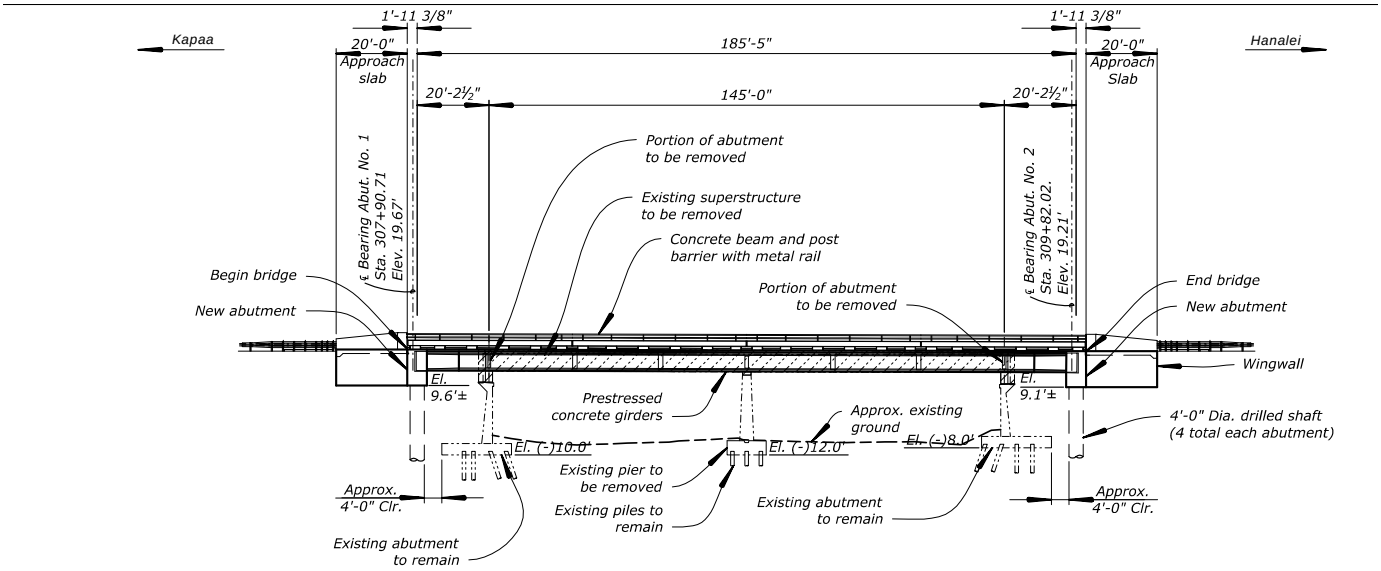
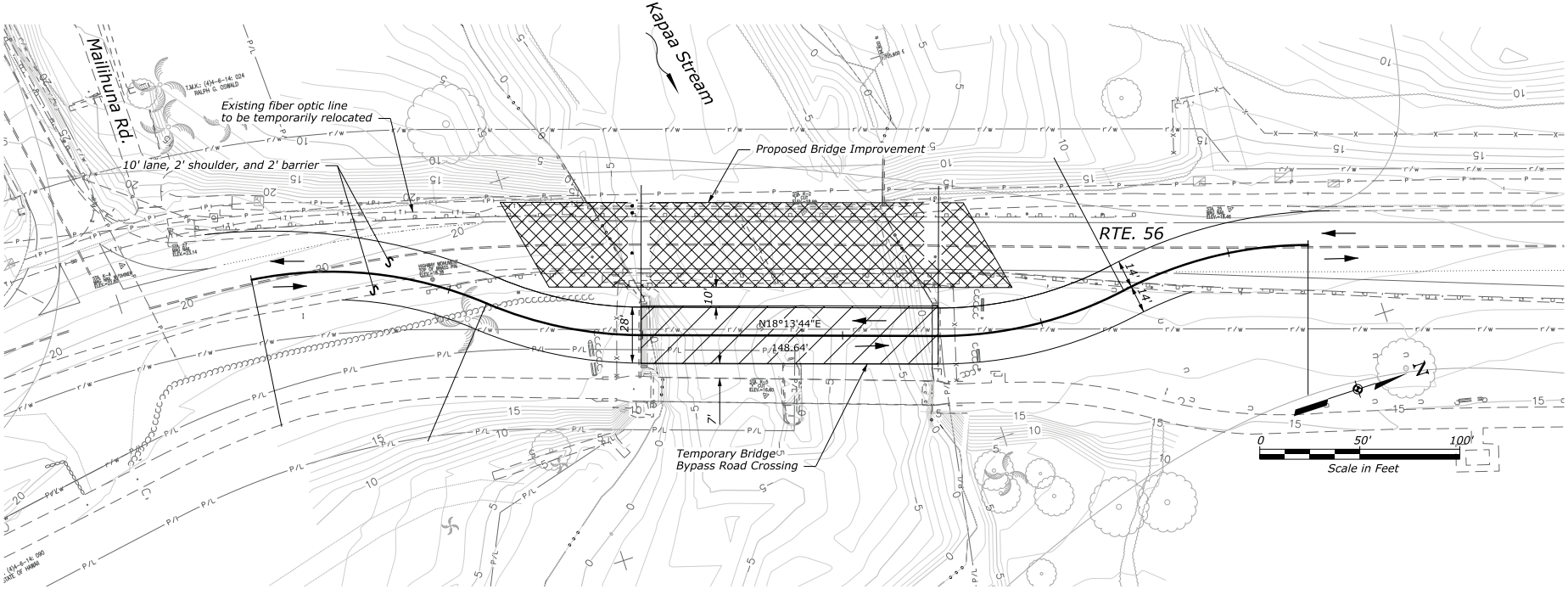


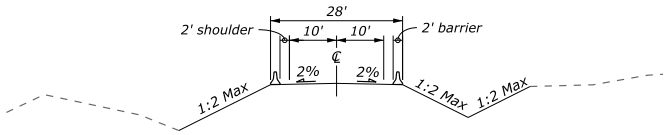
PLAN



ELEVATION

FIGURE 2-6
Bridge Design (Preliminary)
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation





TYPICAL SECTION

FIGURE 2-7
Temporary Bypass
Kapaa Stream Bridge
Hawaii Bridges Program -
Central Federal Lands Highway Division and
Hawaii Department of Transportation

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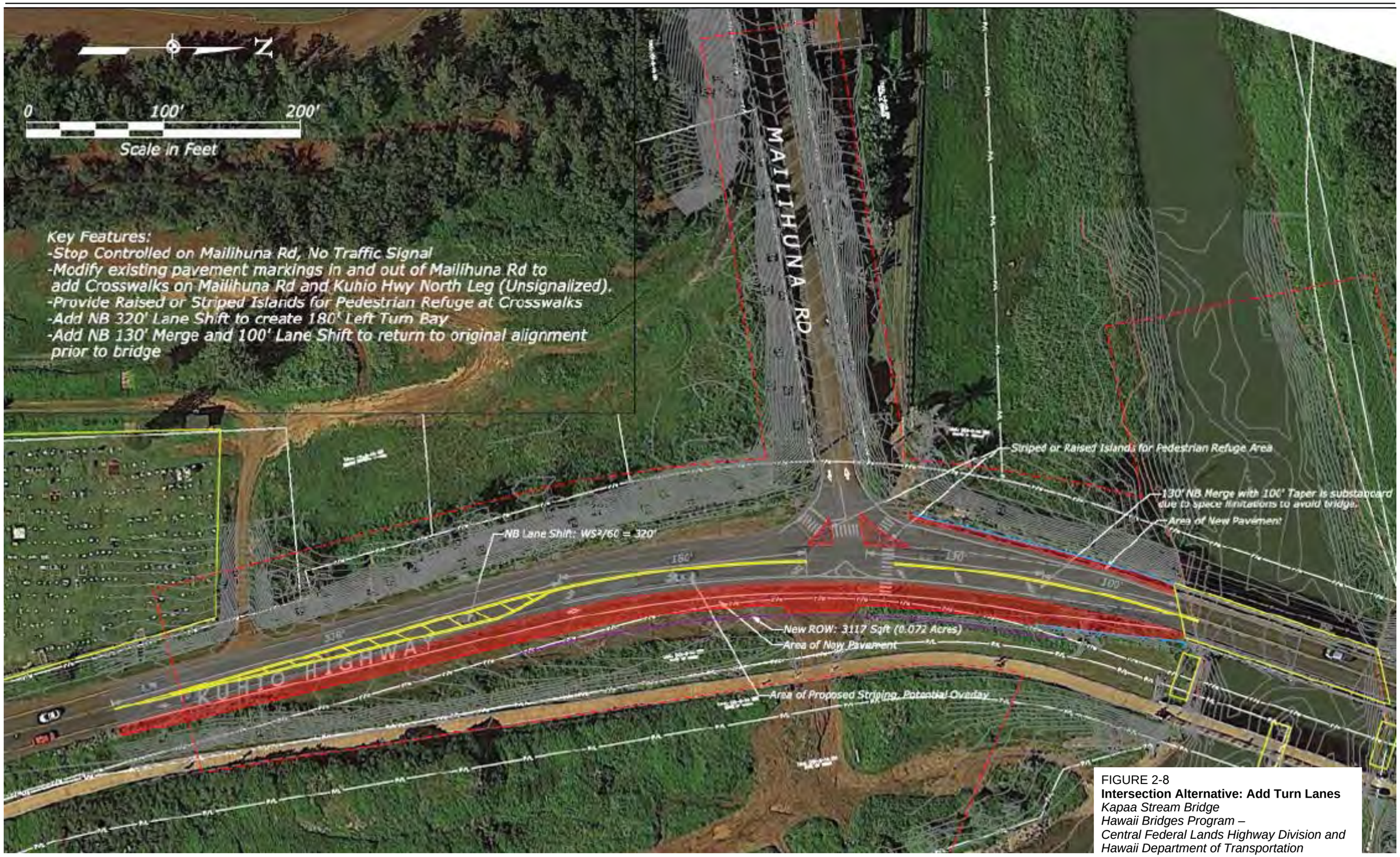


FIGURE 2-8
Intersection Alternative: Add Turn Lanes
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

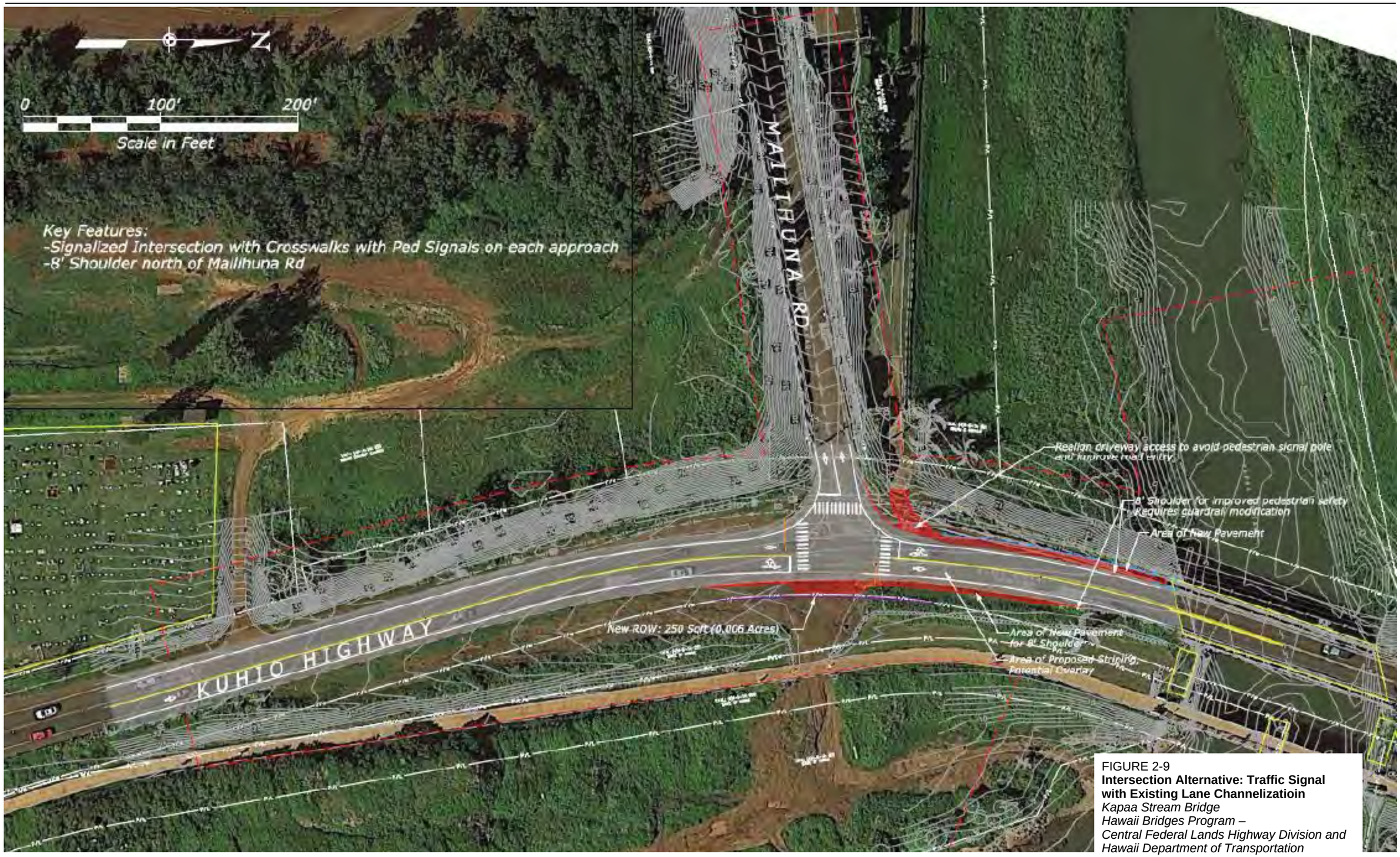


FIGURE 2-9
Intersection Alternative: Traffic Signal with Existing Lane Channelizatioin
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and Hawaii Department of Transportation

FIGURE 2-10
Intersection Alternatives:
Signalized Intersection
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

SECTION 3

Affected Environment, Impacts, and Mitigation

Chapter 3 describes the affected environment, impacts, and mitigation for relevant resources areas. Resources that are not present (or otherwise don't apply) that are not discussed further include potable water or wastewater disposal. Public safety is discussed within Section 3.15, Roads and Traffic.

3.1 Topography, Geology, and Soils

3.1.1 Existing Conditions

The island of Kauai is composed of a single basalt shield volcano built by the extrusion of lava of the Waimea Canyon Volcanic Series, more than two million years ago. After this main shield-building phase, there was renewed volcanic activity known as the Koloa Volcanic Series, characterized as thick flows of dense basalt extruded from groups of vents aligned in northern-southern trends in various locales. Along streams, drainage ways, and low-lying areas, erosion of the upper Koloa and Waimea Canyon Volcanic Series has deposited alluvial sediments. These sediments generally are unconsolidated to moderately consolidated, and are non-calcareous soil deposits.

The area of Kapaa Stream Bridge can be characterized as fairly flat, with irregularly shaped gulches and small valleys in the uplands, through which small tributary streams run including Kapahi, Makaleha, and Moalepe. The U.S. Department of Agriculture Soil Survey Geographic Database (SSURGO, 2001) and soil survey data gathered by Foote et al. (Foote et al., 1972) indicate four soil types in the project area (see Figure 3-1):

- **Beaches (BS):** This soil occurs as sandy, gravelly, or cobbly areas on all islands. It is washed and rewashed by ocean waves. The beaches consist mainly of light-colored sands derived from coral and seashells. A few of the beaches, however, are dark colored because their sands are from basalt and andesite.
- **Mokuleia Series (Mr) and (Mta):** This series consists of well-drained soils along the coastal plains on the islands of Oahu and Kauai. These soils formed in recent alluvium deposited over coral sand. They are shallow and nearly level. Elevations range from nearly sea level to 100 feet. The annual rainfall amounts to 15 to 40 inches on Oahu and 50 to 100 inches on Kauai. The mean annual soil temperature is 74 degrees Fahrenheit (°F). Mokuleia soils are geographically associated with Hanalei, Jaucas, and Keaau soils.
- **Lihue Series (LhE2):** This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amount to 40 to 60 inches. The mean annual soil temperature is 73° F. Lihue soils are geographically associated with Ioleau and Puhi soils.

Kapaa Stream Bridge is at an elevation of 18 feet amsl. As part of the project's field exploration program, four borings were drilled for the replacement bridge. Two additional borings were drilled for the proposed bypass bridge. The findings of the geotechnical investigations led to a recommendation for deep foundations such as drilled shafts for the replacement bridge.

3.1.2 Potential Impacts and Mitigation Measures

The proposed project is not constrained by geological and topographic site conditions. There are no farmlands within the project area.

To address subsurface conditions, site preparation would include materials such as clean gravel and well-graded granular structural fill material as backfill for excavations. To address the presence of soft subgrade soils found in geotechnical investigations and the potential for settlement, deep foundations are being considered in the final design. Roadway sections would be designed to standard HDOT specifications that consist of asphalt and base course over sub-base course material.

Construction of the intersection improvement, bridge and roadway approaches would involve land disturbance that could result in soil erosion.

The *mauka* (western) portion of the roundabout at the foot of Mailihuna Road would require substantial cuts into a bluff. A new retaining wall would be needed to support the cut slope and a drainage system engineered to address changes in landform and stormwater flow.

Mitigation Measures. To minimize the potential for construction-related erosion impacts, best management practices (BMPs) would be developed as part of the project's engineering and design in accordance with the Kauai County Code for grading, grubbing, and stockpiling (Kauai County Code, Chapter 22, Article 7). See Section 3.2, Climate and Air Quality, and Section 3.3, Hydrology and Water Quality, for a list of applicable BMPs.

3.2 Climate and Air Quality

3.2.1 Existing Conditions

Climate in the project area is moderated by elevation and prevailing northwest tradewinds. The average maximum daily temperature is approximately 80°F, with an average minimum of 67°F. Mean annual rainfall for the project area is approximately 84.5 inches. Rainfall is typically highest in November and December and lowest in June (Giambelluca et al., 2013). The closest rainfall gage to the site experienced above-average rainfall in 2015 through the end of September (NOAA, National Weather Service, Weather Forecast Office Honolulu, 2015).

Kauai, like the rest of the state, meets the standards set by the Clean Air Act (CAA) and is within an attainment area. HDOH operates a network of air quality monitoring stations at locations around the state. The only monitoring station on Kauai is located approximately 10 miles east-southeast of the project site in the Niumalu subdivision, near Lihue. As reported in the Annual Summary of Air Quality Data for 2014 (HDOH, 2015) (the latest year for which annual data are available), the pollutants monitored at the Niumalu station were particulate matter less than 2.5 microns ($PM_{2.5}$), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). Carbon monoxide (CO) monitoring was shut down as of April 25, 2013. The readings at this location show that criteria pollutant levels were below state and federal ambient air quality standards (see Table 3-1).

TABLE 3-1
Island of Kauai Air Monitoring Station (Niumalu) Data (2014)

Pollutant	Annual Mean	Federal Air Quality Standard (Primary)	State Air Quality Standard
$PM_{2.5}$ (24-hour)	4.5 µg/m^3	35 µg/m^3	None
NO_2 (Annual)	0.002 ppm	53 ppb	0.04 ppm
SO_2 (1-hour)	0.002 ppm	75 ppb	None
SO_2 (3-hour)	0.002 ppm	0.50 ppm[a.]	0.50 ppm
SO_2 (24-hour)	0.002 ppm	None	0.14 ppm

Notes:
[a.] Federal secondary standard

Source: State of Hawaii Annual Summary 2014 Air Quality Data, Hawaii Department of Health, September 2015

µg/m^3 = micrograms per cubic meter
ppb = parts per billion
ppm = parts per million

Air quality in the project area is currently affected primarily by emissions from mobile sources (traffic on Kuhio Highway and Mailihuna Road). The primary mobile sources of emission are all types of vehicles, which generate pollutants (primarily nitrogen oxide and CO) when traveling or idling on roadways within and adjacent to the project limits.

3.2.2 Potential Impacts and Mitigation Measures

3.2.2.1 Short-term, Construction-related Emissions

Short-term impacts on air quality may result from project construction. BMPs would be employed to minimize emissions. The following two types of pollutants are common: (1) fugitive dust from vehicular movement and soil disturbance and (2) exhaust emissions from onsite construction equipment. Overall air quality impacts are expected to be insignificant because the project is in an unpopulated area, and the expected 22-month construction period is of limited duration.

Fugitive Dust. BMPs for dust control would be implemented to minimize air quality impacts during the project construction phase. BMPs to protect air quality include the following (Kauai County Code, Chapter 22, Article 7):

- Use water, dust fences, disturbance area limitations, and revegetation to minimize dust emissions.
- Stabilize all disturbed areas with erosion control measures.
- Cover open-bodied trucks whenever hauling material that can be blown away.
- Revegetate disturbed area as soon as possible after construction.
- Stabilize construction entrances to avoid offsite tracking of sediment.

Exhaust Emissions. Emissions from engine exhausts of onsite mobile and stationary construction equipment could also affect air quality. Emission impacts can be minimized by requiring the Contractor to use vehicles that are properly maintained. Nitrogen oxide emissions from diesel engines can be relatively high compared to emissions from gasoline-powered equipment; however, the standard for nitrogen oxide is set on an annual basis and is unlikely to be violated by emissions from short-term use of construction equipment. CO emissions from diesel engines are low and are expected to be insignificant compared to vehicular emissions generated on the highway.

Construction activities would employ fugitive dust emission control measures in compliance with the provisions of HAR Chapter 11-60.1, “Air Pollution Control,” Section 11-60.1-33 on Fugitive Dust.

3.2.2.2 Long-term Impacts on Air Quality

The purpose of this project is to improve the intersection of Mailihuna Road and Kuhio Highway and replace Kapaa Stream Bridge. This project has been determined to generate minimal air quality impacts for CAA criteria pollutants (see Section 3.2) and has not been linked with any special mobile source air toxics (MSAT) concerns. As such, this project would not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause an increase in MSAT impacts of the project from the No Action Alternative.

U.S. Environmental Protection Agency (USEPA) regulations for vehicle engines and fuels would cause overall MSAT emissions to decline substantially over the next several decades. Based on regulations now in effect, an analysis of national trends with USEPA's Motor Vehicle Emission Simulator model forecasts a combined reduction of over 80 percent in the total annual emission rate for the priority MSAT from 2010 to 2050. Vehicle miles of travel are projected to increase by over 100 percent. This would both reduce the background level of MSAT and possibly generate minor MSAT emissions from this project.

3.3 Wetlands, Hydrology, and Water Quality

3.3.1 Surface Water and Groundwater

Kapaa Stream is in the Kapaa Watershed, which encompasses roughly 16.5 square miles. The State of Hawaii and the U.S. Geological Survey (USGS) identify Kapaa Stream, traversing the survey area, as a perennial stream (Figure 1-1). The total length of this perennial stream is approximately 59.2 miles according to the *Atlas of Hawaiian Watersheds & Their Aquatic Resources* (Parham et al., 2008). The stream flows west, perpendicular to the highway through the study area and terminates in the Pacific Ocean. The mouth of Kapaa Stream is shaped by a variety of natural conditions, and likely shifts throughout the year. Natural

conditions influencing elevation and physical features near the mouth include stream flow, sediment deposition, ocean tide, and wave action.

The survey area covers approximately 8.2 acres, stretching south of Mailihuna Road and north of mile post 10 near the gravel beach park parking lot. The survey area encompasses the former cane haul road bridge, located immediately *makai* of the Kapaa Stream Bridge, which is part of the Kauai bike and pedestrian path. Elevations in the survey area range from sea level to roughly 30 feet above sea level.

The National Wetlands Inventory program identifies three wetland and water types within the survey area:

- Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded (R2UBH)
- Palustrine, Emergent, Persistent, Seasonally Flooded (PEM1C)
- Palustrine, emergent, Persistent, Seasonal-Tidal (PEM1R)

A marine water (Marine, Intertidal, Unconsolidated Shore, Irregularly Flooded - M2USP) is identified immediately east of the survey area.

Groundwater was encountered in the borings at depths ranging from 15.8 to 17.8 feet. The depth to groundwater can be expected to vary with water level in the stream, seasonal rainfall, and tidal influence.

3.3.2 Wetlands

Biologists with SWCA Environmental Consultants (SWCA) evaluated ten wetland sampling points within the survey area on September 29, 2014, to delineate wetlands and other WOUS. Appendix A presents methods and results. The biologists used methods for determining the presence of wetlands pursuant to the 1987 *Corps of Engineers Wetland Delineation Manual* and the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai'i and Pacific Islands Region* (USACE, 1987 and 2012). Based on these documents, jurisdictional wetlands are identified using the following three criteria:

- Hydric soils—soils that are permanently or seasonally saturated by water
- Hydrophytic vegetation—plants adapted to life in water or waterlogged conditions
- Wetland hydrology—areas that are periodically inundated or have soils saturated to the surface at some time during the growing season

The boundaries of potential non-wetland Waters of the U.S. were delineated by recording the location of the HTL (see Section 3.3.3).

As shown in Table 3-2, SWCA delineated approximately 1.98 acres of tidal, non-wetland WOUS (Riverine, Tidal [R1]) below the high tide line, and 0.31 acre of tidal wetlands (Palustrine Emergent Marsh [PEM], Tidal). Figure 3-2 shows the survey points and delineation results. Non-wetland Waters of the U.S. are discussed in Section 3.3.3.

TABLE 3-2
Potential Waters of the U.S Delineated in the Survey Area

WOUS ID	Type	Size (Acres)
1	Riverine, Tidal (R1)	1.98
2	Palustrine Emergent Marsh [PEM], Tidal	0.28
3	Palustrine Emergent Marsh [PEM], Tidal	0.02
4	Palustrine Emergent Marsh [PEM], Tidal	0.01
	R1 Subtotal	**1.98**
	PEM Subtotal	**0.31**
	Total Waters of the U.S.	**2.29**

Three individual wetland areas were delineated (Figure 3-2). Wetland W02 is shown in Photo 3-1; wetland W03 is shown in Photo 3-2, and wetland W04 is shown in Photo 3-3. The dominant plants observed at the three wetland locations included California grass (*Urochloa mutica*) (FACW), coconut (*Cocos nucifera*) (FACU), and tropical almond (*Terminalia catappa*) (FAC). Hydric soils were identified in three of the ten sampling points. Of the three wetland sampling points, the NRCS soil map identified one hydric soil in the survey area, Mokuleia clay loam, a poorly drained variant (Mta) (NRCS, 2012). Hydric soil indicators of the delineated wetlands included Redox Dark Surface, Muck, a problematic hydric soil (fluvial sediments within floodplains). Wetland hydrology indicators observed were Saturation (A3) and High Water Table (A2).

Photo 3-1. Wetland W02, PEM, Tidal

Photo 3-2. Wetland W03, PEM, Tidal

Photo 3-3. Wetland W04, PEM, Tidal

3.3.3 Non-wetland Waters

A single perennial non-wetland water (Kapaa Stream) was identified in the survey area (Figure 3-2). This segment of Kapaa Stream was determined to be tidally influenced because of the close proximity to the ocean and the presence of marine/estuarine biota (e.g., Hawaiian flagtail [*Kuhlia* spp.]) observed during SWCA's field work (SWCA, 2015) and from previous surveys (AECOS, 2002; Parham et al., 2008). The high tide line was determined using several factors. Near the Kapaa Stream Bridge and Ke Ala Hele Makalae, where the banks of the drainage are cemented, SWCA determined that the high tide line at the top of the vertical concrete wall (Photo 3-4). In the remainder of the survey area the high tide line was determined at the line of debris and shells deposited along the shore, as well as the vegetation line (Photo 3-5). The MHHW, located at 1.017 feet (0.31 meter) above mean sea level. In total, approximately 1.98 acres (0.80 hectare) of tidal, non-wetland Waters of the U.S. were delineated in the survey area (Figure 3-2).

Photo 3-4. Ke Ala Hele Makalae and Kapaa Stream Bridge showing modifications to the left bank

Photo 3-5. Looking upstream toward Kapaa Stream Bridge. Note: high tide line is shown by yellow lines.

The mouth of Kapaa Stream is shaped by a variety of natural conditions, and likely shifts throughout the year. Natural conditions influencing elevation and physical features near the mouth include stream flow, sediment deposition, ocean tide, and wave action.

3.3.4 Water Quality

HAR Chapters 11-54 and 11-55 outline a number of requirements related to water quality in the state of Hawaii. These include an anti-degradation policy; designated uses of waters, which must be maintained; water quality criteria, which must be met during construction and operation; and permitting requirements.

The Federal CWA requires states to collect and review surface water quality data and related information, and to prepare and submit to USEPA biennial lists of waterbodies that are impaired (that is, not meeting state water quality standards). According to the list included in the 2014 *State of Hawaii Water Quality Monitoring and Assessment Report* (HDOH, 2014a), insufficient data exist to determine whether Kapaa Stream is an impaired waterway, but most uses were attained and one use not attained. As of the 2014 Integrated Report, initiating Total Maximum Daily Load development for Kapaa Stream was a low priority.

The classification of water use of Kapaa Stream is mapped as Inland Class 2 on the *Water Quality Standards Map of the Island of Kauai* (HDOH, 2014b). Use categories classify waters for the purpose of applying the water quality standards, as well as the selection or definition of quality parameters and uses to be protected. Class 2 waters are to be protected for uses compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters. In addition, Class 2 waters are to be protected for agricultural and industrial water supplies, shipping, and navigation use (HDOH, 2014c).

3.3.5 Potential Impacts and Mitigation Measures

3.3.5.1 Short-term Construction Impacts

The project would involve demolition, excavation, grading, and construction in the stream and on the streambanks. There may be temporary impacts to WOUS associated with the water diversion structure for construction. Waterborne erosion would be mitigated by implementing BMPs in place during construction. Because new disturbances would exceed 1 acre, an NPDES permit (Notice of Intent Form C) would be obtained under CWA Section 402. An approved erosion control plan would be held onsite.

BMPs to protect water quality include the following (Kauai County Code, Chapter 22, Article 7):

- Minimize sedimentation or other pollution discharge to the stream through BMPs and/or erosion control measure.
- Stabilize all disturbed areas with erosion control measures.
- Use check dams to slow runoff water velocities.
- Revegetate disturbed area, including streambanks, as soon as possible after construction.
- Stabilize construction entrances to avoid offsite tracking of sediment.

- All project-related materials and equipment placed in the water should be free of pollutants.
- Fueling of land-based vehicles and equipment should take place at least 50 feet away from the water, preferably over an impervious surface.

A temporary bypass road and prefabricated modular steel bridge would route traffic around the bridge sites during construction. No temporary fill would be placed below the HTL to construct the bypass.

Accidental spills or releases of hazardous materials during construction could degrade the quality of stormwater runoff and reach Kapaa Stream. Temporary stormwater control measures would be implemented to protect water quality in the stream. The potential for accidental spills or releases is low and, if they did occur, would be attended to and cleaned up immediately.

All or portions of the bridge construction area would be dewatered before in-stream work using an isolation and confinement structure or other method, as appropriate for the location and construction phase. The dewatering structure would be constructed where needed for dewatering between the HTLs and would be sized as needed to dewater the bridge construction area. The size and location of the dewatering structure will account for tidal fluctuations anticipated during the construction window. The dewatering structure would be removed immediately after it is no longer needed. The area to be temporarily disturbed within the HTLs will be determined before applying for the CWA Section 404 and other required Permits.

Federal (Section 404) and State (Stream Channel Alteration) permits would be needed for discharges or fill in regulated waters. Collecting and disposing groundwater would be conducted in accordance with applicable permit requirements.

3.3.5.2 Long-term Impacts on Waters of the U.S. and Water Quality

No permanent fill would be placed below the HTL to construct the bypass bridge. The permanent bridge would clear-span the stream channel, thereby reducing the impact on WOUS relative to the existing bridge, which is supported by a mid-channel pier that is proposed for demolition above the mudline. Construction of the replacement bridge is expected to require removal of incidental sediment. No fill is proposed below the HTL for scour and streambank protection. Small areas of riprap are proposed for locations above the HTL, between the existing and proposed bridge abutments and along the embankment adjacent to the abutments.

The bridge replacement and intersection projects would not change the general drainage pattern of stormwater flows. Within the existing project area, there are 3.2 acres of permeable surfaces and 1.6 acres of impermeable surfaces, the latter consisting primarily of road surface.

The roundabout is expected to result in a net increase of 0.1 acre (or approximately 4,350 square feet) in the amount of impermeable area because of expanded road surfaces. A slightly smaller surface area would be converted from permeable to impermeable if the circle is landscaped. Plans for potential vegetation in and around the roundabout would be included in the final design.

Because the project area is surrounded by undeveloped land, the slight increases in impervious surface area would not have a significant adverse effect on stormwater runoff.

3.4 Natural Hazards

3.4.1 Flooding

Per the National Highway System, Kuhio Highway is functionally classified as an urban principal arterial roadway. As a principal arterial, Kuhio Highway should be analyzed for the 50-year and 100-year storm events based on the HDOT criteria. The project site is located within a mapped Federal Emergency Management Agency (FEMA) regulated floodway, Zone AE special flood hazard area. Therefore, the design of the replacement bridge has been designed for the 100-year storm event to comply with the National Flood Insurance Program's regulations and requirements.

3.4.2 Seismic Activity

Earthquakes in the Hawaiian Islands are primarily associated with volcanic eruptions from the expansion or shrinkage of magma reservoirs, rather than shifts in the earth's crust. The island of Kauai is periodically subject to episodes of seismic activity of varying intensity, but available historical data indicates that the number of major earthquakes occurring on Kauai have generally been fewer and of lower intensity compared with other islands, such as the Big Island.

The AASHTO LRFD Bridge Design Specifications (2014) provide minimum design criteria to address potential damages from seismic disturbances. The recommended seismic response parameters for use in design represent ground motion corresponding to an exceedance probability of approximately 7 percent in 75 years for an earthquake with an approximate 1,000-year return period. The AASHTO LRFD Bridge Design Specification scale is from Seismic Zone 1 through 4, where 1 is the lowest level for potential seismic induced ground movement. Kauai is designated Seismic Zone 1.

3.4.3 Tsunami

Tsunamis potentially destructive to the Hawaiian Islands may originate anywhere around the rim of the Pacific Ocean and may also be locally generated by earthquakes on or near the island. Approximately 50 tsunamis have been reported in the Hawaiian Islands since the early 1800s. The State of Hawaii Civil Defense established tsunami inundation zones and maps for all coastal areas in Hawaii. The Kapaa Stream Bridge project area is located within the tsunami evacuation zone (NOAA, 2015).

3.4.4 Potential Impacts and Mitigation Measures

The existing bridge does not meet the 100-year storm criteria. Results of hydraulic calculations indicate that the existing bridge will experience pressure flow conditions during the 100-year storm. The existing bridge will not provide the 2-foot minimum freeboard during the 100-year storm. The analysis also indicates that overtopping will not occur at Kapaa Stream Bridge, but will occur north of the bridge along Kuhio Highway.

Likewise, the proposed bridge will not meet the 100-year storm criteria. Similar to the existing bridge, the replacement bridge would not be overtopped but would experience pressure flow conditions during the 100-year storm. Because the proposed bridge will not provide the 2-foot minimum freeboard specified by the HDOT criteria, a design exception will be required.

The hydraulic analysis also found that the single-span replacement bridge (and removal of the in-stream pier associated with the existing bridge) would not cause a rise in the 100-year water surface elevation and would meet FEMA's and the County of Kauai's flood hazard and No-Rise requirements. Therefore, the new structure would not adversely affect flood conditions in the stream.

HDOT currently does not evaluate the future threat of sea level rise (SLR) when constructing within the coastal zone. The School of Ocean and Earth Science and Technology (SOEST) at the University of Hawaii is studying the potential threat of sea level rise on the islands. SOEST has projected a schedule of global mean SLR based on published best- and worst-case scenarios that SOESTs suggests could be adopted in Hawaii in lieu of a local analysis (Table 3-3).

TABLE 3-3
Schedule of Sea-level Rise 2011 to 2100

Sea Level Rise	Worst case	Best Case
1 foot	2040	2050
2 feet	2050	2070
3 feet	2070	2090

SOURCE:
http://www.soest.hawaii.edu/coasts/sealevel/index.html
(accessed May 23, 2016)

The proposed Kapaa Stream Bridge would be designed for a life span of 75 years and the elevation of the proposed bridge deck is approximately 18 feet amsl. It is anticipated that SLR would not affect the use of the bridge during its lifetime under the best-case scenario (best-case SLR of 3 feet by 2090), nor under the worst-case scenario if 1 foot per 10 years is assumed out to 2090 (giving a worst-case SLR of 5 feet by 2090). However, adjacent roadways with elevations less than 18 feet amsl could be affected by SLR before the Kapaa Stream Bridge. It is anticipated that SLR will be addressed in the design if a future bridge is required to cross Kapaa Stream at the existing bridge location.

3.5 Noise

3.5.1 Existing Conditions

Traffic on Kuhio Highway is the primary noise generator. A quantitative noise analysis was not performed because the project does not meet Federal or State criteria for when a noise analysis is needed; specifically, the proposed project would not increase highway capacity and does not meet the classification of a Type I or Type II project as defined in 23 CFR 772.5.

3.5.2 Potential Impacts and Mitigation Measures

3.5.2.1 Construction-related Noise

Construction noise impacts are unavoidable, but would be temporary. Noise levels produced during construction would be a function of the methods employed during each stage of construction. Equipment likely to be used include drill rig, crane, excavator, backhoe, front-end loader, grader, forklift, semi-trucks, dump trucks, concrete trucks, compactors, paving equipment, and compressors. The FHWA *Construction Noise Model User's Guide* (2006) indicates that the loudest equipment generally emits noise in the range of 80 to 90 A-weighted decibels (dBA) at a distance of 50 feet, which exceeds permissible levels.

Per HAR Chapter 11-46-3, the project area is comprised of land use located in the Class A Zoning District (conservation and public space) where maximum permissible sound levels are 55 dBA during the daytime (7 am to 10 pm) and 45 dBA at night (10 pm to 7 am). Construction noise is expected to exceed the State's "maximum permissible" property line noise levels, and a Community Noise Permit would be obtained from HDOH under HAR Chapter 11-46, Community Noise Control. For HDOH to issue a noise permit, the application would describe construction activities for the project. Specific permit restrictions required for construction projects includes the following:

- No permit shall allow construction activities creating excessive noise before 7 am and after 6 pm of the same day.
- No permit shall allow construction activities that emit noise in excess of 95 dBA except between 9 am and 5:30 pm of the same day.
- No permit shall allow construction activities that exceed the allowable noise levels on Sundays and on certain holidays. Pile driving and other activities exceeding 95 dBA would be prohibited on Saturdays.

The HDOH noise permit generally does not limit the noise level generated at the construction site, but rather the times at which high-volume construction can take place. However, before issuing the permit, HDOH may require noise mitigations to be incorporated into construction plans, for example, maintenance and proper muffling of construction equipment and onsite vehicles that exhaust gas or air. HDOH may also require the contractor to conduct noise monitoring. In addition to the noise permit, a noise variance may be requested from HDOH for specific occasions when work hours need to be extended into the evenings and/or on weekends to implement the overall construction schedule.

3.5.2.2 Long-term Noise Impacts

Replacement of Kapaa Stream Bridge and improvements to the Mailihuna Road intersection would not change highway capacity or operational conditions (that is, the posted speed limit). Therefore, noise levels after the project is completed are expected to be unchanged.

3.6 Hazardous Materials

3.6.1 Existing Conditions

A regulatory database computerized environmental report (CER) was acquired in the form of an EDR Radius Map Report with GeoCheck®. The CER is a download from select Federal and State standard source environmental databases that identifies sites within a search radius of up to 1 mile. CER data lists were reviewed to determine whether any sites could present a hazard during construction. The CER (included in Appendix B) did not identify any sites within the 1-mile radius that are suspected to represent a material negative environmental impact.

The CER identified 1 site and 11 orphan sites (sites whose location was not available in the CER) suspect or having potential to represent a material negative environmental impact. The one site mapped is a state hazardous waste site with benzo[a]pyrene in the groundwater. However, clean-up at the site is complete, and the site was listed as No Further Action (NFA) with unrestricted residential use.

A further review of the orphan sites determined that many of the same sites were listed multiple times, and only 4 distinct orphan sites were included in the 11 orphan site listings. One of the 4 sites was only listed in the Facility Index System/Facility Registry System database, with no reported release of hazardous materials or petroleum products. Another of the orphan sites was listed in the SPILLS database for a transformer leak. However, the spill site is approximately 0.9 mile south of the proposed project site and listed as NFA with clean-up complete. The remaining 2 orphan sites were listed for leaking underground storage tanks (LUSTs). The status or clean-up efforts for the LUST sites was not reported. However, both sites are located further than 1 mile south of the proposed project site. Therefore, no sites were identified as a potential concern of a material negative environmental impact for the proposed project.

There is potential for the bridge to contain asbestos-containing material (ACM) and lead-based paint (LBP). Potential ACM on bridge structures includes abutment forms, waterproof membranes between the deck and the paving, geo-textiles, asbestos cement pipes and conduits, textured surfaces, and asbestos concrete. LBP may be present in paint chips or waste generated during removal of paint from bulk material, including striping paint grindings from asphalt pavement.

3.6.2 Potential Impacts and Mitigation Measures

Based on the results of the CER, no hazardous materials are anticipated to be encountered within the proposed project site. Project construction would require the removal of the existing structure. Construction-related activities would also require use of hazardous materials, including lubricants of various weights and viscosities, hydraulic fluid for transit and construction equipment, and cleaning products, and materials used for corrosion protection such as paint or other coatings on exposed steel. In addition, the proposed project would not impact the identified sites of potential concern.

A hazardous materials spill plan would be developed that describes spill prevention measures regarding the location of refueling and storage facilities and the handling of hazardous materials. The hazardous materials spill plan would describe actions to be taken in case of a spill. The contents and requirements of the hazardous materials spill plan include the following:

- The project manager and heavy equipment operators would perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations would be postponed or halted should a leak be detected, and they would not proceed until the leak is repaired and the equipment is cleaned.
- Absorbent material manufactured for containment and cleanup of small hazardous materials spills would be kept at the project site.

- In the event of a large hazardous materials spill or if unanticipated hazardous materials are encountered within the project site, the HDOH Hazard Evaluation and Emergency Response Office and the HDOT Hazard Evaluation and Environmental Response Office would be contacted immediately.

A survey would be performed to determine whether ACM, LBP, or both are present. If asbestos is present or suspected, an Asbestos Abatement Plan would be prepared to establish the appropriate protocols for abatement. If LBP is identified, work practices (in accordance with applicable State and Federal regulations) would be implemented before removing LBP to contain debris, control airborne dust, and properly dispose of materials with LBP.

3.7 Flora

3.7.1 Existing Conditions

SWCA biologists conducted field reconnaissance surveys of the project area on September 17 and 29, 2014 (see Appendix C). Representative portions of the area were driven or walked, to describe vegetation types and wetlands or streams, as well as known or suspected threatened, endangered, or candidate plant species. No State- or Federally-listed threatened, endangered, or candidate plant species were recorded in the survey area. Three native Hawaiian plants were seen during the survey:

- Kipukai (*Heliotropium curassavicum*)
- Naupaka (*Scaevola taccada*)
- Pohuehue (*Ipomoea pes-caprae ssp. Brasiliensis*)

The vegetation in the survey is composed of the following three main vegetation types:

- **Strand Vegetation:** This vegetation type occurs near the shoreline in the *makai* portion of the survey area, which is strongly influenced by salt spray, saline soil, strong winds, low moisture, high rates of evaporation, and other shoreline processes. Pohuehue is the most abundant plant in the northeast portion of the survey area, forming low-growing mats along the sand dunes. To the south of Kapaa Stream, non-native California grass (*Urochloa mutica*) is dominant, forming dense mats. Naupaka and wedelia (*Sphagneticola trilobata*) are also common throughout the Strand Vegetation. Tree heliotrope (*Tournefortia argentea*) and coconut (*Cocos nucifera*) are widely scattered along the southern side of the stream, whereas a small ironwood (*Casuarina equisetifolia*) grove is on the northern side, adjacent to the bridge.
- **Ruderal Vegetation:** This vegetation type occurs in and along the highway right-of-way and adjacent to parking areas. It is dominated by a mix of non-native plants. Abundant and common herbaceous species found in the Ruderal Vegetation type are Guinea grass (*Urochloa maxima*), swollen fingergrass (*Chloris barbata*), wire grass (*Eleusine indica*), Bermuda grass (*Cynodon dactylon*), *Macroptilium atropurpureum*, khaki weed (*Alternanthera pungens*), Dallis grass (*Paspalum dilatatum*), and *Ipomoea obscura*. These weedy areas are likely mowed occasionally. On the *mauka* side of the survey area, trees and shrubs are more common, including small stands of koa haole (*Leucaena leucocephala*) and ironwood, as well as scattered castor bean (*Ricinus communis*) and pluchea (*Pluchea* spp.).
- **Emergent Wetland:** This vegetation type is dominated by a dense mat of the non-native California grass. It occurs on the *mauka* side of the bridge immediately adjacent to Kapaa Stream. On the southern side of the stream, California grass is interspersed with bulrush (*Schoenoplectus* sp.). It appears to be the non-native kaluha or California bulrush (*Schoenoplectus californicus*), which looks very similar to the indigenous akiaki (*Schoenoplectus tabernaemontani*).

3.7.2 Potential Impacts and Mitigation Measures

Some trees in the project limits may be trimmed or cut down. The following BMPs related to floristic resources would be implemented:

- Natural vegetation, especially grass, would be retained where possible.

- Native plant species, such as naupaka and pohuehue, would be considered for restoration of areas affected by construction, as appropriate.
- Construction traffic would be routed to avoid existing or newly planted vegetation.
- Natural vegetation would be protected with fencing, tree armoring, and retaining walls or tree wells, as appropriate.
- Removed vegetation would not be deposited along the banks of any watercourse.
- All removed vegetation would be disposed away from the project site within 3 months of being removed.
- All construction equipment would be washed before construction to prevent introduction of invasive species seeds from earthmoving or hauling.

The vegetation types and species identified during the survey are not unique. No threatened or endangered plants were found. In addition, no designated plant critical habitat occurs nearby. Based on the lack of sensitive botanical resources and implementation of BMPs, the proposed project is not expected to have a significant adverse impact on botanical resources.

3.8 Fauna

SWCA biologists also investigated the presence of known or suspected threatened, endangered, or candidate wildlife species during the September 11, 2014, field survey (see Appendix C).

3.8.1 Avifauna

The bird species observed in and near the project area are species typically found in disturbed lowland areas. In all, 10 bird species were documented. These birds, status, and protection under the Migratory Bird Treaty Act (MBTA) are summarized in the following Table 3-4:

TABLE 3-4
Birds Observed

Common Name	Scientific Name	Status	Protection Under the MBTA
Cattle egret	*Bubulcus ibis*	NN	Yes
Chestnut munia	*Lonchura malacca*	NN	
Common myna	*Acridotheres tristis*	NN	
Domestic chicken	*Gallus gallus*	NN	
Hawaiian gallinule	*Gallinula galeata sandvicensis*	E,E	Yes
Japanese white-eye	*Zosterops japonicas*	NN	
Pacific golden-plover	*Pluvialis fulva*	M	Yes
Sanderling	*Calidris alba*	M	Yes
Spotted dove	*Streptopelia chinensis*	NN	
Zebra dove	*Geopelia striata*	NN	

Status: E = endemic, NN = non-native established species, M = migrant, E = endangered

Two species of migrant shorebirds, the Pacific golden-plover (*Pluvialis fulva*) and sanderling (*Calidris alba*), were observed foraging on the sand downstream of the bridge. One species of waterbird, the endangered Hawaiian gallinule, was observed foraging along the vegetated streambank upstream of the bridge. These

three species are protected under the MBTA. One non-native bird protected under the MBTA, the cattle egret (*Bubulcus ibis*), was observed.

Seabirds, particularly the endangered Hawaiian petrel (*Pterodroma sandwichensis*), threatened Newell's shearwater (*Puffinus auricularis newelli*), and proposed endangered band-rumped storm-petrel (*Oceanodroma castro*), may fly over the project area at night while travelling to and from their upland nesting sites to the ocean. These species nest inland in the mountainous interior of Kauai. No suitable nesting sites for these species are present in the project area.

3.8.2 Mammalian Species

3.8.2.1 Hawaiian Hoary Bat

The endangered Hawaiian hoary bat or 'ope'ape'a (*Casiurus cinereus semotus*) is the only native terrestrial mammal species that is still present within the Hawaiian Islands. A survey specifically for Hawaiian hoary bats was not conducted, but suitable habitat for roosting and foraging were noted during the biological survey. Hawaiian hoary bats typically roost in dense canopy foliage or in the subcanopy when canopy is sparse, with open access for launching into flight. The bats have been observed roosting in coconut and ironwood trees and potentially roost in these tree species within the vicinity of the project area. The bats forage in open, wooded, and linear habitats with a wide range of vegetation types. These animals are insectivores and are regularly observed foraging over streams, reservoirs, and wetlands, and up to 300 feet offshore. The stream corridor in the project area is considered suitable bat foraging habitat.

3.8.2.2 Other Terrestrial Mammals

Dogs (*Canis familiaris*) and cats (*Felis catus*) were not observed during the biological survey, but are likely to enter the project area. Other mammals that can be expected onsite include mice (*Mus musculus*) and rats (*Rattus spp.*).

3.8.3 Terrestrial Invertebrates

Two species of introduced bees were observed during the biological survey: the Sonoran carpenter bee (*Xylocopa sonorina*) and the honey bee (*Apis mellifera*). Non-native garden spiders (*Argiope* appensa) were also present.

3.8.4 Fish and Aquatic Invertebrates

Fish and aquatic species within the Kapaa Stream in and near the project area were observed during the September 2014 biological survey. Furthermore, a review of the Hawaii DLNR Division of Aquatic Resources (DAR) Watershed Atlas (Parham et al., 2008) and a previous stream survey (AECOS, 2002) was performed to obtain species previously observed. The resulting list of fish and aquatic species from these sources and their status are summarized in Table 3-5.

TABLE 3-5
Aquatic Species Observed

Common Name	Scientific Name	Status	Observation Source
Mollusks			
Asiatic flume clam	*Corbicula fluminea*	NN	AECOS, 2002
Hapawai	*Neritina vespertina*	E	AECOS, 2002
Melanid snail	*Melanoides tuberculate*	NN	AECOS, 2002
Crustacea			
Crayfish	*Procambarus clarkia*	NN	Parham et al, 2008
Opae kalaole	*Atyoida bisulcata*	E	Parham et al, 2008

TABLE 3-5
Aquatic Species Observed

Common Name	Scientific Name	Status	Observation Source
Opae oehaa	*Macrobrachium grandimanus*	I	Parham et al, 2008
Tahitian prawn	*Macrobrachium lar*	NN	AECOS
Insects			
Asian dragonfly	*Crocothemis sevilla*	NN	AECOS
Fish			
Anaholehole, Hawaiian flagtail	*Kuhlia* spp.	E/I	SWCA, AECOS
Ama, mullet	*Mugilidae*	n/a	AECOS
Goby	*Gobiid* sp.	n/a	Parham et al, 2008, SWCA
Guppy	*Poecilla reticulate*	NN	AECOS
Kaku, great barracuda	*Sphyraena barracuda*	I	AECOS
Mexican molly	*Poecillis mexicana*	NN	AECOS
Mosquito fish	*Gambusia affinis*	NN	AECOS
Oopu Naniha	*Stenogobius hawaiiensis*	E	AECOS
Oopu Nakea	*Awaous stamineus*	E	AECOS
Papio	*Carangoides* sp.	I	AECOS
Swordtail	*Xiphophorus helleri*	NN	Parham et al, 2008
Tilapia	*Oreochromis* sp./ *Sarotherodon* sp.	NN	SWCA, AECOS
Amphibia			
Tadpoles	--	NN	SWCA, AECOS

Status: E = endemic, I = indigenous, NN = non-native established species

Note:
n/a= not available

For the entire Kapaa Stream, Parham et al. (2008) documented five native crustaceans (including both ʻōpae kalaʻole [*A. bisulcata*] and ʻōpae ʻoehaʻa [*M. grandimanus*]), which were seen in the estuary. Eighteen species of fish, including all five native amphidromous gobioid species, were listed by Parham et al. (2008) as occurring in Kapaa Stream. In addition, two endemic Neritina mollusks have been recorded (Parham et al. 2008). All these native animals are amphidromous, and so must pass through the estuarine part of the stream twice in their life cycles.

3.8.5 Marine Mammals and Turtles

No endangered Hawaiian monk seals or threatened green sea turtles (*Chelonia mydas*) were observed during the survey; however, these animals may haul out or bask on the beach or be found in the marine waters nearby. The proposed critical habitat for monk seal includes terrestrial habitat 15 feet (5 meter) inland from the shoreline and marine habitat from the shoreline seaward to the 1,640-foot (500-meter) depth contour. As defined by the USFWS, the shoreline is the upper reaches of the wash of the waves, other than storm or seismic waves, at high tide during the season in which the highest wash of the waves occurs, usually evidenced by the edge of vegetation growth or the upper limit of debris.

3.8.6 Potential Impacts and Mitigation Measures

3.8.6.1 State- and Federally listed Species

Hawaiian Hoary Bats. Bats may roost in coconut and ironwood trees present in the project area, or they may forage throughout the area. Direct impacts to bats would occur only if a juvenile bat too small to fly but too large to be carried by a parent were present in a tree that is trimmed or cut down. The possibility of adversely affecting Hawaiian hoary bats as a result of the proposed project is small. However, the following measures would be taken to avoid impacts:

- Any fences that are erected as part of the project would have barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire. No fences in the survey area were observed with barbed wire; however, if fences are present within the project limits, the top strand of barbed wire would be removed or replaced with barbless wire.
- If trees taller than 15 feet would be trimmed or removed as a result of this project between June 1 and September 15, when juvenile bats that are not yet capable of flying and may be roosting in the trees, a qualified biologist would ensure no juvenile bats are in the affected trees.

Seabirds. Threats to the endangered Hawaiian petrel, threatened Newell's shearwater, and proposed endangered band-rumped storm-petrel include the attraction of adults and newly fledged juveniles to bright lights while transiting between their nest sites and the ocean. Juvenile birds are particularly vulnerable to light attraction and are sometimes grounded when they become disoriented by lights. Many of the grounded birds are vulnerable to mammalian predators or to being struck by vehicles. With implementation of the following mitigation measures, the project would not likely adversely impact the seabirds:

- Construction activity would be restricted to daylight hours during the seabird peak fallout period (September 15 to December 15), to avoid the use of nighttime lighting that could attract seabirds.
- All outdoor lights would be shielded to prevent upward radiation.
- Outside lights that are not needed for security and safety would be turned off from dusk through dawn during the peak fallout period (September 15 to December 15).

Waterbirds. The four endangered waterbirds could be present in the survey area at any time. Based on known distribution and habitat requirements, any of these species could also breed in or near the survey area. Breeding for Hawaiian ducks, Hawaiian coots, and Hawaiian gallinules is not restricted to a particular season. The breeding season for the Hawaiian stilt is between February and August.

Direct impacts to waterbirds could occur in association with construction related activities (e.g., human activity, noise, and removal of vegetation). Disturbance of nesting adults could result temporary or permanent abandonment of nests, ducklings, and/or chicks, and ultimately nest failure from egg predation or thermal stress. Disturbance to rearing areas can also result in mortality due to exposure or trauma. Temporary displacement of birds as a result of construction could cause changes to their roosting and foraging patterns leading to increased expended energy and risk of predation. Potential impacts would be minor based on the small amount of habitat to be disturbed by the project. Additionally, potential impacts would occur approximately 1,000 feet from foraging habitat, and adjacent foraging and roosting habitat is available for displaced water birds. The possibility of adversely affecting water birds as a result of the proposed project is likely small; however, the following measures would be taken to avoid impacts.

- Although not expected because of the lack of suitable nesting habitat within the project area, if a waterbird nest with eggs or chicks/ducklings is discovered, work would cease within 100 feet of the nest until the chicks/ducklings have fledged. Waterbird nests, chicks, or broods found in the project area before or during construction would be reported to the USFWS within 48 hours.

- If an endangered Hawaiian waterbird is present or lands in the area during on-going activities, then all activities within 100 feet of the bird would cease, and the bird would also not be approached. Work may continue after the bird leaves the area of its own accord.

Nene. The action area[1] contains habitats that could provide nesting and foraging habitat for the nene. Direct impacts could occur during vegetation removal if a nest is damaged or goslings are separated from adults. However, with implementation of conservation measures and the listed BMPs, adverse impacts are unlikely.

The permanent removal of nesting habitat would constitute a long-term indirect impact. This impact would be discountable because of the small amount of habitat removed under the proposed project and the availability of adjacent nesting habitat for displaced nene to use.

In the short term, the human noise and disturbance associated with construction activities could temporarily displace nene from roosting or foraging habitats, or both. This displacement could alter an individual's typical foraging and roosting patterns, forcing it to expend energy to search for new foraging and roosting locations. Displacement from roosting or foraging habitat could lead to increased predation and car strikes on individual nene if a nene is forced to change its behavior and search for suitable habitat.

With implementation of the following conservation measures and BMPs, the project would not likely adversely impact the nene:

- A biologist familiar with the nesting behavior of the nene should survey the area before the initiation of any work, or after any subsequent delay in work of 3 or more days (during which birds may attempt nesting).
- All regular onsite staff would be trained to identify nene, and should know the appropriate steps to take if nene are present onsite.
- If a nene is found in the area during ongoing activities, all activities within 100 feet of the bird would cease, and the bird would also not be approached. If a nest is discovered, contact USFWS. If a nest is not discovered, work may continue after the bird leaves the area of its own accord.

Hawaiian Monk Seal. Construction-related activities (such as noise, movements of equipment, and lights) could cause short-term impacts to seals basking and could temporarily displace monk seals from hauling-out and foraging within the Kapaa action area. This displacement could alter an individual's typical foraging and rest patterns, forcing it to expend energy to search for new foraging and haul-out locations. Displacement from haul-outs or foraging habitat could lead to increased predation and boat strikes on individual monk seals if a seal is forced to search for other suitable habitat. However, evidence suggests that Hawaiian monk seals have less sensitive hearing in water than other pinnipeds, and above-water communication largely occurs through short-ranged signals (NMFS, 2014). In addition, evidence from seal behavior suggests that basking seals are surprisingly tolerant of human activity. The thick vegetation between the existing Kapaa Stream Bridge and the ocean may buffer any visual or noise disturbance to basking seals. When seals are disturbed, the likely response is to return to the water, with no long-term consequences.

Construction activities may also temporarily discourage monk seals from using the action areas as a pupping location. Because successful reproduction is important to maintain abundance of this species, conservation measures would be taken should a nursing mother and pup occur in the action area. Disturbance as a result of harassment by construction workers is not expected to occur because workers would be instructed not to intentionally interact with the species.

Indirect harm from the accidental introduction of contaminants or construction-related debris into Kapaa Stream has the potential to reduce water quality in the ocean. However, the potential for these impacts

[1] The ESA defines an action area as the area within which all of the direct and indirect impacts of the project would occur (50 CFR 402.02). In other words, it is the geographic area that would be affected by noise and light from construction and maintenance of the project, which is typically larger than the project area (see Appendix C).

would also be unlikely and discountable by ensuring appropriate BMPs are in place. These include fueling equipment away from the water, inspecting and cleaning all equipment before daily operations, training personnel for emergency spill prevention, and cleaning up.

The primary threats to monk seals (entanglement in fishing gear, impact from boats, and predation by fishermen) are not expected to increase as a result of the proposed project.

Because all impacts on the Hawaiian monk seal would be discountable or insignificant, the proposed project may affect, but is not likely to adversely affect, individuals or populations of the species.

Green Sea Turtle. Green sea turtles could use two habitats in the action areas: the nearshore waters for foraging and the sandy beach for hauling-out to rest/bask and for reproduction.

In the short term, construction activities (specifically, noise, and light) may temporarily displace sea turtle individuals from the beach or marine habitats in the action areas. This displacement could alter an individual's typical foraging and rest patterns, forcing it to expend energy to search for new foraging and basking locations. Displacement from haul-outs and foraging habitat could lead to increased predation and boat strikes on individual turtles if forced to search for suitable habitat. Because there is a thickly vegetated buffer zone between the existing Kaapa Stream Bridge and the beach, it is unlikely that basking turtles would be disturbed, should they haul-out on these beaches. If they are disturbed, the likely response would be to return to the shallow water's edge and swim away. Usually this has little consequence, unless there are predators or boats in the area.

Noise and light from construction may also temporarily discourage turtles from using the area as a nesting location. With regard to noise, the main concern would be very loud low-frequency sounds during the nesting period. Increased lighting during the breeding season evening hours is likely to dissuade turtles from emerging to lay eggs on afflicted beaches. Furthermore, artificial lighting is known to disorient hatchlings, which orient toward brighter lights after emerging from their nest. The conservation measures regarding nighttime lighting, such as restricting construction work to daylight hours and shielded lights, would minimize the impact of lighting, reducing it to an unlikely and discountable impact. Disturbance as a result of harassment by construction workers is not expected to occur because workers would be informed not to intentionally interact with the species.

Indirect harm from the accidental introduction of contaminants or construction-related debris into Kaapa Stream has the potential to reduce water quality in the ocean. However, the potential for these impacts would also be unlikely and discountable by ensuring appropriate BMPs are in place. To avoid exacerbating the incidence of fibropapilloma tumors in green sea turtles as a result of the proposed project, BMPs would be implemented to avoid increased nitrogen or other nutrient loads to nearshore waters, which are known to promote algae growth into the surrounding waters (Smith et al., 2010).

Other major causes of human related turtle mortality (impact from boat propellers, gill net entanglement, fishing activities) are not likely to increase as a result of the proposed project.

Because all impacts on green sea turtles would be discountable or insignificant with BMPs, the proposed project may affect, but is not likely to adversely affect, individuals or populations of the species.

Mitigation Measures and Best Management Plans

The following mitigation measures and BMPs will be implemented to protect the Monk Seal and Green Sea Turtle:

- Do not begin construction activities if a monk seal or turtle is in the construction area or within 150 feet of the construction area. Construction can only begin after the animal voluntarily leaves the area. If the species is noticed after work has already begun, that work may continue only if, in the best judgement of the project supervisor, that there is no way for the activity to adversely affect the animal(s).

- Remove any construction-related debris that may pose an entanglement threat to monk seals and turtles from the construction area at the end of each day and at the conclusion of the construction project.
- Do not attempt to feed, touch, ride, or otherwise intentionally interact with any monk seals or sea turtles.
- Shield lighting to reduce direct and ambient light to potential nearby beach habitat.
- Use lights with a wavelength (yellow) that are not as attractive to hatchling turtles, wherever possible.

The following BMPs to protect marine water quality are recommended by NOAA. The applicability of these BMPs to the proposed project would depend on the site-specific construction means and methods chosen.

- Develop a contingency plan to control toxic materials should be developed.
- Store appropriate materials to contain and clean potential spills at the work site, and make them readily available.
- Use pollutant-free project-related materials and equipment in the water.
- For project manager and heavy equipment operators, perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations should be postponed or halted should a leak be detected, and they should not proceed until the leak is repaired and the equipment is cleaned.
- Fuel land-based vehicles and equipment at least 50 feet away from the water, preferably over an impervious surface. Fueling of vessels should be done at approved fueling facilities.
- Minimize turbidity and siltation from project-related work and contain through the appropriate use of erosion control practices, effective silt containment devices, and curtailment of work during adverse weather and tidal/flow conditions.
- Develop a plan to prevent debris and other wastes from entering or remaining in the marine environment during the project.

3.8.6.2 Critical Habitat

The Kapaa action area falls within recently designated critical habitat for the Hawaiian monk seal. Effects on the three essential critical habitat features consist of temporary construction impacts to water quality (turbidity, siltation, pollutants, and debris) and noise and light disturbances. Impacts on water quality would be discountable because of BMP measures that would maintain water quality. Low levels of light and noise from the construction activities could impact critical habitat; however, the conservation measures on nighttime lighting listed in Section 3.8.6.1 would minimize the impact of lighting, reducing it to an unlikely and discountable impact. Noise levels elevated to the point at which monk seals behavior is disrupted would be unlikely because of the distance of the critical habitat from the construction activities and the dense vegetation that would screen the noise before it reached the critical habitat. Noise and light effects would occur in the short term, and would cease after construction is completed.

Because all impacts on the Hawaiian monk seal critical habitat would be discountable or insignificant, the proposed project is not likely to destroy or adversely modify critical habitat of the species.

3.8.6.3 Migratory Birds

SWCA observed four bird species federally protected under the MBTA during the biological survey: the migratory Pacific golden-plover and sanderling, the endangered Hawaiian gallinule, and the introduced cattle egret. Construction may temporarily displace some of these bird species, but long-term impacts are not expected. These birds (likely limited to a few individuals) are expected to find suitable foraging habitat in nearby areas. The temporary displacement of these individuals at the project site is not expected to affect their survival or the overall species' populations.

3.8.6.4 Aquatic Resources

None of the species recorded in the lower or estuarine portion of Kapaa Stream are Federally or State-listed threatened, endangered, or candidate species. However, native fishes and aquatic invertebrates have been recorded in the stream, and the potential exists for project activities to impact these animals near and downstream of the construction activities.

Because the native amphidromous species travel to and from the sea as part of their life cycle, habitat alteration near the site should be minimized to the maximum extent practicable. As such, precautions should be taken not to impede upstream and downstream movement of these species.

While the type and extent of impacts would depend on the final project design, the mitigation measures described in Sections 3.3.5 and 3.6.2 would be implemented to reduce potential impacts to aquatic resources in the area.

3.9 Archaeological Resources

3.9.1 Existing Conditions

The project sits within the ahupuaa (traditional land division) of Kapaa and Kealia, part of the ancient Puna District. Human occupation in the area ranges from pre-Contact times to the Plantation Era. Historic accounts suggest a fairly sparse population in Kapaa, with Hawaiians living in a series of small settlements along a path that is the present-day Kuhio Highway. This path traversed a narrow sand berm that created the *makai* boundary of an inland swamp. Agricultural fields were located on the *mauka* side of the swamp in valleys.

In the 1860s, a nearby ranch and dairy began operation. A decade later, the Makee Sugar Plantation was established, with a mill at Kapaa and a railroad adjacent to the present-day Kuhio Highway and Kapaa Stream Bridge. A pineapple cannery was established in Kapaa in the early 1900s and made use of the railroad infrastructure. Railroad transport shifted to truck transport in the 1950s, and a cane haul road was constructed near the project area at the intersection of Hauaala Road and Kuhio Highway.

A pedestrian survey and subsurface testing were conducted by Cultural Surveys Hawaii (CSH) archaeologists in June 2015 (see Appendix D). A 100-percent-coverage pedestrian inspection of the project area was undertaken using systematic sweeps spaced 5 meters apart. The subsurface testing program was backhoe-assisted and involved two linear test excavations measuring approximately 9 to 7 meters (29.5 to 23 feet) long and 0.6 meter (2 foot) wide on the eastern side of the bridge, along the shoulder of the highway. No archaeological resources were identified in the project area during field work or subsurface testing.

Four historic cultural resources were identified during field investigations (see Figure 3-3):

- State Inventory of Historic Properties (SIHP) #50-30-08-2278: Kapaa Stream Bridge
- SIHP #50-30-08-2279: Ditch and culvert (a possibly historic water control complex)
- SIHP #50-30-08-0789A Sub-Feature 1: Railroad bridge foundation
- SIHP #50-30-08-2075: Historic bridge foundation

All four resources are discussed in Section 3.10, Historic Architecture resources.

The project APE is outside the boundary of the St. Catherine's Cemetery historic property (SIHP #50-30-08-B002). A driveway that is informally used for access is located within the project area, but historical aerial photography indicates that the driveway was initially constructed for access to homes and was not related to the cemetery. The official vehicular entrance is located at the far southern end of the cemetery and unaffected by the proposed project.

3.9.2 Potential Impacts and Mitigation Measures

Based on the background information, it is anticipated that pre-Contact and historic cultural layers associated with occupation, habitation, and agriculture would most likely be encountered during any subsurface activities in the project area, including human burials and associated cultural layers. The

plantation era infrastructure still extant within the vicinity of the project area suggests a possibility of encountering significant plantation era cultural resources.

No further archaeological fieldwork is proposed for this project. However, archaeological monitoring will be conducted for ground disturbance and excavation activities during construction, as provided in the Final Mitigation Plan dated January 2017 (see Appendix G). If cultural resources or human remains are inadvertently discovered during construction, construction activities will cease immediately and the contractor will comply with State law and administrative rules for handling them.

3.10 Historic Architectural Resources

3.10.1 Existing Conditions

Four historic architectural resources were identified within the project area:

- SIHP #50-30-08-2278: Kapaa Stream Bridge
- SIHP #50-30-08-2279: Ditch and culvert
- SIHP #50-30-08-0789A Sub-Feature 1: Kealia Stream Bridge pier
- SIHP #50-30-08-2075: Historic bridge foundation

The Kapaa Stream Bridge (SIHP #50-30-08-2278) is a concrete T-beam bridge built in 1953. SIHP #50-30-08-2279 consists of two features: an earthen ditch remnant and a concrete culvert. It is unclear whether these features were built during the construction of the Kuhio Highway in 1953, or more recently. The Kealia Stream Bridge pier (SIHP #50-30-08-0789A Sub-Feature 1) is the only remaining portion of the historic Kealia Stream Bridge. It is a mortared basalt and concrete pier that is partially collapsed and located under a modern pedestrian bridge. SIHP #50-30-08-2075 consists of remnant abutments of the former Kealia Bridge of the old Kauai Belt Road, located between SIHP #50-30-08-2278 (Kapaa Stream Bridge) and SIHP #50-30-08-0789A Sub-Feature 1 (Kealia Stream Bridge).

Significance Assessment

The Kapaa Stream Bridge (SIHP #-2278) is included in the November 2013 Hawaii State Historic Bridge Inventory and Evaluation by MKE Associates, LLC, and Fung Associates, Inc. This inventory describes the bridge as a typical post-war bridge that falls under “program comments.” The status refers to common post-war bridges built after 1945 and covered by the Advisory Council for Historic Preservation program comments. However, program comments were never developed for Hawaii and this bridge must be analyzed on its own merits.

The Kapaa Stream Bridge was evaluated by Mason Architects as not eligible for inclusion in the Hawaii or National Register of Historic Places (See Appendix E). This bridge is a common type with other examples on Kauai. It does not contribute significantly to an understanding of the development of Kuhio Highway. Although it was designed by William Bartels, it is not a particularly distinctive example of a tee beam bridge; nor is it considered a significant achievement of its designer. The historic ditch and culvert (SIHP #-2279), a possibly historic water control complex, was evaluated for significance under §13-275-6 Criterion “d” (have yielded, or is likely to yield, information important for research on prehistory or history), and determined eligible to both the Hawaii and National Registers under Criterion D. The cultural resource possesses integrity of location, design, and materials. The AIS sufficiently documented the information content of SIHP #-2279 within the APE (see Appendix D).

SIHP #-0789A, Sub-Feature 1, consists of the remnant portions of the original Kealia Stream Bridge Crossing and part of the first railroad system constructed ca. 1891 to transport sugar cane. The bridge crossing remnants lack integrity of design, materials, workmanship, feeling, and association; therefore, SIHP #-0789A is evaluated as not a significant cultural resource as it is not eligible for listing on the National Register and Hawaii Register pursuant to 36 CFR 60.4 and HAR §13-198-8.

SIHP #-2075 consists of the remnant abutments of the former Kealia Bridge of the old Kauai Belt Road. Because the bridge remnants lack integrity of design, materials, workmanship, feeling, and association, SIHP #-2075 is evaluated as not eligible for listing on the National Register and Hawaii Register pursuant to 36 CFR 60.4 and HAR §13-198-8.

3.10.2 Potential Impacts and Mitigation Measures

Because no eligible historic architectural properties are located within the project APE, the proposed project would result in "no historic properties affected" in accordance with NHPA Section 106 and Federal regulations (36 CFR 800.5) and "no historic properties affected" in accordance with HRS §6E-8 and HAR §13-13-275-7. The SHPD concurred with these determinations by letter dated November 7, 2016 (see Appendix G).

3.11 Cultural Resources

3.11.1 Existing Conditions

Act 50, Session Laws of Hawaii, 2000, requires that a proposed project's impact on the community's cultural practices be disclosed in the environmental review process. CSH conducted a Cultural Impact Assessment (CIA) for the project (see Appendix F).

CSH conducted historic research of the project area to identify cultural resources and traditional cultural practices. Background research for the CIA yielded elements of the area's cultural history:

- Kapaa literally translates to "the solid or the closing." Kealia, the *ahupuaa* (or traditional land division) on the north of the stream, means "the salt encrustation."
- The earliest foreign accounts of life in Kealia appear on the 1830s when missionary censuses recorded a total population of 283 people, including approximately 264 adults and 18 children. The population of Kealia then declined to 143 persons with the introduction of foreign diseases accounting for the decline. Kapaa's population at this time was unknown.
- Mahele documentation provides insight into habitation and agricultural patterns. Kapaa was designated as Crown Lands, while Kealia was granted to the alii (chief) Miriam Keahikuni Kekauonohi, the granddaughter of Kamehameha, one of Liholiho's wives, and the governor of Kauai from 1842 to 1844. Seventeen land claims were made in Kealia and 15 were awarded. Six claims were awarded in the vicinity of the project area. Approximately 67 cultivation *loi* (irrigated terrace) were claimed within the *kuleana* (land claim). *Auwai* (ditch), *koele* (small land unit farmed by a tenant for the chief), and *loko* (ponds) were referenced in land claims, exemplifying the rich agricultural within the *ahupuaa*.
- The first large-scale enterprise in Kapaa and Kealia was formed in 1877 with the Makee Sugar Plantation and the Hui Kawaihau. Makee was given land to build a mill in Kapaa and agreed to grind sugar cane grown by Hui members. The mill subsequently moved to Kealia and its smokestack and landing were still present into the 1900s. Railroad construction for the plantation began in the mid-1890s. The rail line was part of a 20-mile network of plantation railroads with some segments of portable track leading into Kealia Valley.

In August 2015, CSH began an outreach effort to obtain knowledge about land use history, cultural sites, and traditional Hawaiian or other cultural practices in the vicinity of the project area. Approval of interview transcriptions and summaries from Kenneth Ponce and Puanani Rogers is pending. Other community members did not participate in full interviews, but shared their *manao* (thoughts) in writing or by phone conversation, as follows:

- On the north side of the bridge, you may find burials on both sides. On the south side, you may find burials on the *makai* side, but should have no problem on the *mauka* side. (Uncle Valentine Ako, *kupuna* [elder])

- *Mauka* of the bridge on the Kealia side is where a Native Hawaiian village was. Several burials over the years have been found there. There is an extensive sand deposit next to the river there. AMFAC used to sand mine there for their roads and disturbed burials there. DLNR Aquatic Division buried a whale back there not far off the highway. I am sure the Kapaa Stream was a source of native fish at one time, but with the urban expansion, the stream might be too polluted today. The plantation railroad ran through this area too. (Milton Chang, cultural descendant of the area)
- *'Iwi* might be "beneath sand layers due to battles, village wars, etc. that occurred during Pre-Christian contacts. Thus should these be unearthed, discovered or the like, please ensure all protocols are followed by the Kauai Burial Council and/or committees handling the proper relocation of such sacred *'iwi*." (Auntie Beverly Muraoka, *kupuna* and *kumu hula* [teacher of the traditional art of hula])

3.11.2 Potential Impacts and Mitigation Measures

Previous archaeology indicates several burials have been found in the vicinity of the project area. Community consultation also indicated knowledge of *iwi kupuna* (ancestral remains) in the vicinity of the project area. Based on these findings, there is a high possibility *iwi kupuna* may be present within the project area and that land disturbing activities during construction may inadvertently uncover burials or other cultural finds. Archaeological monitoring will be conducted during construction activities involving ground disturbance. Should burials or other cultural artifacts be encountered, all construction work will cease immediately and the appropriate agencies notified pursuant to applicable law in HRS Chapter 6E.

During the construction period, cultural practices and gathering activities near the bridge (if any) would be temporarily restricted for safety reasons. All permitted activities would resume once the improvements have been completed. The intent of the project is to improve access in a way that is respectful of historic and cultural resources.

3.12 Population and Demographic Factors

3.12.1 Existing Conditions

The project area is adjacent to the northeastern portion of Kapaa and approximately 0.4 mile south of Kealia, both residential neighborhoods. There are seven census tracts in the northern and eastern areas of Kauai, as follows:

- Census Tract 401, Hanalei
- Census Tract 402, Wailua-Anahola
- Census Tract 403, Kapaa
- Census Tract 404, Puhi-Hanamaulu
- Census Tract 405, Lihue
- Census Tract 406, Koloa-Poipu

Approximately 86 percent of the island's population resides within the seven census tracts (see Table 3-6). For this region, the U.S. Census counted a combined population of 57,589 in 2010. Compared to 2000, the region experienced a net increase of 7,849 persons, or 15.8 percent. Census Tract 402, which bounds the town of Kapaa to the north and south, maintains the largest 2010 population among the seven census tracts, with a total population of 12,607, while Census Tract 403 (which includes the town of Kapaa) indicated a 2010 population of 8,385, which is the third largest population. Census Tract 401 experienced a 23.3 percent increase in population from 2000 to 2010, the second largest increase of the seven census tracts.

TABLE 3-6
Resident Population, Selected Census Tracts, 2000 and 2010

Census Tract	Area	2000 Population	2010 Population	Net Change	Percent Change
401	Hanalei	6,348	7,828	1,480	23.3%
402	Wailua-Anahola	10,873	12,607	1,734	15.9%
403	Kapaa	7,652	8,385	733	9.6%
404	Puhi-Hanamaulu	6,860	8,740	1,880	27.4%
405	Lihue	5,162	5,943	781	15.1%
406	Koloa-Poipu	5,404	5,683	279	5.2%
Region	Northern/Eastern Kauai	49,740	57,589	7,849	15.8
County	Kauai	58,463	67,091	8,628	14.8%

Source: 2010 U.S. Census

3.12.2 Potential Impacts and Mitigation Measures

The proposed project would improve an existing intersection and replace an existing bridge, with no change in the operating or carrying capacity of either. Therefore, the project is not expected to affect the number of area residents or demographic characteristics. However, the population distribution on Kauai supports the need for a well-functioning regional highway system, where approximately 43 percent of the island's residents live to the north of Kapaa Stream Bridge or immediately to the south. Improving the transportation infrastructure would meet the mobility needs of a significant proportion of Kauai's population.

Environmental Justice. The project involves the improvement of an intersection and replacement of an existing structure that is adjacent to the northeastern portion of Kapaa and adjoining one residential property. 70 to 80 percent of the adjacent population is a minority population (USEPA, 2015). The household income-to-poverty-level ratio for 80 to 90 percent of the adjacent population was less than two (USEPA, 2015). This project would replace an aging bridge facility and construct a safer intersection; therefore, it would not have a disproportionately high or adverse impact on minority and/or low-income populations, but rather improve public infrastructure within the community.

3.13 Economic and Fiscal Resources

3.13.1 Existing Conditions

The Kauai economy has transformed over time from a plantation economy to a modern economy with a mix of tourism, diversified agriculture, construction, retail, and professional businesses. As reported in the 2013 edition of County Business Patterns, Kauai had a total of 1,986 business establishments with 25,186 paid employees and an annual payroll of more than $880 million.

The largest industries in terms of jobs are trade (retail and wholesale) and services. In 2013, hotels and food services accounted for 8,372 jobs, retail trade had 3,992, and healthcare and social assistance had 3,038. The town of Kapaa, surrounding the project area, and the Princeville resort area, located north of the project area, are significant employment centers to the Kauai economy.

The national economic recession of the late 2000s had a ripple effect on tourism and the island's primary economic engine. However, economic conditions have since improved and the unemployment rate in August 2015 for Kauai County was 3.8 percent (Ycharts, 2015), compared to a 3.5 percent unemployment

rate statewide (State of Hawaii Department of Labor and Industrial Relations, 2015) and 6.1 percent nationwide (U.S. Bureau of Labor Statistics, 2015).

3.13.2 Potential Impacts and Mitigation Measures

The preliminary cost estimate to construct the project with a roundabout is 14.1 million (in 2015 dollars). The estimate is for capital expenses only and does not include long-term costs for operations and maintenance.

3.13.2.1 Economic Impacts

The proposed project is anticipated to have several types of economic impacts. One type is construction-related employment and income. With a preliminary estimated cost of $14.1 million for the bridge replacement with intersection improvements, the project is expected to support a number of construction workers for the duration of the project. Unless the economy expands substantially and existing firms are working at full capacity, this project is more likely to help sustain existing employment and income levels than to create new jobs. However, because project funds are coming from (Federal) sources outside the region, wages paid to workers on this project (direct income), payments to suppliers (indirect income), and their subsequent expenditures (induced income) would have positive cumulative impact as monies circulate through the local economy.

3.13.2.2 Fiscal Impacts

Public funds are needed for long-term operations and maintenance of all bridge structures. In the case of the project, the existing bridge structure has exceeded its normal lifespan. Replacing the bridge would allow HDOT to extend the timeframe for major bridge repair. Design improvements would reduce ongoing maintenance costs. These changes would provide long-term fiscal benefits to HDOT.

3.14 Visual and Aesthetic Resources

3.14.1 Existing Conditions

The 2000 *Kaua'i General Plan* (General Plan) identifies important scenic resources, such as major land forms, open spaces, viewing points, and scenic drives. The Plan's Kawaihau Planning District Heritage Resources map was reviewed to identify resources that may be affected by the project. Long stretches of Kuhio Highway, including the section from Kealia to immediately south of the Kapaa Stream that encompasses the Mailihuna Road intersection and Kapaa Stream Bridge, are identified as scenic roadway corridors.

The setting of the intersection and bridge is adjacent to the moderately narrow stretches of Kealia Beach to the north of the stream and an unnamed beach to the south of the stream. The land surrounding the project area is not substantially developed. The largest developments in the vicinity are the Kapaa High School athletic fields complex and St. Catherine Cemetery, which lies immediately to the south and *mauka* of Kuhio Highway. There is one private property owner to the northwest of the intersection, and the private property runs from the intersection northwest, in between Mailihuna Road and the Kapaa Stream. Ke Ala Hele Makalae runs parallel to Kuhio Highway, approximately 70 feet downstream from the Kapaa Stream Bridge. Kealia Beach Park is located on the north side of the stream.

In general, although the project site is located near the athletic fields complex, the project area is not visible to its users because of thick intervening vegetation around the perimeter of the complex. Other than users of Kuhio Highway, the greatest number of viewers that do have views of the project area are users of the Ke Ala Hele Makalae and people visiting the beaches *makai* of the project area.

Photo 3-6 shows a view of the Kuhio Highway and Mailihuna Road intersection in 2014, with the viewpoint facing south. Photos 3-7 and 3-8 show views of the Kapaa Stream Bridge in 2014 from the northern and southern approaches, respectively. Photo 3-9 shows Ke Ala Hele Makalae *makai* of the existing Kapaa Stream Bridge, from the northern approach.

Photo 3-6. Kuhio Highway and Mailihuna Road Intersection, current condition. Photo facing south.

Photo 3-7. Kapaa Stream Bridge, current condition. Photo facing southwest from northern approach.

Photo 3-8. Kapaa Stream Bridge, current condition with the Ke Ala Hele Makalae bridge to the right. Photo facing northwest from southern approach.

Photo 3-9. Ke Ala Hele Makalae makai of the Kapaa Stream Bridge. Photo facing southeast from the Kapaa Stream Bridge.

3.14.2 Potential Impacts and Mitigation Measures

The project could result in temporary visual impacts during the construction period as a result of dust, heavy equipment at the project site, and the temporary bypass road upon which vehicles would be traveling. These impacts would be minimal and temporary.

Although the bridge component of the project would result in visual changes to the project area, as shown in the visual simulation (Photos 3-10 and 3-11), features of the new structure would be substantially similar in character to the existing structure. From the vantage point shown in the simulation, the new bridge railing would be the most noticeable visual feature, but in general, this and other design changes would be considered minimal and would not affect the quality of views toward the bridge. The new railing design would echo the character of the existing railing. Other project features such as lane-width alterations would be even less noticeable when compared to existing conditions. Frequent bridge users may notice that the bridge is wider and note the addition of the shoulders. In addition, the center support structure on the existing bridge would be removed but not replaced, resulting in a more visually open waterway under the bridge.

Photo 3-10. Existing Kapaa Stream Bridge.

Photo 3-11. Visual simulation of proposed replacement bridge.

The project would not result in a substantial change to the existing landscape or result in a noticeable change to the project viewshed, because the changes would be relatively minimal in scale and scope. Though users of the nearby bicycle and pedestrian path would have a clear view of the project site, their exposure to the site would be relatively brief, because they are transient viewers passing through the area on foot or bicycle. Beach users remain near the project site for longer periods of time compared to users of the bicycle and pedestrian path, but their attention is focused primarily to the east, toward the ocean.

Views from the bridge would not change significantly after the new bridge is constructed. Like the existing bridge, there would be a lower concrete railing topped by an upper metal railing with a combined height of 42 inches, the required height for bicyclist safety. The narrow metal railing in the upper portion would minimize obstructions in motorists' sightlines and maintain the continuity of coastal and ocean views.

Construction of the roundabout would add circular movement through the environment, a departure from what has been a linear travel experience. In the context of the project area's rural character, the roundabout may be perceived as a less urban visual element, compared to the introduction of standard traffic signals. The roundabout would also provide an opportunity for distinctive design through landscaping or other decorative features. Any decision to incorporate decorative elements would be developed during final design and based, in part, on long-term maintenance costs.

3.15 Roads and Traffic

3.15.1 Existing Conditions

Kuhio Highway connects Lihue and the northern coast of Kauai through the town of Kapaa. From Lihue to the Kapaa Stream Bridge (just north of Mailihuna Road), the roadway is classified as an urban principal arterial and is listed on the NHS (CH2M, 2015). For approximately 5 miles beyond the bridge, the roadway is classified as an urban minor arterial. Within the vicinity of Mailihuna Road, Kuhio Highway is a two-lane, undivided road with paved shoulders and posted speed limit of 40 mph.

Mailihuna Road is on the northern side of the town of Kapaa, and extends *mauka* from Kuhio Highway. It is functionally classified as a major collector and is a narrow, two-lane, undivided roadway with narrow shoulders and vegetation on both sides. Mailihuna Road has a posted speed limit of 25 mph with a posted reduction to 15 mph in the school zone near the high school and elementary school.

Makai of the intersection, an unpaved driveway provides public access to the shore from Kuhio Highway. This access crosses the shared use path, and although unmarked, is wide enough to accommodate traffic

heading to the beach and coming from the beach at the same time. The approaches from Mailihuna Road and from the shore-access driveway are stop-controlled.

In addition to public roads, a private driveway on the *mauka* side of the intersection also has access to all directions via a stop-controlled approach.

Intersection traffic volumes reach three distinct peaks during the day (CH2M, 2015). The first is the morning peak hour of traffic, which occurred between 7:15 am and 8:15 am; the second, a midday peak hour, occurred between 11:15 am and 12:15 pm. The afternoon/evening peak hour occurred between 2 pm and 3 pm. Based on known peak-hour volumes and assuming these volumes can be expanded to estimate AADT volume, the daily traffic volume on Kuhio Highway is approximately 12,600 vehicles.

3.15.2 Potential Impacts and Mitigation Measures

3.15.2.1 Development in the State Highway Right-of-Way

The project would affect approximately 290 feet of Mailihuna Road and 1,500 feet of Kuhio Highway. The majority of the intersection improvement and replacement bridge would be constructed and operated within the right-of-way of the existing highway facility. The proposed project, therefore, would predominantly occur in areas previously impacted by construction of the original structure in 1953 and subsequent highway upgrades and repairs. The roundabout would require additional right-of-way of approximately 0.3 acre (or 13,100 square feet).

3.15.2.2 Traffic Impacts

Short-term Construction-related Impacts. Construction is expected to last for approximately 22 months. A temporary bypass road—including a temporary stream crossing—would be constructed to maintain traffic flow during construction. The temporary bypass would be located adjacent to, and *makai* of, the existing bridge. It would consist of two travel lanes, thereby accommodating travel in both directions. The bypass is being design for a travel speed of 25 mph (compared to the highway speed of 40 mph). While motorists would be required to slow down, which may result in slightly longer travel times, traffic flow is not expected to be impeded for a majority of construction. Construction related activities are not anticipated to impact use of the shared use path located *makai* of the replacement bridge.

Periodically, construction activities may necessitate restricting the road to one lane of travel. Road use would be maintained by implementing an alternate one-way movement of travel through the construction area. Provisions would be made for this alternate one-way movement using such methods as flagger control, a flag transfer, a pilot car, or traffic control signals. Provisions would be made to restrict these alternate one-way movement of travel conditions to the extent possible.

Full closure of Kuhio Highway may be needed for brief periods during certain construction activities. Provisions would be made to restrict these full closures to when road use is minimal, such as nighttime periods, although no nighttime work would occur between September 15 and December 15, the seabird peak fallout period. Provisions would also be made to restrict these full closures to the extent possible. The public would be notified well in advance of all closures. Emergency and incident responders would be allowed access through the construction area at all times. The Ke Ala Hele Makalae would remain open to continue to allow for foot and bicycle traffic through the project area.

Traffic Control. A traffic management plan would be developed by the contractor before construction and submitted to HDOT for review and approval. Components of the traffic plan may include public notices and electronic signboards to inform motorists about the work schedule and to help with travel planning. All temporary signs, signals, and pavement markings would conform to standards contained in the FHWA *Manual on Uniform Traffic Control Devices* (2009 as revised; adopted 2010).

Emergency Services. Kuhio Highway is a lifeline transportation facility for police, fire, and emergency medical services. The project includes a temporary bypass road adjacent to the existing structure designed to carry conventional loads, thereby resulting in no adverse impact to emergency services access. The

contractor would be required to make provisions for emergency access and maintain full access during non-working hours. Emergency services, including police, fire, and ambulance services, would be notified before implementation of any required roadway closures or detours.

Relationship to Other Transportation Improvement Projects. The HDOT STIP report for 2015 through 2018 identified sidewalk construction on Mailihuna Road as part of its Kawaihau Road (Route 5860), Hauaala Road (Route 5865), and Mailihuna Road (Route 5870) Complete Street and Safety Improvements project. Based on the STIP, planning, design, and construction activities are anticipated to be performed from 2017 to 2018.

3.16 Parks and Recreation Facilities

3.16.1 Beaches and Parks

Kealia Beach Park is a 7.24-acre County of Kauai park located *makai* of the project area and immediately north of the Kapaa Stream. Its facilities include small pavilions with picnic tables, a lifeguard station, and a vehicle parking lot for beachgoers. Kealia Beach Park was not acquired or developed with Land and Water Conservation Funds.

A beach area owned by the State of Hawaii and not maintained is located immediately *makai* of the project area and south of the Kapaa Stream Bridge. While no facilities were observed in this area, unpaved roads used by vehicular traffic for beach and pedestrian access are present.

3.16.2 Ke Ala Hele Makalae – Kauai Shared Use Path

Ke Ala Hele Makalae is a shared use path for walkers, joggers, skaters, bicyclists, and people using other forms of non-motorized transportation (County of Kauai, 2013). Currently covering a distance of more than 11 miles from Lydgate Park to Ahihi Point (Donkey Beach), it is a transportation corridor connecting a string of beach parks and providing access to swimming, surfing and fishing spots along the coast. Opened in 2009, the portion of the shared use path in the project area ranges from approximately 60 to 70 feet *makai* of Kuhio Highway and crosses the Kapaa Stream and provides access to Kealia Beach Park.

3.16.3 Potential Impacts and Mitigation Measures

The temporary bypass road, constructed to maintain traffic flow, would be located between the existing bridge and the bike/pedestrian bridge. The southern and northern approaches of the temporary bypass road both cross into the northern portions of the unnamed beach and Kealia Beach Park. However, the southern approach would not impact beach use or access, while the northern approach would temporarily impact approximately 3,263 square feet of the southernmost area at Kealia Beach Park. This area consists primarily of an area cordoned off by boulders and an approximately 625-square-foot area of the southernmost portion of the parking lot. Once the bridge replacement is complete, the temporary bypass would be removed and the area would be restored to preconstruction status. Construction related activities are not anticipated to impact use of Ke Ala Hele Makalae located *makai* of the replacement bridge. There would be no long-term impacts to park and recreation facilities (see also Section 4.1.3).

The unpaved vehicular road along the coast, accessed at the Mailihuna Road intersection, would not be affected in the long-term. Traffic volumes are understood to be relatively low and vehicles would continue to use the proposed roundabout. Currently, the beach access road crosses the shared use path, in a manner similar to driveways crossing the path through more urban sections of its alignment. With construction of a roundabout, the distance between the shared use path and the intersection would be reduced to approximately 20 feet because this configuration will occupy more *makai* land. This means less queuing space for vehicles waiting to enter the roundabout. This condition would be mitigated by the low volume of traffic using this leg of the intersection; however, signage may be needed to prevent vehicles from stopping on the path itself. Alternatives will be explored in final design to accommodate vehicles using the beach access road, while minimizing right-of-way impacts.

3.17 Solid Waste Management

3.17.1 Existing Conditions

The County of Kauai, Department of Public Works, Solid Waste Division operates the primary refuse collection system. The County is responsible for regulating the disposal of all solid waste with the exception of hazardous materials. Refuse collection crews operate out of three baseyards on Kauai.

The island has a single landfill located in Kekaha. The 34-acre Kekaha Landfill Phase II site opened in 1993 and was allowed by the State to have its height limit increased to 60 feet in 1998. The facility also serves as a drop-off point for segregated recoverable waste (such as cardboard, newspaper, glass, and aluminum cans). The landfill, with the addition of the vertical expansion, is projected to reach capacity in several years. The County has identified a landfill site north of Lihue, *makai* of Maalo Road, and is currently preparing an EIS.

3.17.2 Potential Impacts and Mitigation Measures

Solid-waste impacts are expected to be short-term and related to construction activities. Removing the existing bridge would generate debris consisting primarily of concrete slabs, asphalt pavement, and metal guardrails, posts, and fastenings. The contractor would be required to dispose of or recycle all materials at approved sites and with proper handling during transport. The contractor would be required to have a waste disposal plan that specifies proper removal and disposal of all debris from the project area. Project-related waste material would be a small proportion of the island-wide total, and is not expected to have a significant impact on the County's solid waste facilities.

3.18 Electrical and Telecommunications Systems

3.18.1 Electrical System

KIUC is the local electrical utility company, providing electrical power to service customers on the island. Pole-mounted overhead double 57-kilovolt lines on the *mauka* side of Kuhio Highway run parallel to the Kapaa Stream Bridge. In addition, a 12-kilovolt line runs parallel and attached to the *mauka* side of the bridge.

3.18.2 Telecommunications Systems

Hawaiian Telcom provides land-line telecommunications service to customers on the island. Telecommunication lines are attached to the *mauka* side of the bridge and underground parallel to the highway.

Oceanic Time Warner Cable provides wired cable television service to customers on the island. The cable television distribution system is attached to the *mauka* side of the bridge and underground parallel to the highway.

Sandwich Isles Communications has an existing fiber optic ductline system that runs parallel and attached to the *mauka* side of the bridge and underground parallel to the highway.

3.18.3 Highway Lighting and Power

There are highway lights located along the *mauka* side of Kuhio Highway.

3.18.4 Potential Impacts and Mitigation Measures

Utilities would remain functional during construction but there may be temporary and short-term interruptions, limited to the extent possible. Further coordination with utility owners would occur before and during construction. Temporary impacts on utilities would be negligible because service would be maintained during construction, and there would be no long-term adverse impacts related to utilities.

3.19 Secondary and Cumulative Impacts

Replacement of Kapaa Stream Bridge is a self-contained project. It would not change the capacity of the existing highway and it is not expected to have secondary impacts such as population change, land

development, or effects on public facilities and services. The County of Kauai has proposed sidewalk construction activities on Mailihuna Road as part of its Kawaihau Road (Route 5860), Hauaala Road (Route 5865), and Mailihuna Road (Route 5870) Complete Street and Safety Improvements project. The subject project is independent of any future County roadway projects, and would neither compel nor preclude their implementation. There would be no cumulative adverse impacts to resources such as water quality and wildlife from this project interacting with the proposed County project. Any nearby safety improvements would be a beneficial cumulative impact when coupled with the safety improvements associated with the intersection improvements proposed in this EA.

3.20 References

AECOS. 2002. *Aquatic Resources Survey for the Kapaa-Kealia Bikepath, Kaua'i.* Prepared for the Kapaa-Kealia Bike and Pedestrian Path Final Environmental Assessment.

American Association of State Highway and Transportation Officials (AASHTO). 2014. *AASHTO LRFD Bridge Design Specifications, Customary U.S. Units, 7th Edition, with 2015 Interim Revisions.*

County of Kauai. *Kauai County Code*.

County of Kauai Planning Department. 2000. *The Kaua'i General Plan*.

Federal Highway Administration (FHWA). 2006. *FHWA Roadway Construction Noise Model User's Guide*. Final Report FHWA-HEP-05-054DOT-VNTSC-FHWA-05-01. January.

Federal Highway Administration (FHWA). 2009. *Manual on Uniform Traffic Control Devices for Streets and Highways*. 2009 Edition with Revision Numbers 1 and 2.

Federal Highway Administration (FHWA). 2014. *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects – FP-14 U.S. Customary/Metric Units, United States Department of Transportation.*

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens. 1972. *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.L. Chen, P.S. Chu, J.K. Eischeid, and D.M. Delparte. 2013 Online Rainfall Atlas of Hawaii. Bull. Amer. Meteor. Soc. 94, 313-316, doi: 10.1175/BAMS-D-11-00228.1. Available at http://rainfall.geography.hawaii.edu. Accessed on June 2, 2015.

Kollmorgen Instruments Corporation. 1998. Munsell Soil Color Charts revised washable edition. Baltimore: Kollmorgen Instruments Corporation.

Lichvar, R.W. 2012. *The National Wetland Plant List*. ERDC/CRREL TR-12-11. Hanover, New Hampshire: U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory. Available at: http://acwc.sdp.sirsi.net/client/search/asset:asset?t:ac=$N/1012381. Accessed on December 10, 2012.

Lichvar, R., N. Melvin, M. Butterwick, and W. Kirchner. 2012. National Wetland Plant List indicator rating definitions. ERDC/CRREL TN-12-1. Hanover, New Hampshire: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Available at: http://www.fws.gov/wetlands/documents/ National-Wetland-Plant-List-Indicator-Rating-Definitions.pdf. Accessed on December 10, 2012.

MKE Associates, LLC, and Fung Associates, Inc. 2013. *Hawaii State Historic Bridge Inventory and Evaluation*. Prepared for State of Hawaii, Department of Transportation, Highways Division. November.

National Marine Fisheries Service (NMFS). 2014. Revision of Critical Habitat for Hawaiian Monk Seals, Final Biological Report. Available at: http://www.fpir.noaa.gov/Library/PRD/Hawaiian%20monk%20seal/Hawaiian_monk_seal_Biological_Report_for_Critical_Habitat.pdf. Accessed August 22, 2015.

National Oceanic and Atmospheric Administration (NOAA). 2015 http://tsunami.coast.noaa.gov/?address=mailihuna+road. Accessed November 3, 2015.

National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Weather Forecast Office Honolulu 2014. Hydrology in Hawaii. Available at http://www.prh.noaa.gov./hnl/hydro/pages/sept14sum.php. Accessed on November 21, 2014.

National Oceanic and Atmospheric Administration (NOAA) Fisheries. 2015. Http://www.fisheries.noaa.gov/pr/pdfs/criticalhabitat/hawaiianmonkseal.pdf. Accessed on October 28, 2015.

Natural Resources Conservation Service (NRCS). 2010. *Field Indicators of Hydric Soils in the United States, Version 7.0*, edited by L.M. Vasilas, G.W. Hurt, and C.V. Noble. U.S. Department of Agriculture, Natural Resources Conservation Service, in cooperation with the National Technical Committee for Hydric Soils.

Natural Resources Conservation Service (NRCS). 2012. Hydric Soils State Lists, Hydric Soils of Hawai'i. Available at: ftp://ftpfc.sc.egov.usda.gov/NSSC/Hydric_Soils/Lists/hydric_soils.xlsx. Accessed on December 7, 2012.

Parham, J.E., G.R. Higashi, E.K. Lapp, D.G.K. Kuamoo, R.T. Nishimoto, S. Hau, J.M. Fitzsimons, D.A. Polhemus, and W.S. Devick. 2008. Atlas of Hawaiian Watersheds and Their Aquatic Resources. Copyrighted website published by the Hawaii Division of Aquatic Resources, Department of Land and Natural Resources. Available at: www.hawaiiwatershedatlas.com. Accessed on June 2, 2015.

Smith, J.E., C.L. Hunter, and C.M. Smith. 2010. The effects of top-down versus bottom-up control on benthic coral reef community structure. *Oecologia* 163.2:497–507.

State of Hawaii Department of Health (HDOH). 2015. *State of Hawaii Annual Summary 2014 Air Quality Data*. September.

State of Hawaii Department of Health (HDOH). 2014a. *2014 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)*. Clean Water Branch. September 2.

State of Hawaii Department of Health (HDOH). 2014b. Water Quality Standards Map of the Island of Kauai. Available at http://health.hawaii.gov/cwb/files/2013/05/WQS_20140708_kauai_Reduced.pdf Accessed August 21, 2015.

State of Hawaii Department of Health (HDOH). 2014c. Amendment and Compilation of Chapter 11-54 Hawaii Administrative Rules. Available at http://health.hawaii.gov/cwb/files/2013/04/Clean_Water_Branch_HAR_11-54_20141115.pdf. November 15, 2014. Accessed August 21, 2015.

State of Hawaii Department of Labor and Industrial Relations. 2015. Hawaii's Unemployment Rate Drops to 3.5% in August. Available online at http://labor.hawaii.gov/blog/news/hawaiis-unemployment-rate-drops-to-3-5-in-august/. September 17. Accessed on October 9, 2015.

SWCA Environmental Consultants (SWCA). 2016. *Biological Resource Assessment for the Kapaa Bridge Project.* July.

U.S. Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetlands Delineation Manual*. Wetlands Research Program Technical Y-87-1. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

U.S. Army Corps of Engineers (USACE). 2012. *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Hawaii and Pacific Island Region* Version 2.0, edited by J.F. Berkowitz, J.S. Wakeley, R.W. Lichvar, and C.V. Nobel. ERDC/EL TR-12-5. Vicksburg, MS: US. Army Engineer Research and Development Center.

U.S. Army Corps of Engineers (USACE). 2014. U.S. Army Corps of Engineers 2014 National Wetland Plant List Home v3.2 – 2014 State Lists. Available at: http://rsgisias.crrel.usace.army.mil/NWPL/. Accessed on September 27, 2014.

U.S. Bureau of Labor Statistics. 2015. Regional and State Employment and Unemployment Summary. Available online at http://data.bls.gov/timeseries/LNS14000000. Accessed on October 9, 2015.

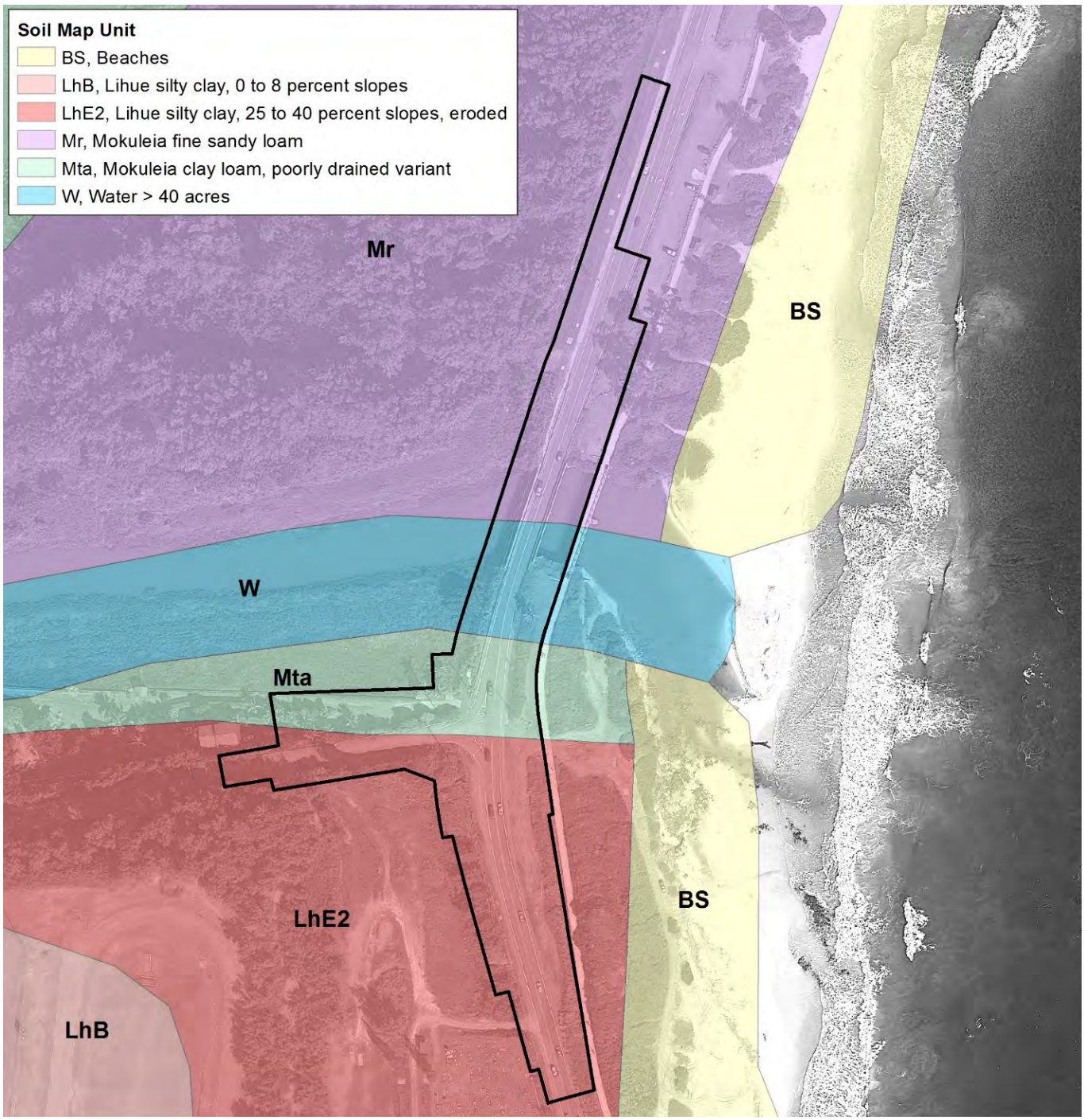
U.S. Department of Commerce Census Bureau. American Fact Finder. General Demographic Characteristics (2010 Census, DP-1). Available at http://factfinder.census.gov/ Accessed on June 4, 2015.

U.S. Department of Commerce Census Bureau. ZIP Code Business Patterns. Available at http://www.census.gov/econ/cbp/ Accessed on July 2, 2015

U.S. Environmental Protection Agency (USEPA). 2015. *Environmental Justice Screening and Mapping Tool*. Available at http://www2.epa.gov/ejscreen. Accessed on September 17, 2015.

U.S. Geographic Survey. National Hydrography Dataset. Available at http://nhd.usgs.gov/.

Ycharts. 2015. Kauai County, HI Unemployment Rate. Available online at https://ycharts.com/indicators/kauai_county_hi_unemployment_rate. Accessed on October 9, 2015.



Base Map: Google Earth Aerial Imagery (2013)
Data Sources: CSH, SSURGO

North

0 200 400
Approximate scale in feet

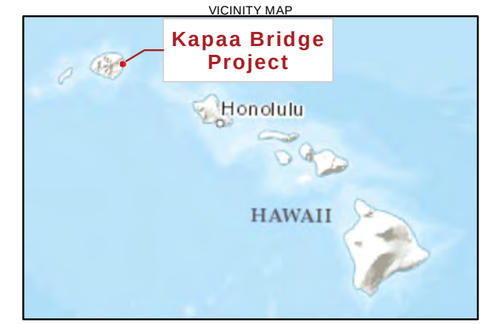
LEGEND

Survey Area

FIGURE 3-1
Soils
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

CH2MHILL.

VICINITY MAP



LEGEND

- Permanent Impact Area
- Temporary Impact Area
- High Tide Line
- Waters of the U.S. and Flow Directions

Wetland Type

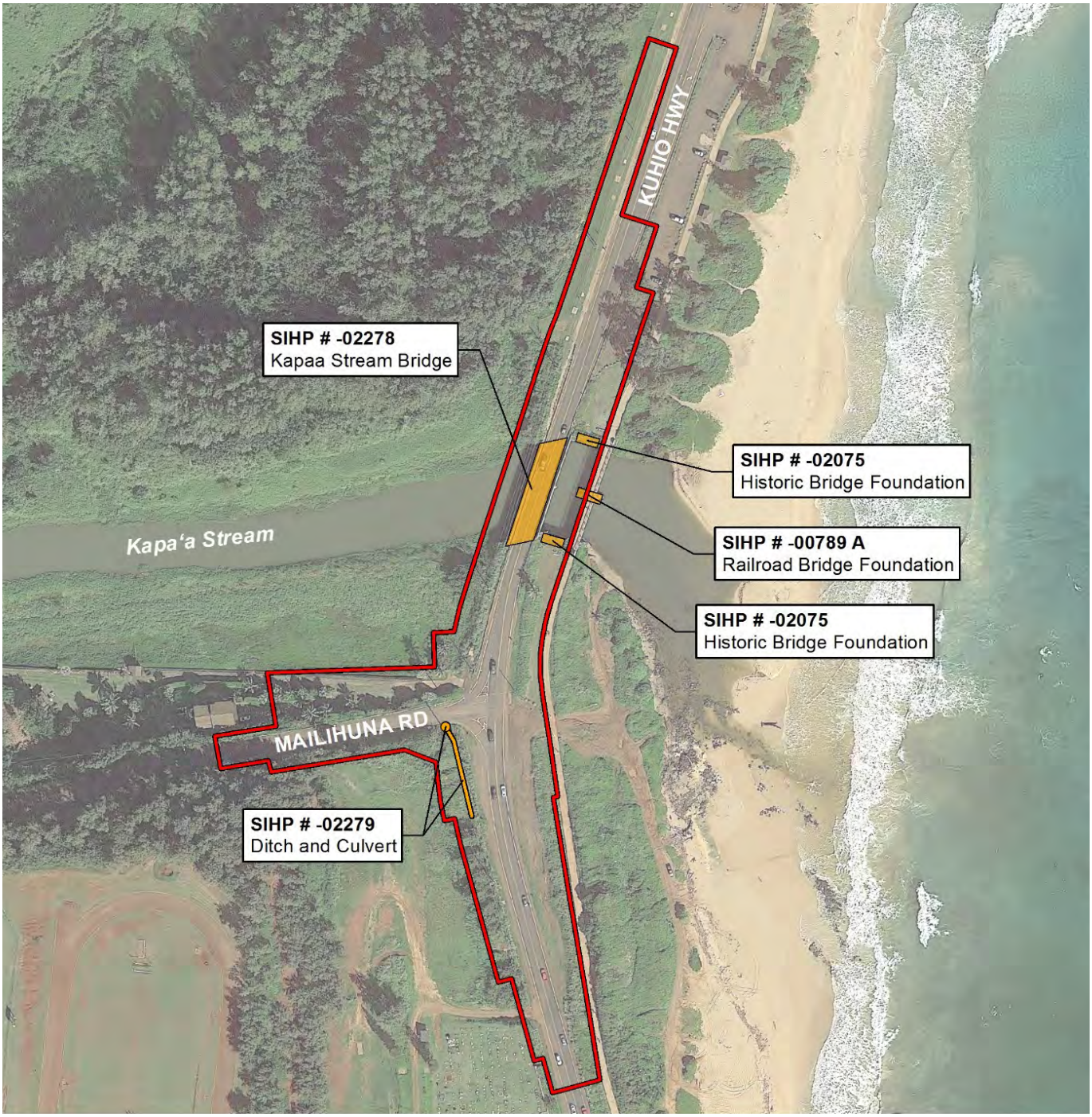
- R1
- PEM
- Ditch

Notes:
1. High-Res Imagery Source: Google Earth 12/16/2013
2. Low-Res Imagery Source: Digital Globe 08/26/2011
3. Imagery base map is not orthorectified; therefore project features may not properly align with the imagery.

N

0 200 400
Feet

FIGURE 3-2
Waters of the U.S.
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation



Base Map: USGS Topographic Map, Kapaa (1996) Quadrangle
Data Sources: CSH

North

0 100 200
Approximate scale in feet

LEGEND

Project Area

Cultural Resources

FIGURE 3-3
Cultural Resources
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

CH2MHILL.

Existing Bridge

Visual Simulation

FIGURE 3-4
Visual Simulation
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

SECTION 4

Relationships to Plans, Policies, and Controls

The plans and policies relating to the proposed project range from broad program guidance to land use controls governing the project site. Construction of the proposed improvements is consistent with the various plans, policies, and regulatory controls, as discussed herein.

4.1 Federal

The proposed project would include the use of Federal funds through the FHWA. As a result, the proposed project needs to be consistent with various Federal statutory and regulatory requirements.

4.1.1 National Environmental Policy Act of 1970

The proposed project would be partially funded by the FHWA; this Federal funding subjects the project to the environmental review requirements of NEPA, prescribed under 40 CFR Parts 1500 – 1508 (Council on Environmental Quality [CEQ]). The FHWA serves as the lead Federal agency, or Administrator, responsible for the project's compliance with NEPA documentation and processing requirements, as provided in 23 CFR 771, Environmental Impact and Related Procedures.

The NEPA determination of significant impacts is related to the type of NEPA document and process that would be required to comply with NEPA for a proposed project. There are three types of environmental documents under NEPA: (1) Categorical Exclusions (CE), (2) EA, and (3) EIS. A CE is appropriate where there are no significant impacts on the environment, an EA when the significance of the effects are not clearly established, and an EIS when the action would have a significant impact on the environment.

Significance is defined in the CEQ regulations (40 CFR 1508.27). A significant impact is assessed in terms of an impact's context and intensity. Context refers to the environment and the level of relative abundance of resources in the project area. Intensity refers to the specific impact, or how much of the resource(s) would be used or affected by the project.

FHWA Regulations for Environmental Impact and Related Procedures (23 CFR 771.117(a)) specify that CEs are actions that meet the definition contained in 40 CFR 1508.4 and act as follows:

- Do not induce significant impacts to planned growth or land use for the area
- Do not require the relocation of significant numbers of people
- Do not have a significant impact on any natural, cultural, recreational, historic, or other resources
- Do not involve significant air, noise, or water quality impacts
- Do not have significant impacts on travel patterns
- Do not otherwise, either individually or cumulatively, have any significant impacts

Specific actions that meet these criteria are listed in 23 CFR 771.117(c); this list includes "bridge rehabilitation, construction or replacement or construction of grade separation to replace existing at-grade railroad crossings" (23 CFR 771.117(c)(28)).

Consistent with their regulations for NEPA compliance, and as further justified by the findings of this EA, the FHWA anticipates issuing a CE.

4.1.2 Section 106 of the National Historic Preservation Act of 1966

The NHPA of 1966, as amended (PL 89-665, codified as 16 United States Code [U.S.C.] 470), recognizes the nation's historic heritage and establishes a national policy for the preservation of historic properties as well as the National Register of Historic Places. Section 106 of the NHPA of 1966 (16 U.S.C. 470f) requires that Federal agencies consider the effects of their projects on historic properties and allow the Advisory Council on Historic Preservation a reasonable opportunity to comment on such projects. Use of Federal funds sets

forth the need for Section 106 consultation. The purpose of the Section 106 consultation process is to evaluate the potential for effects on existing historic sites, if any, resulting from the project. Findings relating to historic properties are discussed in Sections 3.9 and 3.10 of this document.

The Section 106 review process encompasses good faith effort in ascertaining the existence and location of historic properties near and within the project site, establishing an APE of the project, identifying whether a potential for adverse effects on historic properties by the project exists, and developing a reasonable and acceptable resolution in the monitoring and treatment of any historic sites that is agreed upon by the agency, the SHPO (DLNR SHPD), and consulting government agencies, community associations, and Native Hawaiian organizations and families. Documentation of Section 106 consultation may be found in Appendix G.

Meetings were held with the SHPD on September 9 and December 10, 2014, and March 12, 2015, to provide an overview of the CFLHD Hawaii Bridge Program, discuss the general parameters for historic preservation review, and discuss 30 percent design plans and possible effects and mitigation. The Section 106 consultation process was formally initiated by letters to potential consulting parties dated August 26, 2015. A legal notice requesting public input to the Section 106 process was published in *The Garden Island* on August 29, 2015. Members of the project planning team discussed the project with the Kauai Historic Preservation Review Commission at its regularly scheduled meeting on October 1, 2015. The Historic Hawaii Foundation provided comments by letter dated December 9, 2015 related to the eligibility status of Kapaa Stream Bridge and potential impacts on St. Catherine's Cemetery.

In a letter to the SHPD dated July 8, 2016, the FHWA conveyed its conclusion that historic properties identified in the APE are not eligible for the National or Hawaii Registers of Historic Places (see also Section 3.9 and 3.10). The FHWA determined that the undertaking will result in a No Historic Properties Affected finding in accordance with Federal regulations (36 CFR 800.5) and in a No Effect finding in accordance with HAR §13-13-275-7 because no resources are eligible for the National or Hawaii Registers (see Appendix G).

4.1.3 Section 4(f) of the Department of Transportation Act of 1966

Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303 and 23 U.S.C. 138) permits the use of publicly-owned park land, recreational area, wildlife and waterfowl refuge, or land of an historic site of National, State, or local significance for a transportation project only if (1) there is no prudent and feasible alternative to using that land and (2) the project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use. The purpose of Section 4(f) requirements is to preserve significant parkland recreation areas, refuges, and historic and archaeological sites by limiting the circumstances where such land can be used for transportation projects.

There are two 4(f) properties adjacent to the project area: Kealia Beach Park and Ke Ala Hele Makalae (the coastal shared use path).

Kealia Beach Park. The project would not permanently incorporate land from 7.2-acre Kealia Beach Park. The construction of a temporary bypass road would result in temporary occupancy of approximately 3,260 square feet of the southern-most area at the beach park. However, the Section 4(f) statute notes that if the five conditions in 23 CFR 774.13(d), commonly known as the "temporary occupation exception criteria" are met, then the temporary occupancy is considered minimal so as to not constitute a use within the meaning of Section 4(f).

(i) Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land

Finding**:** The total timeline for construction of the proposed action is estimated at approximately 19 months. The temporary occupancy of Kealia Beach Park because of project actions is anticipated to be up to 15 months in duration. There would be no change in ownership of the parkland that would be temporarily occupied.

(ii) Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) resource are minimal

Finding: The temporary bypass would be located adjacent to the existing bridge, where its alignment would cross an area cordoned off by boulders and approximately 625 square feet at the southern-most end of the parking lot. There would be no changes to Kealia Beach Park as a result of temporary project construction actions.

(iii) There are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis

Finding: There would be no permanent adverse impacts to Kealia Beach Park resulting from project construction. Vehicular, bicyclist, and pedestrian access to the beach park during construction would be maintained and there would be no change to user experience of the beach itself. Project construction would not interfere with the activities at the beach park either on a permanent or temporary basis.

(iv) The land being used must be fully restored, i.e., the resource must be returned to a condition that is at least as good as it was prior to the project

Finding: Once the bridge replacement is complete, the temporary bypass would be removed completely and the area of Kealia Beach Park to be used during construction would be restored.

(v) There must be documented agreement of the appropriate Federal, State, or local officials having jurisdiction over the resource regarding the above conditions

Finding: The FHWA will coordinate with the Kauai Department of Parks and Recreation and anticipates a Temporary Occupancy Exception/No Section 4(f) Use letter to serve as documented agreement by the County that regulatory conditions have been met and that temporary occupancy of Kealia Beach Park would not constitute a “use” as defined under Section 4(f).

Ke Ala Hele Makalae. The shared use path is for walkers, joggers, bicyclists, and other people using non-motorized forms of transportation and is classified as a linear park administered by the Kauai Department of Parks and Recreation. The proposed project is not anticipated to impact the shared use path. The path itself would not be physically impacted, nor would there be any interference to the use of the path during construction or any project-related permanent or temporary proximity impacts.

4.1.4 Uniform Relocation Assistance and Real Property Acquisition Act of 1970

The Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (42 U.S.C. 4601 et seq. and 49 CFR 24), as amended by the Uniform Relocation Act Amendments of 1987 is commonly referred to as the Uniform Act. The Uniform Act provides important protection and assistance for people affected by Federally funded projects. The law was enacted by Congress to ensure that people whose real property is acquired, or who move as a result of projects receiving Federal funds, would be treated equitably and would receive assistance in moving from the property they occupy.

This project would be constructed mostly within the existing right-of-way, but would also require temporary and permanent easements, and potentially additional right-of-way (see Section 2.3.4). Displacement of persons or businesses is not anticipated. All applicable and appropriate measures would be followed in acquiring property interests consistent with the requirements of the Uniform Act.

4.1.5 Endangered Species Act of 1973

The ESA of 1973 (16 U.S.C. 1531-1544) establishes a process for identifying and listing threatened and endangered species. It requires Federal agencies to carry out programs for the conservation of Federally listed endangered and threatened plants and wildlife and designated critical habitats for such species, and prohibits actions by Federal agencies that would likely jeopardize the continued existence of those species

or result in the destruction or adverse modification of designated critical habitat. Section 7 of the ESA requires consultations with Federal wildlife management agencies, such as the USFWS and NMFS.

To begin consultations with agencies that have authority over protected species, the FHWA-CFLHD sent a letter requesting a list of threatened and endangered species, candidate species, plants and animals of concern, and critical habitats in the vicinity of the proposed bridge project. USFWS responded by letter dated December 22, 2014, providing the location-specific biological information and recommended standard BMPs. Discussions continued through meetings held with the USACE on December 11, 2014, and with USFWS, USEPA, NOAA-NMFS, and DLNR-DAR on March 13, 2015.

A Biological Assessment was prepared for the Kapaa Stream Bridge project (see Appendix C) and submitted to USFWS and NMFS for review as part of the informal Section 7 consultation process. Concurrence with the determinations made by FHWA-CFLHD were received from NMFS (by letter dated October 24, 2016) and USFWS (by letter dated November 15, 2016).

4.1.6 Migratory Bird Treaty Act

The MBTA of 1918, as amended (16 U.S.C. 760), protects migratory wild birds found in the U.S. The MBTA makes it unlawful to pursue, hunt, take, capture, possess, sell, purchase, barter, import, export, or transport any migratory bird or any part, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the U.S. Department of the Interior.

Consultation related to the MBTA is occurring as part of ongoing coordination with resource agencies.

4.1.7 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661-667e) calls for conservation of wildlife resources related to projects where the “waters of any stream or other body of water” are impounded, diverted, or modified by any agency under a Federal permit or license. The law requires consultation with USFWS and State fish and wildlife agencies for the purpose of “preventing loss of and damage to wildlife resources.”

Consultation related to the FWCA is occurring as part of ongoing coordination with resource agencies.

4.1.8 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Steven Fishery Conservation and Management Act (16 U.S.C. 1802 et seq.) promotes the conservation and management of U.S. fishery resources and ensures sustainable domestic fisheries in Federal waters. The act requires compliance with regional fisheries management plans developed by the Western Pacific Regional Fisheries Management Council and managed by the NMFS. Four types of Essential Fish Habitat (EFH) occur in the project area: bottomfish and seamount groundfish, pelagic fishery, crustaceans, and coral reef ecosystems.

An EFH assessment was prepared for the project. Although Kapaa Stream is not within an actual mapped and designated EFH area, the assessment was conducted because of potential impacts to Kealia Bay, where the four types of EFH exist. The project is not expected to result in any measurable changes in habitat in the ocean offshore of the mouth of the stream. Minor temporary increases in sedimentation and turbidity in the stream are expected to occur during the installation and removal of isolation and confinement structures, such as cofferdams. The assessment concluded that the project May Affect, But is Not Likely to Adversely Affect designated EFH. Identified adverse effects would be minimal and temporary, and likely limited to the stream during any phase of construction. The consultation process with NMFS is ongoing.

4.1.9 Clean Water Act of 1972

The Federal Water Pollution Control Act (FWPCA) (33 U.S.C. §§1251 et seq.), is the Federal statute regulating the discharge of water pollution. Congress revised the FWPCA into the CWA in 1972. The goals of the CWA include *(1) “the discharge of pollution into the navigable waters be eliminated by 1985,” (2) “the discharge of toxic pollutants in toxic amounts be prohibited,” and (3) an “interim goal of water quality which provides for*

the protection and propagation of fish, shellfish, and wildlife and... recreation in and on the water... by July 1, 1983" (CWA §101a, 33 U.S.C. §1251a).

Section 404 of the CWA regulates discharge of dredge and fill material in the WOUS, including wetlands, and requires a Department of the Army permit from USACE. Section 401 of the CWA directs States to establish water quality certification (WQC) programs; in Hawaii, the Section 401 WQC is administered by HDOH, Clean Water Branch. As described in Section 3.3, the project would involve work within WOUS at Kapaa Stream Bridge. It is anticipated that this work would result in discharge, as regulated under Section 404 and 401 of the CWA. A Section 404 Department of the Army Permit and Section 401 WQC will be pursued as appropriate.

Section 402 of the CWA requires an NPDES permit for point source discharges, including storm water discharges associated with construction activities. The permit is required for construction activities that disturb 1 acre or more and discharge storm water from the project site to WOUS. NPDES permits are issued by the HDOH Clean Water Branch.

4.1.10 Rivers and Harbors Act of 1899

Because work would occur over a stream influenced by tidal action, the project would fall under the jurisdiction of Sections 9 and 10 of the Rivers and Harbors Act of 1899. The USACE and the USCG entered into a Memorandum of Agreement (MOA) in 1973 that described the responsibilities of each agency relative to permitting bridge work within water influenced by the ebb and flow of tides. The MOA stipulated that the USCG is responsible for issuing bridge permits approving the location and plans of all new bridges, modification of existing bridges, international bridges, and causeways in or over navigable waterways of the United States influenced by tidal action that may affect the movement of shipping. The USACE maintains authority to regulate dredge and fill activities associated with the bridge's construction. However, if the bridge construction is authorized under Section 9 of the Rivers and Harbors Act, a Nationwide Permit 15 (USCG Approved Bridges) would apply.

By email dated December 18, 2015, USCG District 14, Waterways Management, stated that no action or permit is required from the U.S. Coast Guard for this project.

4.1.11 Clean Air Act of 1970

The CAA and amendments (42 U.S.C. §7401 et seq.) is the comprehensive Federal law that regulates air emissions from area, stationary, and mobile sources. This law authorizes USEPA to establish National Ambient Air Quality Standards to protect public health and the environment.

Over the long term, this project would not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that can cause an increase in emissions impacts. As such, this project would generate minimal air quality impacts for the CAA criteria pollutants and would not be linked with any special MSAT concerns (see Section 3.2.2).

4.1.12 Floodplain Management, Executive Orders 11988 and 12148

Executive Order 11988, Floodplain Management, dated May 24, 1977 requires Federal agencies to take action to reduce the risk of flood loss, restore the natural and beneficial values of floodplains, and minimize the impacts of floods on human safety, health, and welfare. Executive Order 12148, July 20, 1979, amended Executive Order 11988. The main feature of the amendment added that agencies with responsibilities for Federal real estate properties and facilities shall, at a minimum, require the construction of Federal structures and facilities to be in accordance with the criteria of the National Flood Insurance Program.

Kapaa Stream Bridge is located within a floodplain mapped by FEMA designated as a Zone AE floodplain. As described in Section 3.4.4, the proposed bridge would meet or exceed the flow capacity of the existing bridge and would not cause a rise in the 100-year water surface elevation. Compliance with these executive orders would be documented by the FHWA as part of the NEPA CE.

4.1.13 Protection of Wetlands, Executive Order 11990

Executive Order 11990, Protection of Wetlands, dated 1977 requires Federal agencies to avoid, preserve, or mitigate effects of new construction projects on lands that have been designated wetlands.

A study to determine and delineate wetlands and other Waters of the U.S. identified approximately 1.98 acres of tidal, non-wetland WOUS (Riverine, Tidal [R1]) below the high tide line, and 0.31 acre of tidal wetlands (Palustrine Emergent Marsh [PEM], Tidal).

4.1.14 Invasive Species, Executive Order 13112

Executive Order 13112 (64 Federal Register 6183), issued in 1999, requires Federal agencies to implement policies to minimize the spread of invasive species. Federal agencies cannot authorize, fund, or carry out action(s) that are likely to cause or promote the introduction or spread of invasive species, unless it has been determined (1) that the benefits of the action outweigh the potential harm caused by invasive species and (2) that all feasible and prudent measures to minimize risk of harm will be taken. Vegetation disturbed during construction would be replaced as part of the project and the spread of noxious weeds would be managed through the implementation of BMPs as part of the project.

4.1.15 Coastal Zone Management Act (16 U.S.C. §1456(C)(1))

In 1972, the U.S. Congress enacted the Federal Coastal Zone Management Act to ensure that each Federal agency undertaking an activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs. Each Federal agency carrying out an activity subject to the Act shall provide a consistency determination to the relevant State agency designated under Section 1455(d)(6) of this title at the earliest practicable time.

The State administers the enforcement of this Act, and therefore, the discussion of the project's consistency with CZM objectives is discussed in Section 4.2.4.

4.1.16 Environmental Justice, Executive Order 12898

Executive Order 12898, Environmental Justice, was signed on February 11, 1994. The intent of Executive Order 12898 (full title: Federal Actions to Address Environmental Justice to Minority and Low-income Populations) is to avoid disproportionately high adverse human health or environmental effects of projects on minority and low-income populations. Executive Order 12898 also requires Federal agencies to ensure that minority and low-income communities have adequate access to public information related to health and the environment.

Guidance from CEQ indicate minority populations should be identified where either (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage of the general population. Minorities are defined as members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. U.S. Census Bureau poverty status data are used to identify low-income populations. Poverty status is assigned to individuals and families whose income is below the poverty threshold appropriate for that person's family size and composition, as reported in the U.S. Census Bureau, 2010 Census of Population and Housing.

The intersection and bridge are located adjacent to the northeastern portion of Kapaa and adjoining two private properties. The construction and operation of the proposed project would not result in adverse effects on minority and low-income populations.

4.1.17 Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d and 49 CFR 21) establishes that no person shall, on the grounds of race, color, or national origin be excluded from participation in, be denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance.

The project would adhere to the Title VI requirements.

4.1.18 Section 6(f) of the Land and Water Conservation Act

Section 6(f) of the Land and Water Conservation Act requires that the conversion of lands or facilities acquired with the Land and Water Conservation Fund be coordinated with the Department of the Interior, usually entailing replacement in kind (36 CFR 59.3).

There are no 6(f) properties in the project area.

4.2 State of Hawaii

4.2.1 Hawaii State Plan

The Hawaii State Plan, HRS Chapter 226, is the umbrella document in the statewide planning system. It serves as written guide for the long-range development of the State by describing the desired future for the residents of Hawaii and providing a set of goals, objectives, and policies that are intended to shape the general direction of public and private development.

The proposed project supports and is consistent with the State Plan objectives and policies presented in Table 4-1.

TABLE 4-1
Compliance with Hawaii State Plan

Objective	Compliance with Specific Objectives and Policies
Population	This theme is not applicable to the project.
Economy (In General)	The project would be in compliance with this theme, particularly the following objectives and policies: (a)(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited. As described in Section 3, the proposed project is anticipated to provide economic benefits by supporting a number of construction workers for the duration of the project (approximately 22 months).
Economy (Agriculture)	This theme is not applicable to the project.
Economy (Visitor Industry)	This theme is not applicable to the project.
Economy (Federal Expenditures)	The project would be in compliance with this theme, particularly the following objectives and policies: (b)(3) Promote the development of federally supported activities in Hawaii that respect statewide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawaii's environment. (b)(6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawaii. This project involves the use of Federal funds as needed to improve Kapaa Stream Bridge and the Mailihuna Road intersection such that they remain safe and functional components of the regional transportation system for highway users. It is being implemented through a partnership between HDOT and FHWA-CFLHD.
Economy (Potential Growth and Innovative Activities)	This theme is not applicable to the project.
Economy (Information Industry)	This theme is not applicable to the project.

TABLE 4-1
Compliance with Hawaii State Plan

Objective	Compliance with Specific Objectives and Policies
Physical Environment (Land-based, Shoreline, and Marine Resources)	The project would be in compliance with this theme, particularly the following objectives and policies: (b)(3) Take into account the physical attributes of areas when planning and designing activities and facilities. (b)(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawaii. The project would provide replacement bridges that substantially coincide with the footprint of the existing bridges, and is not expected to have a significant adverse effect on important natural resources. Biological surveys of the project area found no threatened or endangered plant or animal species; BMPs would be implemented to avoid and minimize contact with special-status species that could potentially occur in the project area.
Physical Environment (Scenic, Natural Beauty, and Historic Resources)	The project would be in compliance with this theme, particularly the following objectives and policies: (a)(1) Promote the preservation and restoration of significant natural and historic resources. (a)(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features. (a)(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage. Although the proposed project would result in visual changes to the site as a result of replacing the existing bridge and constructing a roundabout intersection, the visual changes would not adversely affect the quality of coastal views. The project would not result in a substantial change to the existing landscape or in a noticeable change to the project viewshed. The existing Kapaa Stream Bridge is not eligible for listing in the National and State Registers of Historic Places.
Physical Environment (Land, Air, and Water Quality)	The project would be in compliance with this theme, particularly the following objectives and policies: (a)(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources. (b)(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters. (b)(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, and other natural or man-induced hazards and disasters. The project would result in short-term, construction-related impacts (noise, dust, and erosion), but implementation of BMPs would minimize the effects to the environment.
Facility Systems (In General)	The project would be in compliance with this theme, particularly the following objectives and policies: (a) Planning for the State’s facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives. (b)(1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans. HDOT’s mission is to provide a safe, efficient, and accessible transportation system for the public. HDOT recognizes the need for replacement of the existing Kapaa Stream Bridge. The replacement bridge will be designed using current AASHTO guidelines that have been adopted by HDOT for planning and engineering for highway projects in Hawaii.
Facility Systems (Solid and Liquid Wastes)	This theme is not applicable to the project.
Facility Systems (Water)	This theme is not applicable to the project.

TABLE 4-1
Compliance with Hawaii State Plan

Objective	Compliance with Specific Objectives and Policies
Facility Systems (Transportation)	The project would be in compliance with this theme, particularly the following objectives and policies: (a)(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods. (a)(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State. (b)(2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives. (b)(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties. (b)(6) Encourage transportation systems that serve to accommodate present and future development needs of communities. (b)(10) Encourage the design and the development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment. The project is a partnership between HDOT and FHWA-CFLHD, and would improve Kapaa Stream Bridge and the Mailihuna Road intersection such that they remain safe and functional components of the regional transportation system for highway users. The replacement bridges will be designed using current AASHTO guidelines that have been adopted by HDOT for planning and engineering for highway projects in Hawaii.
Facility Systems (Energy)	This theme is not applicable to the project.
Facility Systems (Telecommunications)	This theme is not applicable to the project.
Socio-cultural Advancement (Housing, Health, Education, Social Services, Leisure, Individual Rights and Personal Well-being, Culture, Public Safety, and Government)	These themes are not applicable to the project.

4.2.2 State Functional Plans

The Hawaii State Plan directs appropriate State agencies to prepare functional plans for their respective program areas. There are twelve State Functional Plans that serve as the primary implementing vehicle for the goals, objectives, and policies of the State Plan.

State Transportation Functional Plan

The 1991 State Transportation Functional Plan identified the four most critical issues of transportation: congestion, economic development, funding, and education. Objectives, policies, and implementing actions were identified for each issue. The following objectives and policies apply to the project:

> *Objective I.A. Expansion of the transportation system.*
>
> *Policy I.A.1. Increase transportation capacity and modernize transportation infrastructure in accordance with existing master plans and laws requiring accessibility for people with disabilities.*
>
> *Policy I.A.2. Improve regional mobility in areas of the State experiencing rapid urban growth and road congestion.*

Discussion: The mission of HDOT is to provide a safe, efficient, and accessible transportation system for the public. HDOT recognizes the need to provide for the replacement of the existing bridge and improve the intersection. The replacement bridge would be designed using current AASHTO guidelines that have been adopted by HDOT for planning and engineering for highway projects in Hawaii.

4.2.3 State Land Use Law

The State Land Use Commission, pursuant to HRS Chapters 205 and 205A and HAR Chapter 15-15 is empowered to classify all lands in the State into one of four land use districts: Urban, Rural, Agricultural, and Conservation. The lands surrounding the project limits are classified in the Agricultural, Conservation and Urban Districts (Figure 4-1). No change in land use classification would be needed.

4.2.4 Coastal Zone Management Program and Federal Consistency Determination

In 1977, Hawaii enacted HRS Chapter 205A, Hawaii Coastal Zone Management Program, to carry out the State's CZM policies and regulations under the Federal Coastal Zone Management Act (see Section 4.1.14). The CZM area encompasses the entire state, including all marine waters seaward, to the extent of the State's police power and management authority, including the 12-mile U.S. territorial sea and all archipelagic waters.

As a result, the project is within the CZM area and subject to being consistent with the CZM program objectives and policies. The Hawaii Coastal Zone Management Program focuses on ten policy objectives:

- Recreational Resources. To provide coastal recreational opportunities accessible to the public and protect coastal resources uniquely suited for recreational activities that cannot be provided elsewhere.

  Discussion: A segment of the temporary bypass road during construction activities would be located on the southwestern-most corner of the Kealia Beach Park Parking Lot. The bypass road would exist only temporarily during construction activities and would not affect access to coastal recreation opportunities. A coastal access road on the *makai* side of the Mailihuna Road intersection is anticipated to remain open for public use during construction and would remain accessible via the reconfigured intersection following project completion.

- Historic Resources. To protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

  Discussion: Studies focusing on archaeological, historic, and cultural perspectives were conducted for this project, but no significant historic resources were found within the APE that would be adversely affected by the proposed construction. The project will adhere to State laws and regulations if there are inadvertent cultural finds during construction,

- Scenic and Open Space Resources. To protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

  Discussion: The project would be developed to be visually compatible with the surrounding environment. The project is located along the shoreline and on a roadway identified as a scenic corridor in the Kauai General Plan. The intersection improvements and replacement bridge would not negatively impact coastal scenic resources and is not anticipated to obstruct views of the rural landscape.

- Coastal Ecosystems. To protect valuable coastal ecosystems, including reefs, from disruption and to minimize adverse impacts on all coastal ecosystems.

  Discussion: BMPs would be implemented during the project construction to avoid impacts to coastal ecosystems.

- Economic Uses. To provide public or private facilities and improvements important to the State's economy in suitable locations; and ensure that coastal dependent development such as harbors and ports, energy facilities, and visitor facilities are located, designed, and constructed to minimize adverse impacts in the coastal zone area.

  Discussion: By creating a safer intersection at Mailihuna Road for all users, the project would result in improved access to public beach facilities and the Ke Ala Hele Makalae.

- Coastal Hazards. To reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

  Discussion: The project is located in a tsunami evacuation zone and floodplain, and is subject to coastal hazards. Intersection improvements and the replacement of the bridge would correct deficiencies that currently exist relative to coastal hazards.

- Managing Development. To improve the development review process, communication, and public participation in the management of coastal resources and hazards.

  Discussion: A general public announcement was made regarding the FHWA-CFLHD Hawaii Bridge Program, which covers a number of State highway bridges on three islands. A public information meeting was held on September 17, 2015. There will be additional opportunity for the public to review and comment on the project through the HRS Chapter 343 environmental review process.

- Public Participation. To stimulate public awareness, education, and participation in coastal management; and maintain a public advisory body to identify coastal management problems and provide policy advice and assistance to the CZM program.

  Discussion: The project does not contain a public participation component for programmatic coastal management issues. Project-specific input will be elicited through the HRS Chapter 343 EA process.

- Beach Protection. To protect beaches for public use and recreation; and locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion.

  Discussion: The project is located along the coastline and a segment of the temporary bypass road would be located on the southwestern portion of the Kealia Beach Park Parking Lot. The bypass road would be temporarily located there during construction activities only and would not affect the use of Kauai beaches for public recreation.

- Marine Resources. To implement the State's ocean resources management plan.

  Discussion: Although the project is not expected to affect marine resources directly, BMPs would be implemented to prevent degradation of the aquatic environment, including the quality of state marine waters.

Other key areas of the CZM program include (1) a permit system to control development within an SMA managed by each County and the Office of Planning (see Section 4.3.3) and (2) a Shoreline Setback Area that serves as a buffer against coastal hazards and erosion and protects view-planes and marine and coastal resources. Finally, a Federal Consistency provision requires that Federal activities, permits, and financial assistance be consistent with the Hawaii CZM program.

The proposed project is located within the County of Kauai SMA. The proposed project involves the placement, construction, or removal of materials near the coastline but does not have the potential to significantly affect coastal resources. The proposed project is consistent with the CZM objectives that are relevant to preserving the existing highway infrastructure. FHWA will submit their Federal Consistency determination to the Office of Planning for their concurrence.

4.2.5 Act 50, Cultural Practices

Hawaii Act 50 (2000) sought to "promote and protect cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups" and requires the proposing agency/applicant under HRS Chapter 343 to consider cultural practices in a CIA. The CIA is being completed for the proposed project in compliance with this requirement, as discussed in Section 3.11. A Draft CIA is included in Appendix F of this document.

4.2.6 HRS Chapter 6E

HRS Chapter 6E and HAR 13-275 through 284 delineate the State's historic preservation review process. §6E-8 requires that the SHPD be given an opportunity to review the effect that a State or County project may have on historic properties. The proposed project may not commence until the SHPD has given written concurrence. Consultation pursuant to HRS 6E occurred in tandem with Section 106 (see Section 4.1.2) and concluded with a concurrence letter dated November 7, 2016. Documentation related to the HRS Chapter 6E consultation process is included in Appendix G.

4.3 County of Kauai

4.3.1 Kauai General Plan

The General Plan is a policy document for the long-range comprehensive development of the County of Kauai and also provides the direction for future growth through 2020. The current General Plan was adopted in November 2000.

Chapter 7 of the General Plan relates to Public Facilities and Services. Relevant to this project is the following policy:

> *7.1.5(a) Use General Plan policies concerning rural character, preservation of historic and scenic resources, and scenic roadway corridors as part of the criteria for long-range highway planning and design. The goal of efficient movement of through traffic should be weighted against community goals and policies relating to community character, livability, and natural beauty.*

Discussion: The existing intersection would be improved and the bridge would be replaced with minimal footprint impacts. The design acknowledges the project's rural setting and the importance of maintaining a natural environment, while also meeting current standards for intersection operational efficiency, bridge engineering, and overall functionality.

4.3.2 Zoning

County zoning provides the most detailed set of regulations affecting land development before actual construction. Zoning is typically limited to lands classified in the Urban District under the State land use system. The project areas is classified within the Urban Centers and Park Districts. As shown in Figure 4-2 and based on available real property information, the project site is comprised of Agriculture, Residential, and Open Districts. The Agriculture District establishes means by which land needs for existing and potential agriculture can be both protected and accommodated, while providing the opportunity for a wider range of the population to become involved in agriculture by allowing the creation of a reasonable supply of various sized parcels. The Open District was established to create and maintain an adequate and functional amount of predominantly open land to provide for the recreational and aesthetic needs of the community or to provide for the effective functioning of land, air, water, plant, and animal systems or communities. The Residential District regulates the number of people living in a given area by specifying the maximum allowable number of dwelling units that may be developed on any given parcel of land.

The proposed project would not require any zoning change.

4.3.3 Special Management Area

The CZM objectives and policies (HRS Section 205A-2) were developed to preserve, protect and, where possible, restore the natural resources of Hawaii's coastal zone. Any development within the SMA boundary requires a SMA Use permit that is administered by the County. The permitting process provides a heightened level of public scrutiny to ensure consistency with SMA objectives.

The County's SMA boundary is near the centerline of the Kuhio Highway right-of-way (Figure 4-3). Therefore, construction activity that extends onto the *makai* side of the boundary is expected to require an SMA permit.

4.4 Transportation Plans

4.4.1 Statewide Federal-aid Highways 2035 Transportation Plan

The 2035 Transportation Plan was developed as the State's first long-range multimodal transportation for Federal-aid highways. The plan is intended to guide transportation decisions by identifying goals and solutions within a context of limited resources. It addresses future land transportation needs for motorists, freight, transit, bicyclists, and pedestrians based on land use and socioeconomic projections through 2035.

The long-range plan was developed with participation from a wide spectrum of community members and stakeholders. A series of meetings were held to develop and refine the goal statements. Specifically relevant to this project are the goals provided in Table 4-2, which focus on prudent and timely investments in the transportation (highway) system to maintain functionality and longevity.

TABLE 4-2
Statewide Land Transportation Goals and Objectives

Goals	Objectives	Federal Planning Factor
3.1 Manage transportation assets and optimize investments	Plan and implement maintenance, resurfacing, rehabilitation, and reconstruction to optimize existing transportation system improvements and spending.	Aligns to MAP-21 Performance Goal: Infrastructure Condition—maintain highway infrastructure assets in state of good repair MAP-21, signed into law on July 6, 2012 (P.L. 112-141) is the current Federal authorization for surface transportation whose full title is Moving Ahead for Progress in the 21st Century Act.
3.2 Maintain safe, efficient, complete transportation system for the long term	Plan and implement existing system improvements to effectively sustain the overall transportation system's safe, efficient, and complete operations.	

4.4.2 Federal-Aid Highways 2035 Transportation Plan for the District of Kauai

Each district in the state has a Regional Federal-aid Highways 2035 Transportation Plan or regional long-range land transportation plan. The purpose of this plan is to provide a basis for making multimodal land transportation decisions over a 20-year time frame. As a regional plan, it serves as an interface between overarching state transportation issues and island-specific needs and funding priorities.

The *Federal-Aid Highways 2035 Transportation Plan for the District of Kauai* includes a list of potential solutions that were evaluated based on ability to address local needs and deficiencies. Recommendations include improvements to Kuhio Highway such as widening to six lanes from Hanamaulu Road in Lihue to the south terminus of Wailua Road in Kapaa, and performing a Kapaa circulation and access study.

While specific project descriptions of the recommends are not yet developed, the recommendations indicate the importance of ongoing investment along Kuhio Highway.

4.4.3 Bike Plan Hawaii

Bike Plan Hawaii is the statewide bicycle master plan, which serves as a blueprint for accommodating and promoting bicycle use. The latest update was completed in September 2003. The plan contains objectives

and implementing actions, an inventory of existing facilities, and proposals to expand the network of bicycle facilities.

In 2003, the Bike Plan indicated activities were underway for a bikeway path parallel to Kuhio Highway. The Ke Ala Hele Makalae multi-use path is a result of these activities. The proposed project is consistent with bicycle planning because improvements to the intersection increases access to Ke Ala Hele Makalae for those *mauka* of Kuhio Highway and the replacement bridge would not affect the use of Ke Ala Hele Makalae by bicyclists.

4.4.4 Statewide Pedestrian Master Plan

The *Statewide Pedestrian Master Plan*, completed in May 2013, provides a comprehensive strategy for improving pedestrian safety, mobility, and accessibility along state highways. The plan identifies and prioritizes pedestrian infrastructure projects throughout the state.

The pedestrian plan identifies Kapaa as one of the two most urbanized areas of Kauai, with destinations attracting pedestrians to its shopping areas, libraries, schools, local parks, and community centers. The pedestrian plan did not identify the project area as a specific area of concern for foot traffic. However, the plan noted that pedestrians from *mauka* residential neighborhoods have difficulty accessing the Ke Ala Hele Makalae located *makai* of Kuhio Highway. The intersection improvement of the project would improve safety for pedestrians who face this situation.

4.4.5 Complete Streets Policy

In 2009, the State Legislature passed Act 54 which states that “the [state] department of transportation and the county transportation departments shall adopt a complete streets policy that seeks to reasonably accommodate convenient access and mobility for all users of the public highways within their respective jurisdictions…including pedestrians, bicyclists, transit users, motorists, and persons of all ages and ability.” The policy applies to all new construction, reconstruction, and maintenance of highways, roads, streets, ways, and lanes located within urban, suburban and rural areas, with exceptions for reasons, such as safety, costs excessively disproportionate to the need or probable use, sparseness of population, availability of other means, and safety of users that may be placed at unacceptable risk. In 2010, the Kauai County Council adopted a resolution establishing a complete streets policy for the county. The first stated resolution is as follows:

> …all roadway projects, including design, planning, reconstruction, rehabilitation, maintenance or operations in the County of Kauai be balanced and equitable in accommodating *and encouraging* travel by bicyclists, public transportation vehicles and their passengers, and pedestrians of all ages and abilities in accordance with Complete Street principles (italics added).

The Kauai resolution also provides exemptions for circumstances similar to the State law. What makes Kauai County’s policy different from State law is the call for transportation improvements to not only accommodate, but also *encourage*, non-motorized and transit modes of travel.

The proposed project would provide an integrated set of safety and efficiency improvements oriented to motorists, bicyclists, and pedestrians which is consistent with the Complete Streets policy.

4.4.6 Kauai Multimodal Land Transportation Plan

The Kauai Multimodal Land Transportation Plan (MLTP) was adopted by the Kauai County Council on January 30, 2013 in an effort to achieve a balanced multimodal transportation system on the island. Among its purposes, the plan seeks to blend land use planning with transportation system development and to guide the prioritization and allocation of transportation funding and projects.

The pedestrian program in the MLTP establishes a pedestrian mode share of 12 percent of all person trips in the target year of 2035 (up from 5 percent of trips in 2010). The MLTP states the following:

> Much of Kauai is not walkable today and it will not be possible to rectify that problem quickly everywhere. Therefore the pedestrian program focuses on making improvements to the most crucial pedestrian places in Kauai, including the town core areas where densities are higher, along corridors connecting schools and parks that are frequently use by children, and on streets that provide access to bus stops.

The proposed project supports the MLTP's emphasis on developing infrastructure for all modes of transportation, including safety improvements for pedestrians and bicyclists at the Mailihuna Road intersection and the *mauka* walkway.

4.5 References

County of Kauai. 2013. *Kauai Multimodal Land Transportation Plan*. Adopted by Kauai County Council January 30; prepared by Charlier Associates, Inc.

County of Kauai. 2000. *The Kaua'i General Plan*.

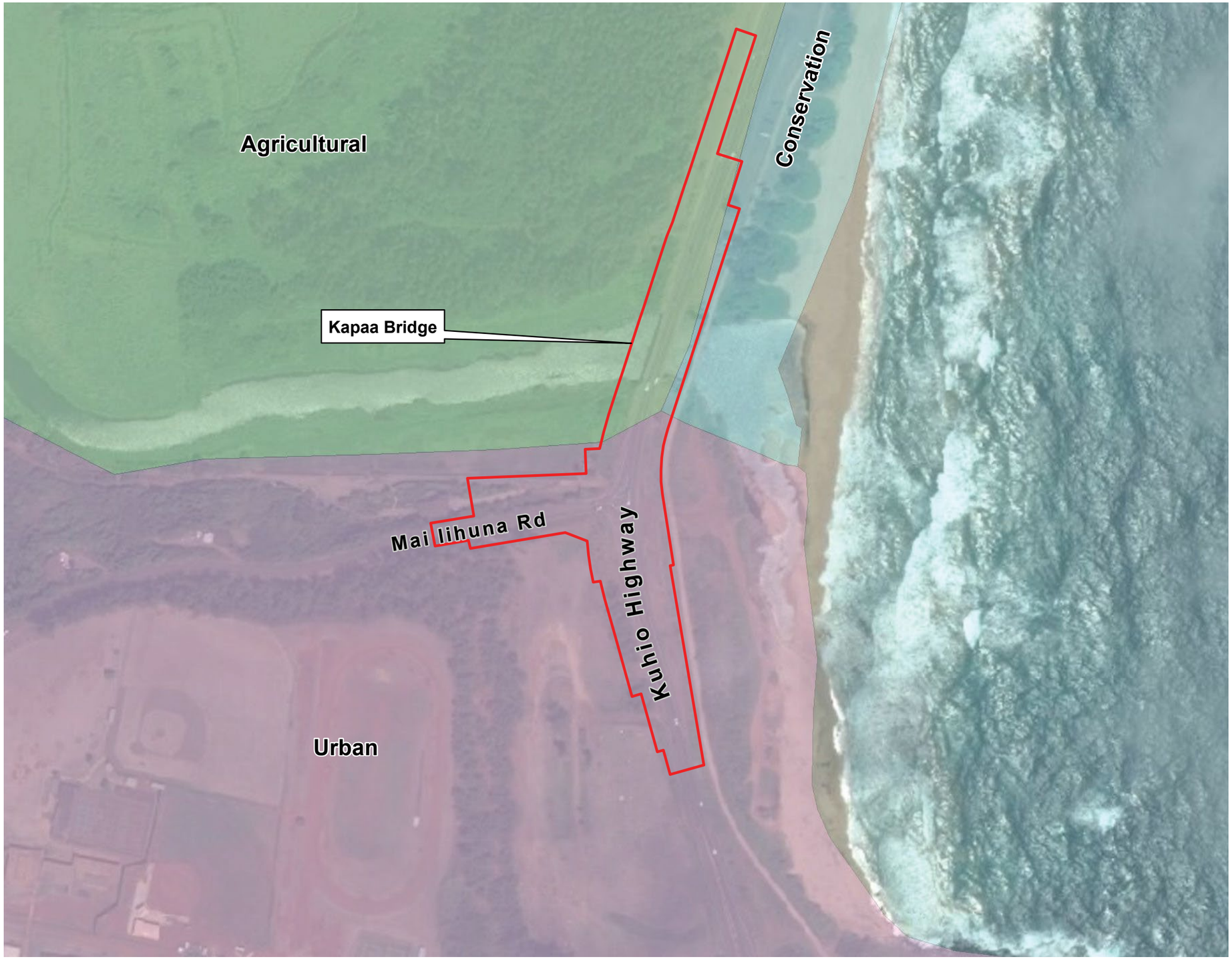
State of Hawaii Department of Transportation (HDOT). 1991 *Transportation; State Functional Plan*.

State of Hawaii Department of Transportation (HDOT). 2003. *Bike Plan Hawaii.*

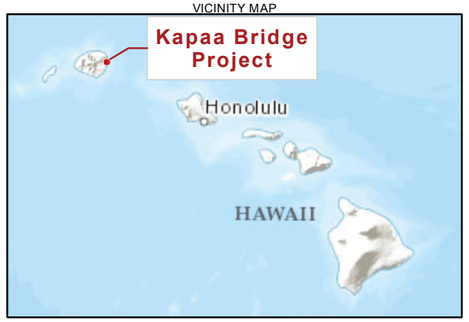
State of Hawaii Department of Transportation (HDOT). 2013. *Statewide Pedestrian Master Plan*.

State of Hawaii Department of Transportation (HDOT). 2014. *Federal-Aid Highways 2035 Transportation Plan for the District of Kauai*. June.

U.S. Department of Commerce Census Bureau. American Fact Finder. General Demographic Characteristics (2010 Census, DP-1). Available at http://factfinder.census.gov/ Accessed on June 4, 2015.



VICINITY MAP



LEGEND

- Project Area
- Agricultural Land Use District
- Conservation Land Use District
- Urban Land Use District

Notes:
1. High-Res Imagery Source: Google Earth 12/16/2013
2. Low-Res Imagery Source: Digital Globe 08/26/2011
3. Imagery base map is not orthorectified; therefore project features may not properly align with the imagery.

N

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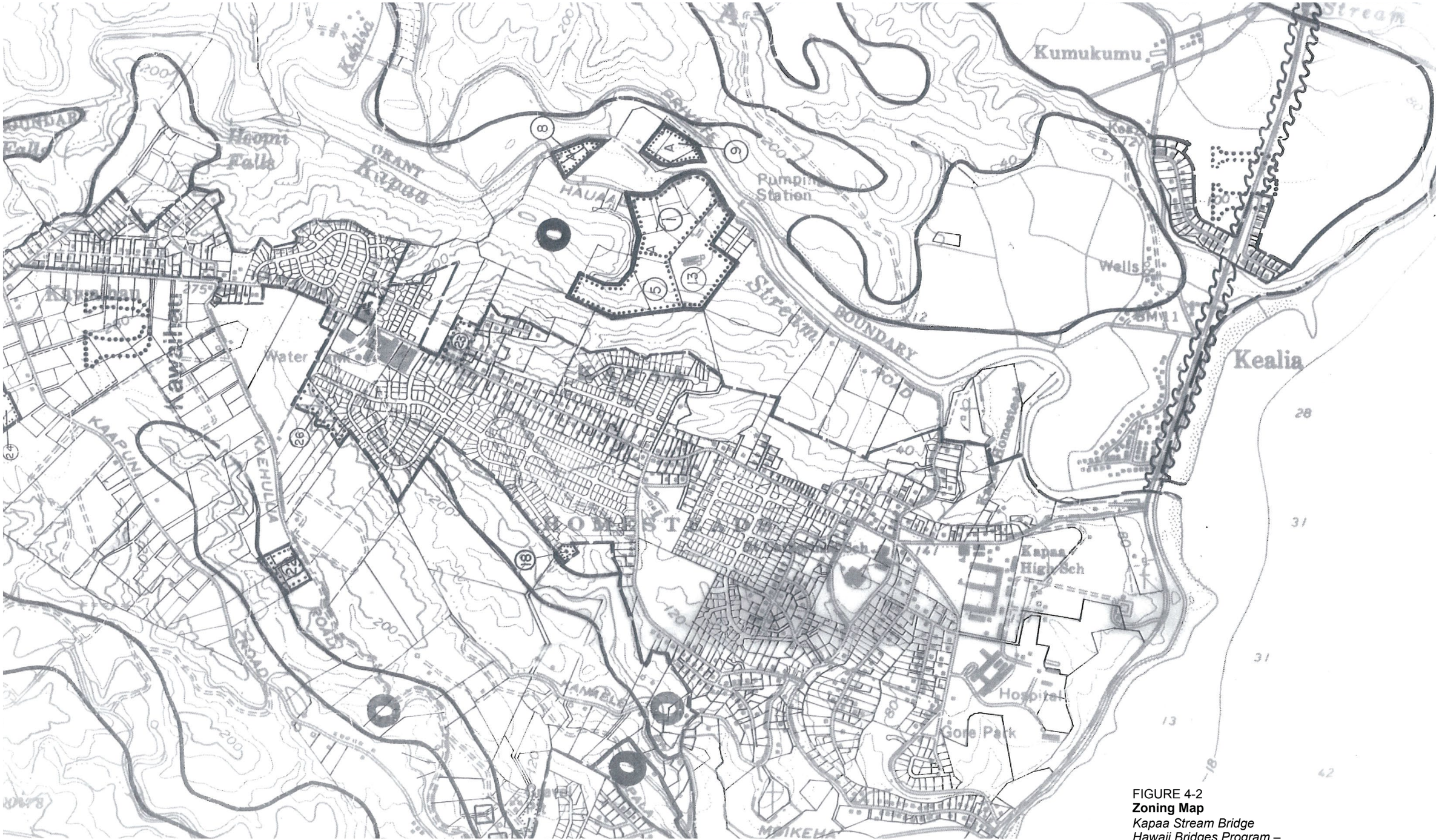
Feet

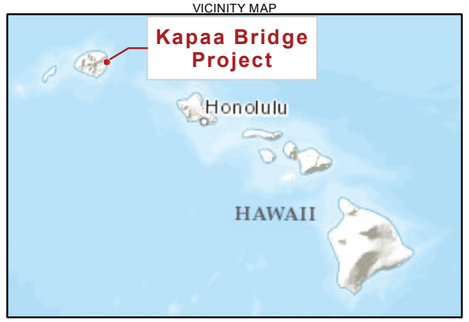
FIGURE 4-1
State Land Use District Boundaries
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation



Source: Kauai County, 2015

FIGURE 4-2
Zoning Map
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

VICINITY MAP



LEGEND

Project Area

Special Management Area

Notes:
1. High-Res Imagery Source: Google Earth 12/16/2013
2. Low-Res Imagery Source: Digital Globe 08/26/2011
3. Imagery base map is not orthorectified; therefore project features may not properly align with the imagery.

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FIGURE 4-3
Special Management Area (SMA)
Kapaa Stream Bridge
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

CH2MHILL

TR0603151048RDD 122_HDOT_SMAmap_Fig4-3_V5.ai cmont 04/20/16

SECTION 5

Findings and Reasons Supporting the Determination

This EA has found that the potential for impacts associated with the proposed project would not be significant, or would be mitigated to less than significant levels. Potential environmental impacts are generally temporary, occurring during construction, and are not expected to adversely impact the long-term environmental quality of the area surrounding the proposed project. This section summarizes the significance criteria used to determine whether the proposed project would have a significant effect on the environment

5.1 Significance Criteria

The potential effects of the proposed project were evaluated based on the Significance Criteria specified in HAR Section 11-200-12. The following summarize potential short-term and long-term effects of the action relative to the criteria.

Involves an irrevocable commitment to, loss or destruction of any natural or cultural resources. The proposed project would not cause significant adverse impacts to biological resources, cultural resources, soils and geology, or water resources, and therefore does not involve irrevocable commitment to, loss or destruction of any natural or cultural resources. The minimal construction footprint would avoid significant or long-term effects to any Federally-listed species.

Curtails the range of beneficial uses of the environment. The proposed project would replace an existing structure that require improvement and is structurally deficient and would have no impact on the beneficial uses of the environment within the project area. The project area itself is predominantly within an established right-of-way.

Conflicts with the State's long-term environmental policies or goals and guidelines, as expressed in HRS Chapter 344, and any revisions thereof and amendments thereto, court decisions, or executive orders. The proposed project is consistent with the environmental policies, goals, and guidelines defined in HRS Chapter 344. In particular, the project is consistent with transportation guidelines by improving the region's transportation infrastructure.

> *Transportation*
>
> A. *Encourage transportation systems in harmony with the lifestyle of the people and environment of the State.*
>
> B. *Adopt guidelines to alleviate environmental degradation caused by motor vehicles.*
>
> C. *Encourage public and private vehicles and transportation system to conserve energy, reduce pollution emission, including noise, and provide safe and convenient accommodations for their users.*

Kuhio Highway—including the Mailihuna Road intersection and Kapaa Stream Bridge—carries all modes of land transportation on a daily basis, including passenger vehicles, buses, freight trucks, bicyclists, and pedestrian. The highway connects communities on the north and east sides of the island. It is used by commuters for work and school, and is essential for commerce and emergency response. Safety issues and operational deficiencies have been identified for the intersection and the existing bridge has exceeded its design life and a replacement structure is needed to maintain system-wide integrity.

Substantially affects the economic or social welfare of the community or state. The proposed project would not result in significant socio-cultural impacts on the community or state, as it would not cause an

increase in population or change the demographic characteristics of the local area. The proposed project would create short-term employment opportunities consisting primarily of construction-related jobs generated by the proposed project. The proposed project would also have a positive impact on the economic and social welfare of the community by improving the long-term functionality of the highway system.

Substantially affects public health. With the exception of short-term, construction-related impacts to ambient air and noise levels, no long-term significant impacts to public health and welfare are anticipated. The incorporation of recommended mitigation measures and BMPs during the construction period would minimize these temporary impacts to surrounding communities.

Involves substantial secondary impacts, such as population changes or effects on public facilities. No adverse secondary impacts on the environment, such as population growth or the need to expand public facilities, would be anticipated with the implementation of the proposed project.

Involves a substantial degradation of environmental quality. The proposed project would not cause any impacts that would substantially degrade environmental quality. Construction activities associated with the proposed project are anticipated to result in relatively insignificant short-term impacts to noise, air quality, biological resources, and traffic in the immediate project vicinity. The incorporation of recommended mitigation measures during the construction period would prevent adverse impacts to the environmental quality.

Is individually limited, but cumulatively has considerable effect on the environment, or involves a commitment for larger actions. The proposed project is a self-contained action and is not part of additional and/or related actions. Land use in the project area consists primarily of residential and commercial uses. No other past, present, or future actions associated with these land uses have been identified that would contribute to significant cumulative impacts for any of the resources considered in this EA.

Substantially affects rare, threatened, or endangered species or its habitat. No aquatic, botanical, or mammalian species that are rare, threatened, endangered, or associated habitat were observed in the project limits. Biological surveys in September 2014 identified one endangered avifauna within the project area, the Hawaiian gallinule. The surveys also identified one Federally listed mammalian species that has the potential to occur in the action area, the Hawaiian hoary bat. In-water work also has the potential to affect two listed marine species, the threatened green sea turtle and the endangered monk seal. Potential impacts from the proposed project to this species are expected to be discountable and temporary and conservation measures would be implemented during construction to protect Federally listed species. BMPs and protocols would be implemented to avoid and minimize contact with individual members of protected migratory birds that may be encountered in the project area.

Detrimentally affects air or water quality or ambient noise levels. Only minimal construction-related, short-term impacts on air quality and noise levels are anticipated. Mitigation measures would be implemented to minimize construction-related noise and dust impacts. Adverse impacts to water resources would be prevented through BMPs and adherence to permit requirements. No long-term, direct or indirect, adverse impacts to these resources are anticipated from implementation of the proposed project.

Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a floodplain, tsunami zone, beach, erosion prone area, geologically hazardous land, estuary, freshwater, or coastal waters. This project is located in an environmentally sensitive area; in particular, the replacement bridge is located within a FEMA-designated floodplain, within the tsunami zone, and near a beach and coastal waters. The project is being designed in accordance with standards appropriate to the geologic, hydrologic, and seismic setting.

Substantially affects scenic vistas and view planes identified in county or state plans or studies. The overall visual quality of the project area would not change significantly as a result of bridge replacement. The proposed project would not obstruct any view planes or scenic vistas.

Requires substantial energy consumption. Construction of the proposed project would not require substantial energy consumption. Fuel would be consumed by construction vehicles and equipment, but this use would be comparable to other construction projects.

5.2 Conclusion

Through project design, impact avoidance and minimization actions, and proposed BMPs and mitigation measures, the analysis contained in this EA has determined that the proposed project would have no significant adverse impacts or would have impacts that can be mitigated to less than significant levels.

SECTION 6

Determination

Based on the information presented and examined in this document, the proposed project is not expected to produce significant adverse social, economic, cultural, or environmental impacts. Consequently, a finding of no significant impact is warranted, pursuant to HRS Chapter 343 and the provisions of HAR Chapter 200, Title 11, Subchapter 6.

SECTION 7

Consultation and Coordination

7.1 Organizations Consulted During Preparation of the Draft Environmental Assessment

The following agencies and organizations were contacted during preparation of the Draft EA. They received preliminary project information and asked to provide comments relative to specific environmental compliance (such as NHPA Section 106 and ESA Section 7) or for general assistance in preparing the Draft EA. A template of the consultation letter is included at the end of this chapter.

7.1.1 Federal

- USACE
- USFWS

7.1.2 State of Hawaii

- Department of Accounting and General Services
- Department of Education, Kauai Area Complex
- Department of Hawaiian Home Lands
- HDOH, Clean Water Branch
- HDOH, Environmental Planning Office
- DLNR
- Office of Hawaiian Affairs
- Office of Planning (OP)
- State Historic Preservation Division
- Senator Ronald Kouchi, Senate District 8
- Representative James Tokioka, House District 15

7.1.3 County of Kauai

- Civil Defense Agency
- Department of Parks and Recreation
- Department of Public Works
- Department of Water
- Fire Department
- Planning Department
- Police Department
- Transportation Agency
- Kauai Council Chair Mel Rapozo
- Kauai Council Vice Chair Ross Kagawa
- Kauai Councilmember Mason Chock
- Kauai Councilmember Arryl Kaneshiro
- Kauai Councilmember KipuKai Kuali'i
- Kauai Councilmember JoAnn Yukimura

7.1.4 Utilities

- Hawaiian Telcom
- KIUC
- Oceanic Time Warner Cable
- Sandwich Isles Communications

7.1.5 Organizations

- Kauai Chamber of Commerce
- Kauai Path
- Kauai Visitors Bureau
- Sierra Club, Kauai Group of Kauai Chapter
- Kapaa Business Association

7.2 Early Consultation Comment Letters Received

A total of 9 agencies responded to requests for comments during the Draft EA preparation period. Of these, substantive comments from 7 agencies are summarized herein, and are incorporated into relevant sections of the Draft EA. Letters are reproduced in full in Appendix I.

State Agencies

- **HDOH, Clean Water Branch** (letter dated May 18, 2015).
    1. A project that potentially impacts State waters must meet the following: (1) antidegradation policy, (2) designated uses, and (3) water quality criteria.
    2. NPDES permit coverage may be required.
    3. Permit from USACE may be required.
    4. Compliance with State water quality standards is required.
    5. All projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters.
- **HDOH, Environmental Planning Office** (letter dated May 12, 2015)
    1. Use of the online Hawaii Environmental Health Portal is encouraged.
    2. Water Quality Standards Maps have been updated and are posted online.
    3. University of Hawaii studies related to potential sea level rise changes in Hawaii are available online.
- **DLNR, Commission on Water Resource Management** (memo dated January 7, 2015, attached to letter from Russell Tsuji, Administrator, DLNR Land Division, dated January 15, 2015)

    A Stream Channel Alteration Permit is needed before alteration(s) can be made to the stream bed and/or banks.
- **OP** (letter dated May 1, 2015)
    1. Verify project TMKs
    2. Draft EA should contain an analysis of project conformance with the Hawaii State Plan.
    3. Draft EA should contain an assessment of project conformance with CZM objectives.
    4. Confirm whether an SMA permit is required.
    5. Federal Consistency Review should be listed as a potential requirement.
    6. Draft EA should include a section on watershed protection and management (see Hawaii Watershed Guidance developed by OP).
    7. Consider OP's Stormwater Impact Assessment when evaluating project-related stormwater impacts
    8. Consider Low Impact Development design concepts and Best Management Practices
- **State of Hawaii Department of Education, Office of the Complex Area Superintendent, Kauai Schools** (letter dated June 26, 2015)

Construction schedules, road closures, and possible dust and noise mitigation measures must be discussed with the Complex Area Superintendent and applicable school principals. In addition, plans for the Mailihuna Road intersection must be provided to the State of Hawaii Department of Education.

County Agencies

- **Kauai Department of Public Works** (letter dated May 6, 2015)

  1. A resident engineer would need to certify that work associated with the Kapaa Stream Bridge would not cause an increase in the base flood elevation during the occurrence of the base flood discharge.
  2. Short-term impacts of construction on traffic in the area of the Mailihuna Road intersection should be fully discussed in the EA.
  3. A roundabout should be evaluated as an alternative for improving the Mailihuna Road intersection.
  4. Due to the presence of Ke Ala Hele Makalae, there is no need for sidewalks on this bridge. An evaluation of the option to retain the existing structure and converting the sidewalks to paved shoulders would be useful. (Note: this comment was withdrawn by letter from the Department of Public Works and Planning Department dated August 22, 2016)

  (letter dated January 8, 2016)

  1. County staff who attended a public information meeting recollect community support for a roundabout.
  2. County recommends a roundabout for safety reasons.
  3. Overall traffic operations would likely be better with a roundabout.
  4. Concerned about the long-term maintenance of a signalized intersection versus a roundabout.
  5. An important community goal expressed in the General Plan and other planning documents is to retain rural character.
  6. Decision should be made for the long-term benefit of Kauai County residents and visitors.

  (letter dated February 4, 2016)

  1. Concerned about the lack of pedestrian facilities across the proposed bridge and a *mauka* pedestrian connection from the bridge to Mailihuna Road.
  2. Concerns are based on existing and future pedestrian activity by area residents, including children. Destinations for foot traffic include facilities on Mailihuna Road and commercial businesses on Kealia Road. A worn footpath is evidence of frequent travel between neighborhoods. It's unsafe for pedestrians to have to cross the highway twice (in order to use the shared use path) or to use the highway shoulder.
  3. A continuous pedestrian facility should be provided on the *mauka* side of Kuhio Highway between Kealia Road and Mailihuna Road.
  4. As currently designed, the project would result in a degradation of existing pedestrian facilities which is not consistent with the County's Complete Streets Resolution and the State's Complete Streets Law.
  5. The proposed bridge section should be changed from 12-foot lanes and 8-foot shoulders to 11-foot lanes, 6-foot shoulders, and a 6-foot sidewalk on the *mauka* side.

Local Groups

- **Wailua-Kapaa Neighborhood Association** (letter dated September 10, 2015)
  1. Can the Bridge be a 3R (resurfacing, restoration, rehab) project? If so, can it use design criteria lower than those in AASHTO Green Book?
  2. Requests the bridge design preserve a sense of place and rural character.
  3. Retaining look, size, and feel of 1952 bridge is important to residents.

7.3 Public Involvement

A public meeting was held on September 17, 2015, at the Kapaa High School Library (4695 Mailihuna Road), to provide an overview of the project and obtain feedback from the community. Ten members of the community attended the meeting, including an aide to Representative Derek Kawakami. The primary concern of attendees were as follows:

- Intersection performance under the signalization and roundabout alternatives
- Pedestrian accommodation through the roundabout and on the bridge
- Continuation of the sidewalk on the *mauka* side of Kuhio Highway
- Potential impacts on the shared use path
- Railing design and view planes
- Existing narrow highway shoulders
- Continued use of the vehicular beach access on the *makai* side of the Mailihuna Road intersection

A summary of the meeting is included in Appendix H.

7.4 Distribution List for the Draft Environmental Assessment

The following lists the distribution for the Draft EA for public review and comment. Comments received on the Draft EA were considered and incorporated into the Final EA, as appropriate.

7.4.1 Federal

- USACE

7.4.2 State of Hawaii

- Department of Accounting and General Services
- Department of Hawaiian Home Lands
- Department of Education, Facilities Development Branch, Office of the Complex Area Superintendent (Kauai), Kapaa Elementary School, and Kapaa High School
- HDOH Clean Water Branch
- HDOH, Environmental Planning Office
- DLNR
- Office of Hawaiian Affairs
- OP
- State Historic Preservation Division
- Senator Ronald Kouchi, Senate District 8
- Representative Derek Kawakami, House District 14

7.4.3 County of Kauai

- Civil Defense Agency
- Department of Public Works
- Department of Water

- Fire Department
- Mayor's Office
- Planning Department
- Police Department
- Transportation Agency
- Kauai Council Chair Mel Rapozo
- Kauai Council Vice Chair Ross Kagawa
- Kauai Councilmember Mason Chock
- Kauai Councilmember Arryl Kaneshiro
- Kauai Councilmember KipuKai Kuali'i
- Kauai Councilmember JoAnn Yukimura

7.4.4 Utilities

- Hawaiian Telcom
- KIUC
- Oceanic Time Warner Cable
- Sandwich Isles Communications

7.4.5 Organizations

- Kauai Chamber of Commerce
- Kauai Path
- Kauai Visitors Bureau
- Sierra Club, Kauai Group of Kauai Chapter
- Kapaa Business Association
- Wailua-Kapaa Neighborhood Association

7.4.6 Individuals

- Property Owner/Resident TMK: [4] 4-6-014:024
- Property Owner/Resident TMK: [4] 4-6-014:033
- Property Owner/Resident TMK: [4] 4-7-003:002

7.5 Public Availability of the Draft Environmental Assessment

The Draft EA was distributed to the following outlets to disseminate project information.

7.5.1 Public Library

- Kapaa Public Library

7.5.2 Media

- The Garden Island Newspaper

7.6 Comments Received on the Draft EA

The 30-day statutory public review period extended from July 23 to August 22, 2016. Written comments on the Draft EA were received from 12 agencies, organizations, and individuals, as follows. Letters and responses are reproduced at the end of this chapter. Response letters were sent to 10 agencies providing substantive comments.

- **USACE, Regulatory Branch** (email dated August 10, 2016) - Acknowledged receipt of document and referenced project file number.

- **HDOH, Clean Water Branch** (letter dated August 2, 2016) - No comments at this time (previously provided comments in letter dated May 18, 2015).
- **HDOH, Environmental Planning Office** (letter dated August 2, 2016)
  1. Recommended reviewing standard comments and strategies to support sustainable and healthy design
  2. Recommended examining and using the Environmental Health Portal
  3. Suggested reviewing the requirements for the NPDES permit
  4. Recommended reviewing the OEQC viewer showing where previous HRS Chapter 343 documents have been prepared
  5. Encouraged using the USEPA EJSCREEN tool.
- **DLNR, Commission on Water Resource Management** (letter dated August 24, 2016) - A Stream Channel Alteration Permit is required before any alteration can be made to the bed or banks of a stream channel.
- **DLNR, Engineering Divisio**n (memorandum dated August 1, 2016) - Compliance with the National Flood Insurance Program is required if the project is within a designated Flood Hazard Zone. The owner of the proposed project or their representative is responsible for researching the Flood Hazard zone designation for the project.
- **DLNR, Land Division, Kauai District** (memorandum dated August 2, 2016) - No comments.
- **OEQC** (letter dated August 23, 2016)
  1. Consider incorporating landscaping and Low Impact Development concepts
  2. Recommended use of native vegation
  3. Requested explanation of why the 100-year storm criteria and 2-foot freeboard cannot be met, and consequences of non-conformance
  4. Requested analysis of not including the *mauka* sidewalk
- **Office of Planning** (letter dated August 9, 2016)
  1. Stated that EA should address the Hawaii State Plan in its entirety.
  2. Acknowledged the need for Coastal Zone Management Act Federal Consistency determination
  3. Acknowledged the need for an SMA permit
- **Kauai Department of Public Works and Planning Department** (letter dated August 22, 2016) - Various comments regarding project purpose and need, existing conditions, and proposed improvements.
- **Kauai Transportation Agency** (email dated August 10, 2016) - No comments, but asked to be kept apprised of the project as it progresses.
- **Sandwich Isles Communications** (letter dated August 16, 2016) - Any work on the bridge may require temporary relocation of their fiber-optic duct system, which would require advance planning. Any relocation cost would be subject to applicable State laws.
- **Kauai Path** (letter dated August 16, 2016)
  1. Provided observations supporting their board of directors' endorsement of the roundabout.
  2. Provided comments relative to accommodating bicyclists.
- **R. Gordon Oswald and family** (letter dated August 15, 2016) - Provided reasons supporting roundabout versus signalizing of the intersection.

DRAFT EA COMMENT AND RESPONSE LETTERS[2]

- USACE, Regulatory Branch
- HDOH, Clean Water Branch
- HDOH, Environmental Planning Office*
- DLNR, Commission on Water Resource Management*
- DLNR, Engineering Division*
- DLNR, Land Division, Kauai District
- OEQC*
- Office of Planning*
- Kauai Department of Public Works and Planning Department*
- Kauai Transportation Agency*
- Sandwich Isles Communications*
- Kauai Path*
- R. Gordon Oswald and family*

[2] Response letters were sent only to agencies that offered substantive comments (indicated by asterisk).

Kettley, Lisa/HNL

From: Chu, Kathleen/HNL
Sent: Wednesday, August 10, 2016 10:42 AM
To: Nishikawa, Nancy/HNL; Kettley, Lisa/HNL; Luersen, Paul/HNL
Subject: Fwd: POH-2016-00163 (Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection, Kauai, HI) [EXTERNAL]

FYI

- Kathleen

Begin forwarded message:

> **From:** "Tatum, Alton L CONTRACTOR @ POH" <Alton.L.Tatum@usace.army.mil>
> **Date:** August 10, 2016 at 10:36:52 AM HST
> **To:** "kathleen.Chu@ch2m.com" <kathleen.Chu@ch2m.com>
> **Cc:** "Meyer, Susan A SPL" <Susan.A.Meyer@usace.army.mil>
> **Subject: POH-2016-00163 (Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection, Kauai, HI) [EXTERNAL]**
>
> Aloha Ms. Kathleen Chu,
>
> This email is notification that the Honolulu District Regulatory Office has received you're Correspondence. Your project has been assigned POH-2016-00163. Please reference this number in all future correspondence. Ms. Susan Meyer-Gayagas has been assigned your project and will contact you if additional information is required. If you don't receive a response from this office within 30 days, please contact us at (808) 835-4303 or by email at CEPOH-RO@usace.army.mil.
>
> Thank you for working with the Honolulu District Regulatory Office

Alton L. Tatum
Administrative Assistant, Regulatory Office
USACE-Honolulu District
Bldg 252
Fort Shafter, HI 96858-5440
Phone: (808)-835-4303
Fax: (808)-835-4126

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
EMD/CWB

08005PCTM.16

August 2, 2016

Mr. J. Michael Will, P.E.
Project Manager
Central Federal Lands Highway Division
U.S. Department of Transportation
12300 West Dakota Avenue, Suite 380A
Lakewood, Colorado 80228

Dear Mr. Will:

SUBJECT: Comments on the Draft Environmental Assessment (DEA) and Anticipated Finding of No Significant Impact (AFONSI) for Kapaa Stream Bridge, Kuhio Highway, and Mailihuna Road Intersection Project, Project No. HI STP SR50(1) Kawaihau, Island of Kauai, Hawaii TMKs: (4) 4-6-014:024 (por.), 033 (por.), 090 (por.), 092 (por.), 4-7-003:001(por.), and 4-7-008:042 (por.) Kuhio Highway and Mailihuna Road Right-of-Way

The Department of Health (DOH), Clean Water Branch (CWB), has reviewed the subject document and has no comments at this time. The DOH-CWB provided comments on the proposed DEA for this project (Letter No. 05028PNN.16, dated May 18, 2016).

Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/10/CWB_Oct22.pdf.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

Alec Wong

ALEC WONG, P.E., CHIEF
Clean Water Branch

CTM:bk
c: EPO # 16-264 [via e-mail only]
Ms. Kathleen Chu, CH2M HILL [via e-mail kathleen.chu@ch2m.com only]

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

EPO 16-264

August 2, 2016

Ms. Kathleen Chu
CH2M Hill
1132 Bishop Street, Suite 1100
Honolulu, Hawaii 96813
Email: Kathleen.chu@ch2m.com

Dear Ms. Chu:

SUBJECT: Draft Environmental Assessment (DEA) for Kapaa Stream Bridge and Mailihuna Intersection Improvements
TMK: (4) 4-6-014:024 por., 033 por., 090 por., 092 por. Kuhio Highway and Mailihuna Road rights-of-way; 4-7-003:001 por., and 4-7-008:042 por. Kuhio Highway right-of-way

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your DEA to our office via the OEQC link:
http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Kauai/2010s/2016-07-23-KA-5B-DEA-Kapaa-Stream-Bridge-and-Mailihuna-Intersection.pdf

In the development and implementation of all projects, EPO strongly recommends regular review of State and Federal environmental health land use guidance. State standard comments and available strategies to support sustainable and healthy design are provided at: http://health.hawaii.gov/epo/landuse. Projects are required to adhere to all applicable standard comments. EPO has recently updated the environmental Geographic Information System (GIS) website page. It now compiles various maps and viewers from our environmental health programs. The eGIS website page is continually updated so please visit it regularly at: http://health.hawaii.gov/epo/egis. EPO also encourages you to examine and utilize the Hawaii Environmental Health Portal at: https://eha-cloud.doh.hawaii.gov. This site provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings.

We suggest you review the requirements of the Clean Water Branch (HAR, Section 11-54-1.1, -3, 4-8) and/or the National Pollutant Discharge Elimination System (NPDES) permit (HAR, Chapter 11-55) at: http://health.hawaii.gov/cwb. If you have any questions, please contact the Clean Water Branch, Engineering Section at (808) 586-4309 or cleanwaterbranch@doh.hawaii.gov. If your project involves waters of the U.S., it is highly recommended that you contact the Army Corps of Engineers, Regulatory Branch at: (808) 835-4303.

You may also wish to review the draft Office of Environmental Quality Control (OEQC) viewer at: http://eha-web.doh.hawaii.gov/oeqc-viewer. This viewer geographically shows where some previous Hawaii Environmental Policy Act (HEPA) {Hawaii Revised Statutes, Chapter 343} documents have been prepared.

In order to better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed a new environmental justice (EJ) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you

to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at: http://www.epa.gov/ejscreen.

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design. Thank you for the opportunity to comment.

Mahalo nui loa,

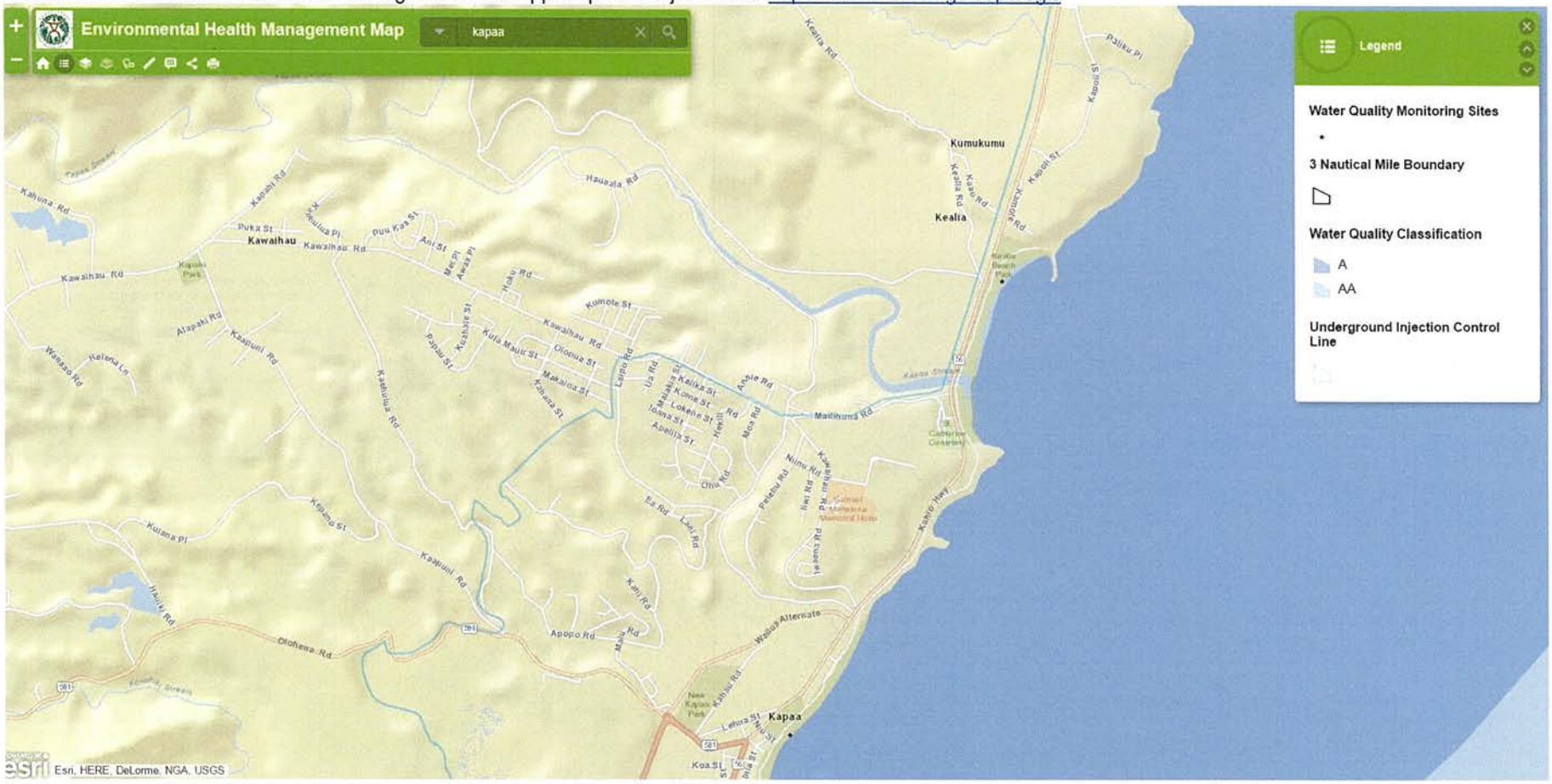
Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

LM:nn

Attachment 1: Environmental Health Management Web App Snipit of Project Area: http://health.hawaii.gov/epo/egis
Attachment 2: Clean Water Branch: Water Quality Standards Map - Kauai
Attachment 3: Wastewater Branch: Act 120 Cesspool Tax Credit Web App Snipit of Project Area
Attachment 4: Wastewater Branch: Recycled Water Use Map of Project Area
Attachment 5: OEQC Viewer Map of Project Area
Attachment 6: U.S. EPA EJSCREEN Report for Project Area

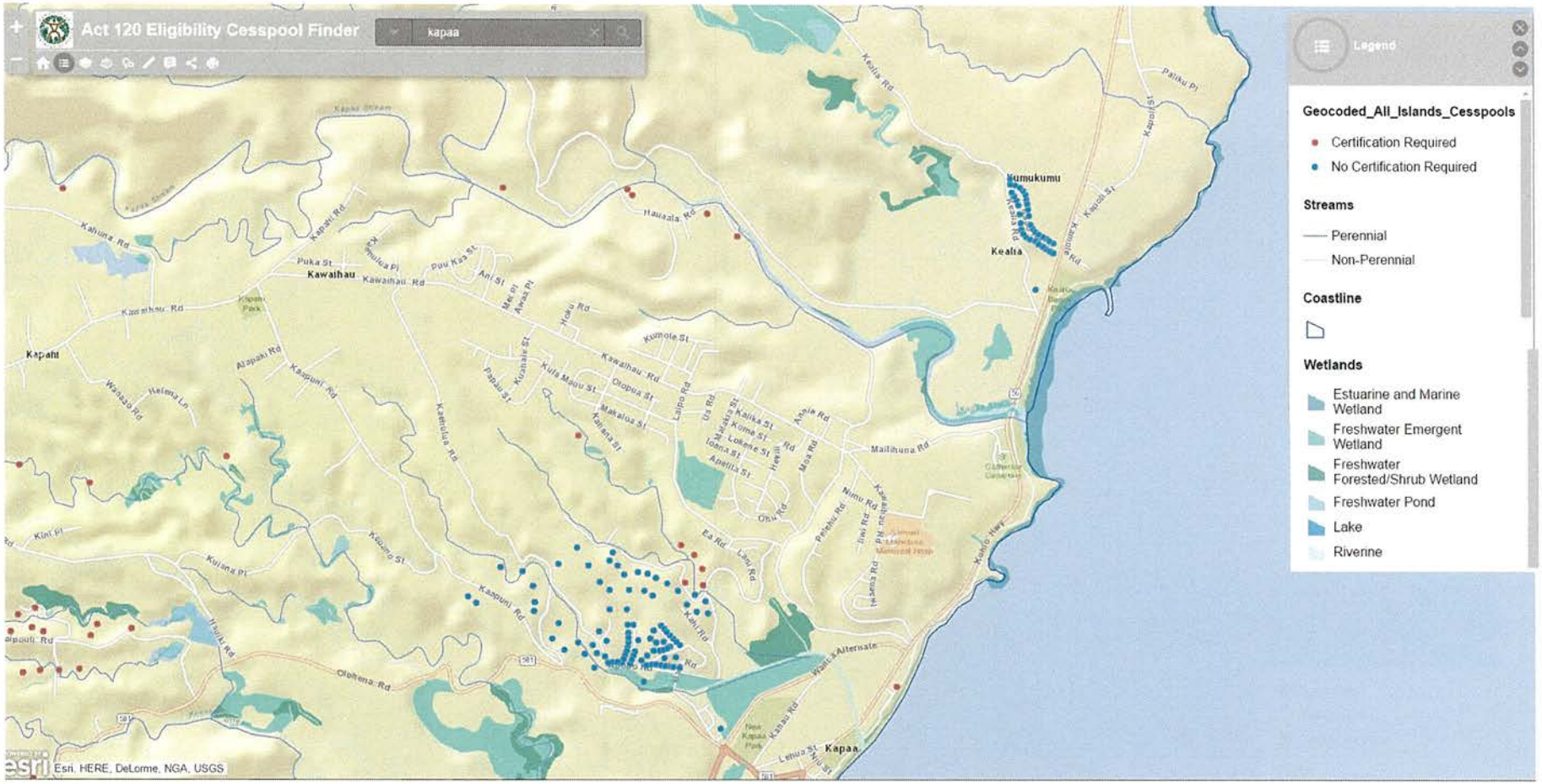
c: DOH: DHO Kauai, CWB {via email only}

Attachment 1: Environmental Health Management Web App Snipit of Project Area: http://health.hawaii.gov/epo/egis



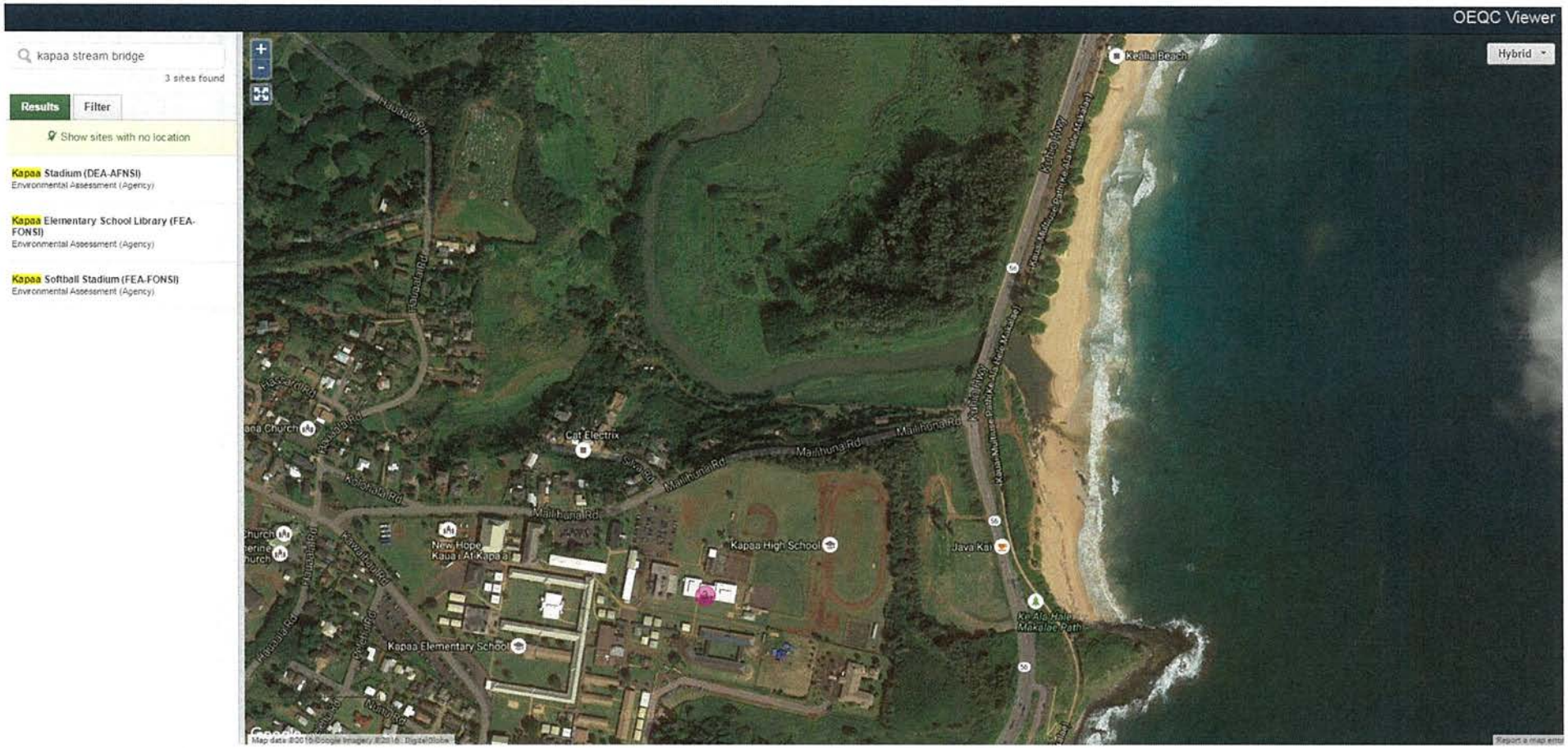
Attachment 2: Clean Water Branch: Water Quality Standards Map – Kauai

Attachment 3: Wastewater Branch: Act 120 Cesspool Tax Credit Web App Snipit of Project Area



Attachment 4: Wastewater Branch: Recycled Water Use Map of Project Area

Attachment 5: OEQC Viewer Map of Project Area



Attachment 6: U.S. EPA EJSCREEN Report for Project Area

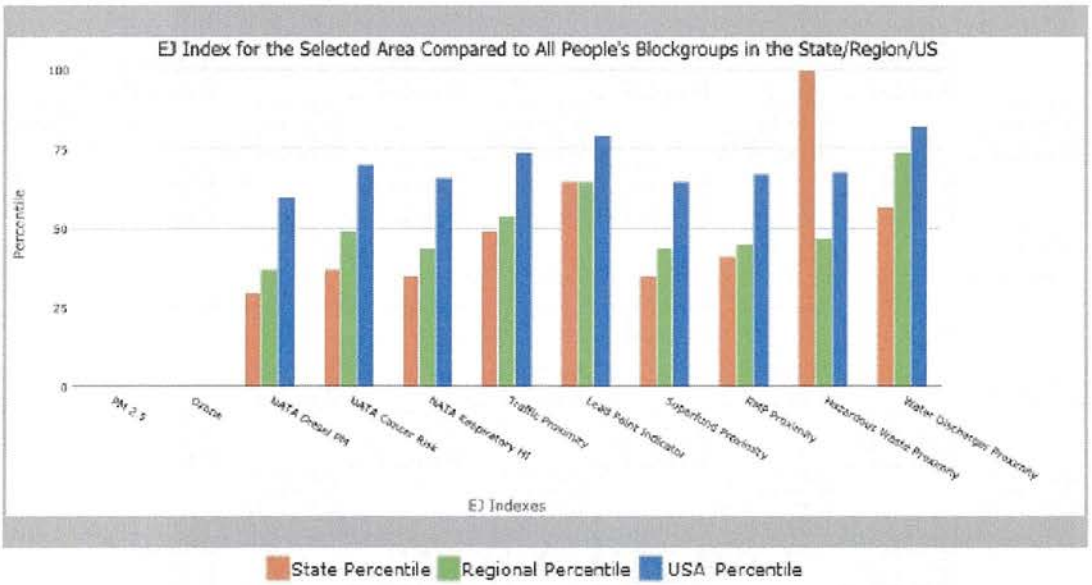
EJSCREEN Report (Version 2016)

1 mile Ring Centered at 22.092865,-159.309207, HAWAII, EPA Region 9

Approximate Population: 2,367

Input Area (sq. miles): 3.14

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	N/A	N/A	N/A
EJ Index for Ozone	N/A	N/A	N/A
EJ Index for NATA* Diesel PM	30	37	60
EJ Index for NATA* Air Toxics Cancer Risk	37	49	70
EJ Index for NATA* Respiratory Hazard Index	35	44	66
EJ Index for Traffic Proximity and Volume	49	54	74
EJ Index for Lead Paint Indicator	65	65	79
EJ Index for Superfund Proximity	35	44	65
EJ Index for RMP Proximity	41	45	67
EJ Index for Hazardous Waste Proximity	100	47	68
EJ Index for Water Discharger Proximity	57	74	82



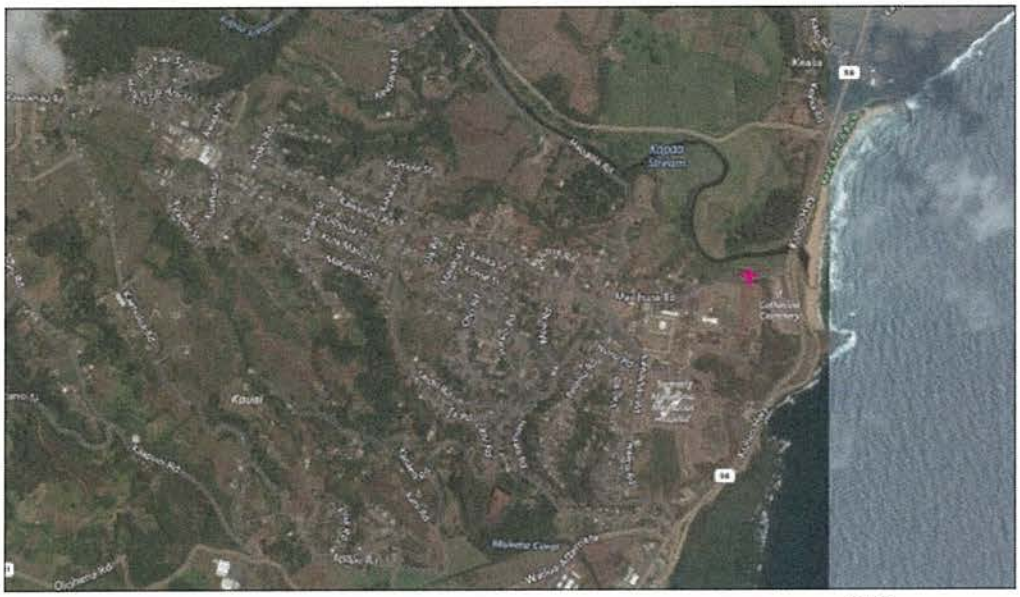
This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report (Version 2016)

1 mile Ring Centered at 22.092865,-159.309207, HAWAII, EPA Region 9

Approximate Population: 2,367

Input Area (sq. miles): 3.14


Kapaa
Kapaa Stream
Kawaihau Rd
Kuhio Hwy
Kawaihau Rd
Kaiulani Ln
Kaiulani Ln
Kawaihau Rd
Kawaihau Rd
Kawaihau Rd

EJSCREEN Report (Version 2016)

1 mile Ring Centered at 22.092865,-159.309207, HAWAII, EPA Region 9

Approximate Population: 2,367

Input Area (sq. miles): 3.14

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m^3)	N/A	N/A	N/A	9.37	N/A	9.32	N/A
Ozone (ppb)	N/A	N/A	N/A	51	N/A	47.4	N/A
NATA* Diesel PM (µg/m^3)	0.0267	0.149	17	0.978	<50th	0.937	<50th
NATA* Cancer Risk (lifetime risk per million)	27	34	24	43	<50th	40	<50th
NATA* Respiratory Hazard Index	0.66	1	25	2	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	80	990	42	1100	34	590	47
Lead Paint Indicator (% Pre-1960 Housing)	0.19	0.16	63	0.24	55	0.3	48
Superfund Proximity (site count/km distance)	0	0.098	29	0.15	13	0.13	16
RMP Proximity (facility count/km distance)	0.071	0.19	33	0.57	11	0.43	16
Hazardous Waste Proximity (facility count/km distance)	0	0	100	0.11	19	0.072	26
Water Discharger Proximity (facility count/km distance)	0.28	0.34	61	0.2	83	0.31	72
Demographic Indicators							
Demographic Index	59%	52%	72	47%	67	36%	80
Minority Population	68%	77%	26	58%	58	37%	78
Low Income Population	49%	26%	90	36%	70	35%	75
Linguistically Isolated Population	1%	6%	27	9%	21	5%	47
Population With Less Than High School Education	6%	9%	39	17%	27	14%	31
Population Under 5 years of age	8%	6%	71	7%	65	6%	69
Population over 64 years of age	12%	15%	38	13%	59	14%	49

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

March 16, 2017

In Reply Refer To:
HFPM-16

TO: LAURA LEIALOHA PHILLIPS McINTYRE, AICP
PROGRAM MANAGER, ENVIRONMENTAL PLANNING OFFICE
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HI 96801

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Ms. McIntyre:

Thank you for sending comments on the Draft EA by letter dated August 2, 2016.

We acknowledge and have reviewed the information you provided on the Environmental Health Management Maps; NPDES, air, and noise permit requirements; the Hawaii Environmental Health Portal; and EPA EISCREEN tool. These resources are helpful and are being utilized in project planning and permitting.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc: Christine Yamasaki, HDOT; Thomas Parker, CFLHD; Kathleen Chu, CH2M HILL

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 24, 2016

Federal Highway Administration
Attention: Mr. Michael Will
12300 West Dakota Avenue, Suite 380A
Lakewood, Colorado 80228-2583

via email: Michael.Will@dot.gov

CH2M Hill
Attention: Ms. Kathleen Chu
1132 Bishop Street; Suite 1100
Honolulu, Hawaii 96813

via email: Kathleen.Chu@ch2m.com

Dear Mr. Will and Ms. Chu:

SUBJECT: Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection Project
Project No. HI STP SR50(1)

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments previously sent you August 22, 2016 enclosed are comments from the Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

RECEIVED
LAND DIVISION
2016 AUG 23 AM 10: 35
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
COMMISSION ON WATER
RESOURCE MANAGEMENT
2016 JUL 28 PM 2:01

July 27, 2016

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_Engineering Division
___Div. of Forestry & Wildlife
___Div. of State Parks
_X_Commission on Water Resource Management
_X_Office of Conservation & Coastal Lands
_X_Land Division – Kauai District
_X_Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection Project Project No. HI STP SR50(1)
LOCATION: Kawaihu District; Island of Kauai; TMK: (4) 4-6-014:024, 033, 090, 092 (pors.); 4 7-008:042 (por.)
APPLICANT: State of Hawaii, Department of Transportation

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **August 17, 2016**.

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on the Current Environmental Notice under Quick Links on the right.)

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(x) Comments are attached.

Signed: /s/ Jeffrey T. Pearson, P.E.

Print Name: Deputy Director
Date: August 18, 2016

cc: Central Files

RFD. 4465.2
14147

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

WILLIAM D. BALFOUR, JR.
KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
NEIL J. HANNAHS
MILTON D. PAVAO
VIRGINIA PRESSLER, M.D.

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

August 18, 2016

REF: RFD.4465.2

TO: Mr. Russell Tsuji, Administrator
State of Hawaii, DLNR Land Division Oahu, DLNR-LD

FROM: Jeffrey T. Pearson, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection Project Project No. HI STP SR50(1)

FILE NO.: RFD.4465.2
TMK NO.: (4) 4-6-014:024, 033, 090, 092 (pors); 4-7-008:042 (por.)

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrm.

Our comments related to water resources are checked off below.

☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

☐ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.

☐ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

☐ 6. We recommend the use of alternative water sources, wherever practicable.

☐ 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.

☐ 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at

http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

☐ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☐ 11. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.

☐ 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☒ 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.

☐ 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☐ OTHER:

If you have any questions, please contact Dean Uyeno of the Commission staff at 587-0234.

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

March 16, 2017

In Reply Refer To:
HFPM-16

TO: JEFFREY T. PEARSON, P.E., DEPUTY DIRECTOR
COMMISSION ON WATER RESOURCES MANAGEMENT
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. Box 621
HONOLULU, HI 96809

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Mr. Peterson:

Thank you for your memorandum on the Draft EA dated August 18, 2016.

We have identified the Stream Channel Alteration Permit as a required permit for the project. Our project team will be working with your staff to ensure a complete application.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc: Christine Yamasaki, HDOT; Thomas Parker, CFLHD; Kathleen Chu, CH2M HILL

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 22, 2016

Federal Highway Administration
Attention: Mr. Michael Will
12300 West Dakota Avenue, Suite 380A
Lakewood, Colorado 80228-2583

via email: Michael.Will@dot.gov

CH2M Hill
Attention: Ms. Kathleen Chu
1132 Bishop Street; Suite 1100
Honolulu, Hawaii 96813

via email: Kathleen.Chu@ch2m.com

Dear Mr. Will and Ms. Chu:

SUBJECT: Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection Project
Project No. HI STP SR50(1)

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from the (a) Engineering Division and (b) Land Division – Kauai District on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

JUL-28 AM 10:30 ENGINEERING
RECEIVED
LAND DIVISION
2016 AUG -1 AM 10: 54
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 27, 2016

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Kauai District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection Project
Project No. HI STP SR50(1)
LOCATION: Kawaihu District; Island of Kauai; TMK: (4) 4-6-014:024, 033, 090, 092 (pors.); 4 7-008:042 (por.)
APPLICANT: State of Hawaii, Department of Transportation

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **August 17, 2016**.

The DEA can be found on-line at: http://health.hawaii.gov/oeqc/ (Click on the Current Environmental Notice under Quick Links on the right.)

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: _____

Print Name: Carty S. Chang, Chief Engineer
Date: 8/1/16

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

To: Land Division
Ref: Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection Project, Kawaihu, Kauai, DOT Highways Division

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a designated Flood Hazard.

The owner or the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zone designations can be found using the Flood Insurance Rate Map (FIRM), which can be accessed through the Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT).

National Flood Insurance Program establishes the rules and regulations of the NFIP - Title 44 of the Code of Federal Regulations (44CFR). The NFIP Zone X is a designation where there is no perceived flood impact. Therefore, the NFIP does not regulate any development within a Zone X designation.

Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may take precedence over the NFIP standards as local designations prove to be more restrictive. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7253.
- Kauai: County of Kauai, Department of Public Works (808) 241-4846.

The applicant should include water demands and infrastructure required to meet project needs. Please note that the projects within State lands requiring water service from their local Department/Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

The applicant is required to provide water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update projections.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 5/7/16

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

March 16, 2017

In Reply Refer To:
HFPM-16

TO: CARTY S. CHANG, CHIEF ENGINEER
ENGINEERING DIVISION, DLNR
P.O. BOX 621
HONOLULU, HI 96809

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Mr. Chang:

Thank you for sending comments on the Draft EA by memorandum dated August 1, 2016.

As reported in Section 3.4 of the EA, the project area is located with the Federal Emergency Management Agency regulated floodway of the Special Flood Hazard Area (Zone AE). The project is being designed to meet applicable National Flood Insurance Program requirements, such that the new structure will not increase the 100-year water surface elevations and cause additional flooding at the project site and surrounding areas.

This project will not generate a demand for water service.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc: Christine Yamasaki, HDOT; Thomas Parker, CFLHD; Kathleen Chu, CH2M HILL

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 27, 2016

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Kauai District
X Historic Preservation

RECEIVED
LAND DIVISION
2016 AUG -8 AM 10: 44
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection Project
Project No. HI STP SR50(1)
LOCATION: Kawaihu District; Island of Kauai; TMK: (4) 4-6-014:024, 033, 090, 092 (pors.); 4 7-008:042 (por.)
APPLICANT: State of Hawaii, Department of Transportation

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this project. Please submit any comments by **August 17, 2016**.

The DEA can be found on-line at: http://health.hawaii.gov/oegc/ (Click on the Current Environmental Notice under Quick Links on the right.)

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
(X) We have no comments.
( ) Comments are attached.

Signed: Marvin Mikasa

Print Name: MARVIN MIKASA
Date: AUG. 2, 2016

cc: Central Files

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

DAVID Y. IGE
GOVERNOR

SCOTT GLENN
DIRECTOR

DEPARTMENT OF HEALTH | 235 South Beretania Street, Suite 702, Honolulu, HI 96813 | oeqchawaii@doh.hawaii.gov

(808) 586-4185

August 23, 2016

Christine Yamasaki
State of Hawai'i
Department of Transportation
601 Kamokila Boulevard, Room 609
Kapolei, HI 96707

Dear Ms. Yamasaki,

SUBJECT: Draft Environmental Assessment (EA) for Kapa'a Stream Bridge and Ma'ilihuna Intersection Improvements

The Office of Environmental Quality Control (OEQC) has reviewed the draft EA prepared for the subject project and offers the following comments for your consideration:

1. During the early consultation process, the Clean Water Branch recommended treating stormwater as a resource. The OEQC also encourages incorporating low-impact development (LID) concepts such as pavers or pervious pavements to help minimize runoff and to help groundwater recharge. Section 3.3.5.2 of the assessment indicates that the roundabout alternative would result in half as much added impervious surface area compared to the signalized intersection alternative. Therefore, the roundabout alternative would benefit stormwater management, especially if the circle is landscaped with pervious surface area. In the final EA, please consider landscaping in the circle in more detail. Please also consider incorporating LID concepts, such as rain gardens, regarding the installation of drainage infrastructure as described in section 2.3.1. Resources for LID can be found towards the bottom of this web page: http://planning.hawaii.gov/lud/.

2. For revegetation proposed in section 3.2.2.1, the OEQC recommends planting native vegetation (as considered in section 3.7.2) to ensure compliance with Act 233, Session Laws of Hawai'i.

3. Section 3.4.4 notes that the proposed bridge will not meet 100-year storm criteria, nor provide the 2-foot minimum freeboard. Please explain why these criteria cannot be met and detail any potential consequences of non-conformance.

4. Figure 2-3 shows there will be no crosswalk on Kūhiō Highway south of the proposed roundabout. Please explain why this is the case and give consideration to its inclusion, particularly as the *Statewide Pedestrian Master Plan* notes that pedestrians from neighborhoods *mauka* of the highway have difficulty accessing the *makai* side (section 4.4.4).

Thank you for the opportunity to comment on the draft EA. We look forward to a response that will also be included in the final EA. If you have any questions, please contact our office at (808) 586-4185.

Sincerely,

Scott J. Glenn

Scott Glenn, Director

cc: Kathleen Chu, CH2M HILL

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

March 16, 2017

In Reply Refer To:
HFPM-16

TO: SCOTT GLENN
DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET, SUITE 702
HONOLULU, HI 96813

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Mr. Glenn:

Thank you for sending comments on the Draft EA by letter dated August 23, 2016.

1. Storm water control measures are being designed into the project to avoid and minimize adverse impact. These measures may be found in Section 3.3 Wetlands, Hydrology, and Water Quality of the Final EA, and will be addressed further during permitting under Sections 401, 402, and 404 of the Clean Water Act.

2. Revegetation is expected to be minimal, affecting stream banks, limited strips of land along the highway, and properties used for construction staging and access. These areas will be restored to preconstruction condition. Native vegetation will be used, as appropriate.

3. For the proposed bridge to meet storm criteria, it would need to be raised a minimum of 5-feet to provide the 2 feet minimum freeboard above the 100-year water surface elevation. Consequently, the roadway at the north and south approaches to the bridge would also need to be raised. The higher roadway would cause the 100-year water surface elevations to rise. The Federal Emergency Management Agency (FEMA) and the County of Kauai's floodplain regulations do not allow any increase in the 100-year water surface elevations because the bridge is located within the floodway of Kapaa Stream.

   Non-conformance to the 2 feet minimum freeboard criteria will not result in any adverse impacts to the project and surrounding areas. Similar to the existing conditions, the proposed bridge will not overtop during the 100-year storm event. The proposed bridge will not increase the 100-year water surface elevations and cause additional flooding at the project site and surrounding areas.

4. Preliminary design included a crosswalk on Kuhio Highway south of the roundabout; however, the County requested its removal because there are no pedestrian facilities on the mauka side of Kuhio Highway in this area.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc: Christine Yamasaki, HDOT; Thomas Parker, CFLHD; Kathleen Chu, CH2M HILL

OFFICE OF PLANNING
STATE OF HAWAII

DAVID Y. IGE
GOVERNOR

LEO R. ASUNCION
DIRECTOR
OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http://planning.hawaii.gov/

Ref. No. P-15267

RECEIVED

AUG 12 2016

August 9, 2016

Mr. J. Michael Will, P.E.
Project Manager
Central Federal Lands Highways Division
Federal Highways Administration
12300 West Dakota Avenue, Suite 380A
Lakewood, Colorado 80228-2583

Dear Mr. Will:

Subject: Draft Environmental Assessment
Kapaa Stream Bridge, Kuhio Highway, and Mailihuna Road Intersection Project, Project No. HI STP SR50(1), Kuhio Highway, Kawaihau District, Island of Kauai;
Tax Map Key: (4) 4-6-014: 024 (por.), 033 (por.), 090 (por.), 092 (por.), (4) 4-7-003:001 (por.), (4) 4-7-008: 042 (por.), Kuhio Highway and Mailihuna Road Rights-of-Way

Thank you for the opportunity to provide comments on the Draft Environmental Assessment (Draft EA) for the Kapaa Stream Bridge replacement project. The review material was transmitted to our office via letter dated July 21, 2016.

It is our understanding that the Federal Highways Administration, Central Federal Lands Highway Division, in partnership with the Hawaii Department of Transportation (HDOT), proposes the replacement of Kapaa Stream Bridge. The project calls for the reconfiguration of the Mailihuna Road intersection (a three-legged intersection) to address safety concerns; the replacement of the current two span bridge with a longer and wider single-span bridge that will improve traffic flow and allow for heavier load capacity; and the relocation of an existing private driveway so that access is from Mailihuna Road.

The project also includes scour protection measures, supporting walls and slopes, utility relocations, and temporary staging areas. These improvements may extend the service life of the bridge and allow for greater structural stability.

The Office of Planning (OP) has reviewed the transmitted material and has the following comments to offer:

1) The Draft EA addresses a number of our comments made in a previous pre-consultation letter dated May 1, 2015 (Reference Number P-14732). The Draft EA:
   a) Verifies the tax map key parcels involved in this project;
   b) Examines the goals and objectives of the Hawaii Coastal Zone Management program as listed in Hawaii Revised Statutes (HRS) § 205A-2;
   c) Lists the project as consistent with the State Transportation Functional Plan, Objective I.A. Expansion of the transportation system, Policies 1A.1 and 1A.2;
   d) Includes a section on soil types in the project area and their susceptibility to erosion;
   e) Examines erosion control and sediment-loss best management practices that will be used to maintain water quality for Kapaa Stream and the nearshore environment;
   f) Examines stormwater runoff by stating that the bridge replacement and intersection projects would not change the general drainage pattern of stormwater flows and that the increase of impervious surfaces is limited to the roadway; and,
   g) States that the project will adhere to HDOT's Design Criteria for Highway Drainage (2010) to govern the hydraulic evaluation, analysis, and design. The project may incorporate low-impact development concepts, such as directing stormwater drainage into grass swales adjacent to the bridge and highway.

2) Section 4.2.1, page 4-7 to 4-8 of the Draft EA addresses the project's consistency with the objectives and policies of the Hawaii State Plan as listed in HRS Chapter 226. As stated in the Draft EA, the objectives and policies applicable to this project include HRS § 226-17 – facility systems – transportation.

   The analysis, however, should have addressed the Hawaii State Plan in its entirety. The Final Environmental Assessment (Final EA), should include an analysis that indicates whether the proposed project conforms to or is in conflict with all of the goals, objectives, policies, and priority guidelines listed in the Hawaii State Plan. The most efficient method is summarizing these in tabular form, followed by discussion passages. If any of these are not applicable, the Final EA should affirmatively state such determination.

3) Section 4.2.4, page 4-10 lists the need of a Federal Consistency determination. OP acknowledges the need for this determination, as the project must be consistent with the enforceable policies of the Hawaii Coastal Zone Management program. As OP is the state

agency which performs Federal Consistency determinations, please contact our office on the process to initiate this review.

4) Section 4.3.3, page 4-11 of the Draft EA lists the need for a Special Management Area (SMA) permit. OP acknowledges the need for this permit. Please contact the County of Kauai, Department of Planning on the procedures for obtaining an SMA approval.

We have no further comments at this time. If you have any questions regarding this comment letter, please contact Joshua Hekekia of our office at (808) 587-2845.

Sincerely,

Leo R. Asuncion
Director

c: Kathleen Chu, CH2M HILL

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

March 16, 2017

In Reply Refer To:
HFPM-16

TO: LEO R. ASUNCION
DIRECTOR
OFFICE OF PLANNING
235 SOUTH BERETANIA STREET, 6TH FLOOR
HONOLULU, HI 96813

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Mr. Asuncion:

Thank you for your letter dated August 2, 2016 confirming that your pre-consultation comments were addressed in the Draft EA and acknowledging the need for a Federal Consistency Determination. Documentation for the Federal Consistency Determination will be submitted to your agency as part of the permitting process. As pointed out in your letter, the project will require a Special Management Area permit and we are coordinating requirements for this permit with the Kauai County Planning Department. In response to your request to list all of the themes from HRS Chapter 226, additional detail has been added to Section 4.2.1 of the EA.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc: Christine Yamasaki, HDOT; Thomas Parker, CFLHD; Kathleen Chu, CH2M HILL

Bernard P. Carvalho, Jr.
Mayor

Wallace G. Rezentes, Jr.
Managing Director

Lyle Tabata
Acting County Engineer

DEPARTMENT OF PUBLIC WORKS
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite 275, Līhu'e, Hawai'i 96766
TEL (808) 241-4992 FAX (808) 241-6604

August 22, 2016

J. Michael Will, P.E.
Central Federal Lands Highway Division
Federal Highway Administration
12300 West Dakota Avenue, Suite 380A
Lakewood, CO 80228-2583

Subject Draft Environmental Assessment
Kapa'a Stream Bridge, Kūhiō Highway and Ma'ilihuna Road Intersection Project
Project No. HI STP SR56(1) **PW 07.16.150**

Dear Mr. Will:

We have reviewed the Draft Environmental Assessment (DEA) that was provided by your transmittal dated July 21, 2016, and we have the following comments:

1. Section 1.2 Project Overview.
   - Second paragraph:
     - This paragraph states that Ma'ilihuna Road has a roadway width of approximately 28 feet, but Section 2.2.2 of the DEA indicates that the roadway width is approximately 24 feet; the latter dimension is probably a better estimate of the width of this road.
     - This paragraph states that Ma'ilihuna Road has a posted speed limit of 15 mph. The correct underlying posted speed limit for Ma'ilihuna Road is 25 mph. There is also a 15 mph school zone speed limit along a portion of Ma'ilihuna Road.
     - It may also be useful to note that Ma'ilihuna Road has an Average Annual Daily Traffic (AADT) of 4,400 vehicles, according to the 2014 Traffic Station Map from the Hawai'i Department of Transportation (HDOT).
   - The fourth paragraph states that the AADT for Kūhiō Highway is approximately 12,600. The 2014 HDOT Traffic Station Map lists an AADT of 15,300 vehicles on Kūhiō Highway between Kawaihau Road and Ma'ilihuna Road and an AADT of 16,000 north of Keālia Road.

2. Section 1.3 Project Purpose and Need.

- We recommend that the word "all" be added to the Project Purpose statement, as follows: "The purpose of the project is to improve (1) the intersection of Kūhiō Highway and Ma'ilihuna Road and (2) the Kapa'a Stream Bridge. Improvement of both components are required to maintain a safe and functional regional transportation system for **all** highway users."
- The first bullet item under deficiencies has a sentence that reads "After bypassing the delay, vehicles merging back onto the paved roadway cause potential conflicts with vehicles from Ma'ilihuna Road turning left onto Kūhiō Highway". While this may be a potential problem, based on our observations, it does not appear to be one that has been regularly occurring at this intersection.
- The third bullet under deficiencies states that Kapa'a High School creates a large number of pedestrians crossing Kūhiō Highway. The DEA only talks about this in general terms and provides no details on how many pedestrians or bicyclists currently use or are projected to use the intersection.
- The fourth bullet refers to peak hour delays and queues. The DEA does not include any details or quantification of these delays. Without a detailed description of these deficiencies, it is not possible to compare the existing condition to the proposed alternatives and determine if the need is being met.
- The fifth bullet states "Heavy rains cause flooding on the shoulder of Kūhiō highway." A more detailed description of the deficiency should be provided in the DEA so that the reviewer has a better understanding of the problem and can determine if the need is being met.
- We recommend that the following bullet be added to the list of deficiencies:
  - The sidewalk connecting Keālia Road to Ma'ilihuna Road on the mauka side of the highway is incomplete.

3. Section 2.1.1 Surrounding Land Uses.
   - We recommend that the three nearby schools be mentioned and their proximity described, including Kapa'a High School Kapa'a Elementary School, and St. Catherine's School.
   - We recommend that the presence and distance to residential land uses be mentioned, including the large residential community along Ma'ilihuna Road and continuing up Kawaihau Road, as well as the residential subdivision accessed by Keālia Road mauka of the highway.
   - The current status of the Keālia Properties, LLC development should be checked and this paragraph revised as necessary.

4. Section 2.1.2. Other Nearby State and County Projects.
   - Revise this paragraph to read, "The HDOT Statewide Transportation Improvement Program (STIP) report for 2015 through 2018 identified proposed ~~sidewalk~~ construction activities by the County of Kauai on Mailihuna Road as part of its Kawaihau Road (Route 5860), Hauaala Road (Route 5865), and Mailihuna Road (Route 5870) Complete Street and Safety Improvements project. <u>This project includes sidewalk construction, crosswalk improvements, and construction of a roundabout at the intersection of these three roads.</u> Planning, design, and construction activities are

anticipated to be performed from 2016 to ~~2017~~ 2018.

5. Section 2.2.2 Roadway Dimensions, Approaches, and Operation. The last sentence states that the posted speed limit on Ma'ilihuna Road is 15 mph. As noted in our comments above on Section 1.2, the speed limit on Ma'ilihuna Road is 25 mph.

6. Section 2.3 Proposed Project. In the second paragraph, the stated posted speed limit on Ma'ilihuna Road should be corrected to be 25 mph.

7. Table 2-1 Project Design Criteria: We recommend that the proposed design speed and posted speed be changed from 40 mph to 35 mph from Kapa'a Town to north of Keālia Road. We believe that a 35 mph speed limit is appropriate given the future presence of a traffic signal or roundabout, as well as the many existing access points along this stretch of highway, including Ma'ilihuna Road and Keālia Road, at least 6 access points to beaches and overlooks (both formal and informal accesses), and access to the Kai'akea Fire Station.

8. Section 2.3.1 Intersection Improvements
   - Signalized Intersection Alternative
     - The County has recently received comments from the public and elected officials about the fact that Ma'ilihuna Road has only one eastbound lane approaching Kūhiō Highway. As a result, if one or two cars are queued to make a left turn onto Kūhiō Highway, then vehicles that are turning right onto Kūhiō Highway must queue up behind the left turning vehicles. Although the signalized intersection is projected to operate within a reasonable level of service for the project year 2036, we want to pass along the request to have two eastbound approach lanes at this intersection.
     - It isn't clear from the DEA how southbound left turn movements to the beach access would be handled. The design does not appear to provide enough space for a southbound left turn lane. We are concerned that southbound left turn movements from the southbound through lane would create both operational and safety problems, even if these movements are only made occasionally. Similarly, it is not clear how the westbound movements from the beach access would be addressed at the signalized intersection. Did the operational analyses consider these movements and any necessary signal phasing to accommodate these movements?
   - Single-Lane Roundabout Alternative
     - We recommend that a second eastbound lane be considered on the Ma'ilihuna Road approach to the roundabout, in order to address the fact that the Ma'ilihuna Road approach is expected to operate at LOS E. One advantage of a roundabout over a signalized intersection is that the additional lane could be very short, while still providing significant improvement in the capacity and reduction in delay for that approach. Even a flared approach that effectively provides a second lane for only one car length could significantly reduce delay for that approach.
     - We recommend the following language change in the second paragraph, in order

to not misrepresent what is defined as a right turn movement at a roundabout: "Its design would eliminate conflicting left-turn movements from northbound Kuhio Highway and from eastbound Mailihuna Road, because left turns are made indirectly at roundabouts, using easy to execute yield or diverging movements ~~only right turns are made into and out of the roundabout~~."

- The third paragraph states that the roundabout alternative would require substantial reconstruction of Ma'ilihuna Road in order to achieve an 8 percent maximum profile grade. The drawings included in the DEA do not provide details showing the proposed elevations and grades at the roundabout. However, if the roundabout has been designed in the typical way with the circulatory roadway sloping outward from the central island, it might be possible to reduce the necessary reconstruction of Ma'ilihuna Road by designing the roundabout on up to a 3% grade, sloping down from the mauka side to the makai side of the roundabout.

9. Table 2-2 Comparison of Operational and Maintenance Elements
   - Safety
     - The third bullet under signalized intersections states that the traffic signal would improve pedestrian safety. However, it is well-documented that pedestrians at signalized intersections have potential conflicts from concurrent left and right turns on green, right turns on red, as well as vehicles running red signals. At the Ma'ilihuna Road intersection, these conflicts might be especially challenging, due to the fact that the pedestrian demand and proposed crosswalk is located on the north side of the intersection. Unless exclusive pedestrian phasing was provided, that crosswalk would conflict with a fairly heavy volume of left turn movements on green. In addition, that crosswalk would conflict with a fairly heavy volume of right turn movements on red.
     - This intersection is semi-rural and relatively isolated. The placement of a signalized intersection at such intersections often violates driver expectation, resulting in a higher-than usual incidence of red light running and/or emergency stopping maneuvers. On the other hand, a well-designed roundabout is highly visible by approaching drivers and requires drivers to slow down somewhat each time they approach, without potential to be surprised by the sudden onset of a yellow then red signal. We recommend that a bullet be added that addresses this issue.
     - We recommend that a bullet be added to the roundabout side of the table as follows: "Proper roundabout design places a high priority on speed control, which is provided by geometric features, not just by traffic control devices or by the impedance of other traffic. Because of this, speed control is typically achieved at all times of day, limiting vehicle movements to approximately 20 mph. Lower vehicle speeds improve safety in many ways, including improving sight lines between users, providing more time for users to react, and reducing both the frequency and the severity of crashes."
   - Long-term maintenance
     - The second bullet states that the roundabout alternative would have additional

pavement to maintain and replace in the future. However, Section 3.3.5.2 (Long-term Impacts on Waters of the U.S. and Water Quality) indicates that the signalized intersection alternative would add twice as much impermeable surface than the roundabout alternative, due to the need for turn lanes with long tapers.

10. Section 2.4 No Action Alternative. This section states that under the No Action Alternative "the intersection would not be improved to increase operational efficiency and safety." The DEA provides few details on the existing operation efficiency, especially of the existing conditions. Since the existing condition is not quantified, it is not possible to determine if the proposed alternatives will be an improvement over existing conditions.

11. Section 2.5.1 Add Turn Lanes.
    - In this alternative, it is unclear how vehicles are intended to make southbound left turns to the beach access. It might be prudent to either prohibit southbound left turns or to mark the northbound merge lane as a two-way left turn lane so that it can accommodate both movements.
    - We do not recommend a marked crosswalk on a 40 mph highway without other measures to reduce speeds, reduce crossing distance, enhance driver awareness, or provide active warning of pedestrian presence. At a minimum, we recommend that this alternative include rectangular rapid flashing beacons or pedestrian hybrid beacons for the crosswalk across Kūhiō Highway.
    - The first reason stated for dismissing this alternative is "because there are no improvements to pedestrian and bicyclist safety on the southern leg of Kuhio Highway, which is in closer proximity to Kapaa High School, a primary source of pedestrians accessing the beach." This seems like an odd justification, since the signalized intersection and the roundabout alternatives also do not include a pedestrian crosswalk on the southern leg. We recommend that the justification focus on the lack of improvements to facilitate pedestrian crossings and turning movements at the intersection.

12. Section 2.5.2 Traffic Signals with Existing Lane Configuration.
    - We recommend that the justification include safety concerns for motorists waiting to turn left from the single northbound lane (in addition to delay concerns already described).

13. Section 2.9 Preliminary Cost and Schedule. Revise schedule as needed. It does not seem likely that construction will begin in mid-2017.

14. Figure 2-5 Typical Sections. Please show the mauka sidewalk alternative in both the roadway and bridge proposed typical sections.

15. Section 3.2 Climate and Air Quality. Please add a comparison of roundabout vs. traffic signal for projected greenhouse gas emissions. Roundabouts typically have significant benefits over signalized intersections when evaluated for fuel consumption and emissions

in the long term.

16. Section 3.4.4 Natural Hazards. Potential Impacts and Mitigation Measures. The Kapa'a Stream Bridge lies within Zone AEF on Flood Insurance Rate Map (FIRM) Panel 210F. Zone AEF is the floodway area of Zone AE. According to Section 3.4.4 of the DEA, the single span replacement bridge would not cause a rise in the 100-year water surface elevation and would meet FEMA's and the County of Kaua'i's Flood Hazard and No-rise requirements. A registered engineer will need to certify that the work will not cause an increase in the base flood elevation during the occurrence of the base flood discharge.

17. Section 3.12.2 Potential Impacts and Mitigation Measures.
    - Environmental Justice. Please note that a sidewalk on the mauka side of the highway would improve pedestrian access between the neighborhoods mauka of the highway off of Ma'ilihuna Road and Keālia Road. Improved pedestrian access benefits underserved populations, including seniors, children, and those that cannot afford automobiles.

18. Section 3.14.2 Potential Impacts and Mitigation Measures
    - Signalized Intersection Alternative. This section states, "The visual elements of the intersection would be in keeping with standard traffic signal design." Although it is mentioned tangentially in the next paragraph about the roundabout alternative, we recommend that this section on the signalized intersection alternative specifically state something such as, "The presence of traffic signal heads, mast arms, controller boxes, and other equipment and structures would change the viewing experience in this area."

19. Section 3.16.3 Parks and Recreational Facilities. Potential Impacts and Mitigation Measures. Figure 2.3 shows the edge of the proposed roundabout about 15 feet from the Shared Use Path, although the text in this section states that it is 20 feet. Modifying the design to place the path 20 feet from the roundabout would be sufficient to provide the recommended one car length between the path and the circulatory roadway of the roundabout.

20. Section 4.1.16 Environmental Justice, Executive Order 12898. Please note that a sidewalk on the mauka side of the highway would improve pedestrian access between the neighborhoods mauka of the highway off of Ma'ilihuna Road and Keālia Road. Improved pedestrian access benefits underserved populations, including seniors, children, and those that cannot afford automobiles.

21. Section 4.3.3 Special Management Area.
    - The Draft EA incorrectly states that the SMA boundary is located on the makai side of Kūhiō Highway's right-of-way. Based on Figure 4-3, the SMA boundary is located near the centerline of the Kūhiō Highway right-of-way. Please adjust the text accordingly.
    - It appears that in the traffic signal alternative, a traffic signal would be constructed

within the SMA. Based on HRS §205A-22, installation of a traffic signal within the SMA would be considered "development" and would not qualify for an exemption. The County Planning Department has serious concerns about the scenic impacts of a traffic signal at this location within the SMA, based on HRS §205A-2(b)(3)(A): "Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources."

22. Section 4.4.5 Complete Streets Policy. We do not believe that the project would be consistent with the State's Complete Streets Policy without a mauka sidewalk, as it would require pedestrians to cross the highway twice, or walk on the shoulder in the same direction of traffic when walking from Keālia Road to Ma'ilihuna Road, which is inconsistent with laws regulating pedestrian traffic and is potentially unsafe.

23. Section 4.4.6 Kaua'i Multimodal Land Transportation Plan. This project is not consistent with the County's Multimodal Land Transportation Plan without a mauka sidewalk, as it would require pedestrians to cross the highway twice, or walk on the shoulder in the same direction of traffic when walking from Keālia Road to Ma'ilihuna Road, which is inconsistent with laws regulating pedestrian traffic and is potentially unsafe.

24. Section 5.1 Significance Criteria.
    - Substantially affects public health.
        - The project alternative without a mauka sidewalk may place pedestrians in an unsafe condition and therefore has the potential to affect public health.

25. Letter from County of Kaua'i dated May 6, 2015.
    - The County no longer supports the statement in the May 6, 2015 letter that says, "Due to the presence of Ke Ala Hele Makalae (shared use path), there is no need for sidewalks on this bridge." Based on further analysis and discussion by the County Planning Department and the Department of Public Works, the County's current position regarding the need for a mauka side sidewalk is more accurately reflected in its letter dated February 4, 2016 and within this current letter.

26. The County of Kaua'i Planning Department and Department of Public Works strongly recommend the following alternatives:
    - The County of Kaua'i strongly prefers the roundabout alternative over the signalized intersection alternative for the following reasons:
        - A roundabout is a safer alternative to a signalized intersection. Research shows that at locations where signalized intersections were converted to roundabouts, all crashes were reduced by 48% and injury crashes were reduced by 78% (See Exhibit 5-9 of NCHRP Report 672 Roundabouts: An Informational Guide, Second Edition).
        - Based on the minimal amount of information included in the DEA, the roundabout alternative appears to have similar capacity and delay operational characteristics during the anticipated peak hours of traffic, but it appears that the off-peak hours have not been analyzed. Roundabouts typically offer reduced

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delay outside of peak hours when compared to signalized intersections, due largely to the amount of "lost time" associated with signal operations, including start up lost time and the lost time associated with yellow and red clearance intervals.

- The roundabout alternative will likely result in significantly lower fuel consumption and emissions over the life cycle of the project.
- The signalized intersection option will likely detract from the existing rural and village character of the area. Specifically, traffic signal structures and equipment will detract from the scenic qualities of the area, which is especially concerning because this intersection is partially within the Special Management Area.
- The signalized intersection option would require long-term maintenance of the traffic signals and equipment. Deterioration of electronic equipment and metal structures is of significant concern at this specific location, given the marine air environment at Keālia Beach, with strong trade winds coming off of the water most of the year.
- The roundabout alternative has the potential to reduce water quality impacts. The signalized intersection alternative has twice as much increase in impervious surface as the roundabout alternative. In addition, the roundabout alternative offers the central island as an area for potential landscaping that could be used for storm water filtration and retention.

- The County of Kaua'i strongly prefers the alternative to build a sidewalk on the mauka side of the roadway and bridge, for the following reasons:
  - A sidewalk on the mauka side is consistent with the project's Purpose and Need, the State of Hawai'i Complete Streets Policy, and the County of Kaua'i Multimodal Land Transportation Plan.
  - A sidewalk on the mauka side would protect public health and safety for pedestrians walking between Keālia Road and Ma'ilihuna Road.

Thank you for the opportunity to review and comment on the DEA for this project. We wish to remain on your mailing list to continue participating in the environmental review process. If you have any questions or need additional information, please contact Michael Moule, Engineering Division at (808) 241-4891.

Sincerely,

LYLE TABATA
Acting County Engineer

MICHAEL DAHILIG
Planning Director

MM/LS/SI
Copy to: Kathleen Chu, CH2M Hill, Inc.
(1132 Bishop Street, Suite 100, Honolulu, HI 96813)
Design and Permitting
Michael Moule, Chief of Engineering
Lee Steinmetz, Transportation Planner

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

March 16, 2017

In Reply Refer To:
HFPM-16

TO: LYLE TABATA, ACTING DIRECTOR
DEPARTMENT OF PUBLIC WORKS
444 RICE STREET, SUITE 275
LIHUE, HI 96766

MICHAEL DAHILIG, PLANNING DIRECTOR
PLANNING DEPARTMENT
444 RICE STREET, SUITE 473
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Messrs. Tabata and Dahilig:

Thank you for sending comments on the Draft EA by letter dated August 22, 2016. We offer the following in response to your comments:

1. Section 1.2 Project Overview. Various clarifications and inconsistencies noted.

The EA has been revised to correct inconsistent or inaccurate information.

2. Section 1.3 Purpose and Need. Request to add the word “all” to the Purpose and Need statement and to quantify the description of deficiencies.

The Purpose and Need statement applies to all highway users. The identified deficiencies were based on available quantified information, observations of HDOT personnel, and community feedback. Obtaining additional quantitative data would not have had an instrumental effect on the proposed solution.

3. Section 2.1.1 Surrounding Land Use. Recommend mention of schools and residential community mauka of the highway. Check status of Kealia project.

Kapaa High School is mentioned in the description of surrounding land uses. The development team for the Kealia project team was contacted in October 2016, at which time, it was reported that an Environmental Impact Statement and State Land Use Petition were being prepared for the proposed development of 235 residential units on 50 acres. The Final EA has been updated to reflect the number of units currently planned.

4. Section 2.1.2 Other Nearby State and County Projects. Revisions proposed to language describing the current STIP.

The wording in the EA is consistent with the STIP.

5. Section 2.2.2 Roadway Dimensions. Speed limit on Mailihuna Road should be corrected to 25 mph.

The speed limit on Mailihuna Road has been corrected.

6. Section 2.3 Proposed Project. Posted speed limit on Mailihuna Road should be corrected to 25 mph.

The speed limit on Mailihuna Road has been corrected.

7. Table 2-1. Project Design Criteria: Recommend that proposed design speed and posted speed be changed from 40 mph to 35 mph from Kapaa Town to north of Kealia Road.

Changing the highway design speed on the stretch of Kuhio Highway from Kapaa Town to north of Kealia Road is beyond the scope of this project; however, your recommendation has been forwarded to HDOT.

8. Section 2.3.1 Intersection Improvements. Comments and discussion of the signalized intersection alternative and single-lane roundabout alternative.

Comments comparing the signalized intersection and roundabout were noted and considered during the alternatives evaluation process.

9. Table 2-2 Comparison of Operational and Maintenance Elements. Comments and discussion of the safety and long-term maintenance elements.

Comments comparing safety and long-term maintenance elements were noted and considered during the alternatives evaluation process.

10 Section 2.4 No Action Alternative. No quantification of existing operations.

The complete traffic study report has been provided to the Public Works and Planning Departments.

11. Section 2.5.1 Add Turn Lanes. Comments on the alternative to add turn lanes (without signalizing the intersection).

The rationale for dismissing this alternative, as discussed in Section 2.5.1, has been revised to emphasize inadequate regulation of vehicular turning movements.

12. Section 2.5.2 Traffic Signals with Existing Lane Configuration. Comment raised safety concerns for motorists turning left from northbound lane of highway.

Comment is noted.

13. Section 2.9 Preliminary Cost and Schedule. Construction start in mid-2017 seems unlikely.

The preliminary start date in Section 2.9 has been revised to the end of 2017.

14. Figure 2-5. Typical Sections. Please show the mauka sidewalk alternative in both the roadway and bridge proposed typical sections.

Design is in progress for the mauka sidewalk. Typical sections will be included in the forthcoming SMA permit application.

15. Section 3.2 Climate and Air Quality. Add a comparison of roundabout vs traffic signal for projected greenhouse gas emissions.

An analysis of greenhouse gas emissions was not conducted because environmental impacts (whether comparing existing and future conditions or comparing alternatives) would be insignificant where there is no expectation of project-induced change in traffic volumes.

16. Section 3.4.4 Natural Hazards Potential Impacts and Mitigation Measures. A registered engineer will need to certify that work will not cause an increase in the base flood elevations.

The project design will be certified by a registered engineer in compliance with National Flood Insurance Program flood requirements.

17. Section 3.12.2 Potential Impacts and Mitigation Measures. Note that improved pedestrian access will benefit underserved populations, including seniors, children, and people who cannot afford automobiles.

Comment is noted.

18. Section 3.14.2 Potential Impacts and Mitigation Meausres. Should be noted that traffic signals, etc. will change the viewing experience in this area.

Comment is noted.

19. Section 3.16.3 Parks and Recreational Facilities Potential Impacts and Mitigation. As shown in Figure 2-3, the roundabout is too close to the bike path to provide sufficient space for waiting cars.

The issue of spacing and other refinements will be addressed during final design.

20. Section 4.1.16 Envinronmental Justice, Executive Order 12898 Note that improved pedestrian access will benefit underserved populations, including seniors, children, and people who cannot afford automobiles.

Comment is noted.

21. Section 4.3.3 Special Management Area. SMA boundary is located near the centerline of Kuhio Highway rather than on the makai side of the highway right-of-way.

The location of the SMA boundary in Section 4.3.3 has been revised accordingly.

22. Section 4.4.5 Complete Streets Policy. Project would not be consistent with the State's Complete Streets policy without mauka sidewalk.

Comments is noted.

Mauka sidewalk is included in the preferred build alternative.

23. Section 4.4.6 Kauai Multimodal Land Transportation Plan. Project is not consistent with plan without a mauka sidewalk.

Comment is noted.

24. Section 5.1 Significance Criteria. Discussion regarding effect on public health. Lack of mauka sidewalk may place pedestrians in unsafe condition with potential to affect public health.

Comment is noted.

25. Letter from County of Kauai dated May 6, 2015 (received during the early consultation phase of the project). County no longer supports the statement that a sidewalk on the bridge is not needed due to the presence of Ke Ala Hele Makalae (shared use path).

The change in the County's position has been indicated in Section 7.2 of the Final EA.

26. Summary and Conclusion. The Kauai Planning Department and Department of Public Works strongly recommend the roundabout alternative and construction of the mauka sidewalk for the reasons provided in the letter.

Based on more detailed engineering, comparative evaluation of environmental impacts, and public comments received, the single-lane roundabout design and mauka sidewalk have been selected as the project's build alternative and are described as such in the Final EA.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Thomas Parker, CFLHD
Kathleen Chu, CH2M HILL

From:	Chu, Kathleen/HNL
To:	Nishikawa, Nancy/HNL; Luersen, Paul/HNL; Kettley, Lisa/HNL
Subject:	FW: Comments on Draft EA for Kapaa Stream Bridge, Kuhio Highway, and Mailihuna Road Intersection Project. [EXTERNAL]
Date:	Wednesday, August 10, 2016 4:58:50 PM

FYI -

From: Jeremy Lee [mailto:jlee@kauai.gov]
Sent: Wednesday, August 10, 2016 2:52 PM
To: michael.will@dot.gov; Chu, Kathleen/HNL <Kathleen.Chu@CH2M.com>
Cc: Celia Mahikoa <cmahikoa@kauai.gov>
Subject: Comments on Draft EA for Kapaa Stream Bridge, Kuhio Highway, and Mailihuna Road Intersection Project. [EXTERNAL]

Michael and Kathleen,
Mahalo for the opportunity to comment on this project.
The CTA does not have any comments at this time but does request to be kept apprised of the project as it progresses forward.
Transit related technical questions, may need to be reviewed and addressed as technical specifications become available.
Mahalo,

Jeremy Kalawaia Lee
Program Specialist III
County Transportation Agency
3220 Hoolako Street
Lihue, Hawaii 96766
808-246-8112
jlee@kauai.gov
Please consider the environment before printing this email

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
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Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

March 16, 2017

In Reply Refer To:
HFPM-16

TO: CELIA MAHIKOA
EXECUTIVE DIRECTOR
KAUAI TRANSPORTATION AGENCY
3220 HOOLAKO STREET
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Ms. Mahikoa:

Thank you for responding during the Draft EA comment period via email from Jeremy Lee dated August 10, 2016. We acknowledge that your office has no comments at this time, but wishes to be kept informed about the project as it advances. Please be assured that coordination will continue through the implementation phase.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Thomas Parker, CFLHD
Kathleen Chu, CH2M HILL

Sandwich Isles Communications, Inc.
A Waimana Company

August 16, 2016

TO: Central Federal Lands Highway Division
Federal Highway Administration
12300 West Dakota Avenue, Suite 380A
Lakewood, CO 80228-2583

ATTN: Mr. Michael Will

SUBJECT: Draft Environmental Assessment,
Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection Project
Project No. HI STP SR50(1)
Kuhio Highway (State Route 56), Kawaihau District, Kauai Island
TMK: [4] 4-6-014:024 (por.), 033 (POR.), 090 (por.), 092 (por.);
4-7-003:001 (por.); and 4-7-008:042 (por.), Kuhio Highway and Mailihuna Road
Rights-of-Way

Thank you for the opportunity to comment on the subject project.

Sandwich Isles Communications' existing fiber optic duct system is mentioned in Section 3.18.2. Any work on the bridge may require temporary relocation of our facilities and would require advanced planning and engineering to avoid interruption of service to our customers. Any relocation cost would be subject to the applicable State laws.

For any additional questions or inquiries, please contact Lew Biven at (808) 540-5748, or by email at lbiven@sandwichisles.com.

Mahalo,

Kalani Andrade
Network Engineering and I.T. Manager
Clearcom, Inc. / Sandwich Isles Communication, Inc.
Cc: Ms. Kathleen Chu, CH2M Hill (via email Kathleen.Chu@ch2m.com)

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
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Michael.Will@dot.gov

March 16, 2017

In Reply Refer To:
HFPM-16

TO: KALANI ANDRADE
NETWORK ENGINEERING AND I.T. MANAGER
CLEARCOM, INC./SANDWICH ISLES COMMUNICATIONS, INC.
77-808 KAMEHAMEHA HIGHWAY
MILILANI, HI 96789

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Mr. Andrade:

Thank you for sending comments on the Draft EA by letter dated August 16, 2016 and confirming Sandwich Isles' ownership of an existing fiber optic duct system, as described in Section 3.18.2 of the EA. We will coordinate project requirements for temporary and/or permanent relocation of the telecommunication facilities with your office.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc: Christine Yamasaki, HDOT; Thomas Parker, CFLHD; Kathleen Chu, CH2M HILL

Kauai Path, Inc. :: P. O. Box 81 :: Lihue, HI 96766
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www.KauaiPath.org
news@kauaipath.org

a registered 501 (C) 3 non-profit, EIN 27-3343903

August 16, 2016

Mr. Mike Will
Central Federal Lands Highway Division
Federal Highway Administration
12300 West Dakota Avenue, Suite 380A
Lakewood, CO 80228-2583 Michael.Will@dot.gov
ph. (720) 963-3647

VIA: E-MAIL

Subject: HFPM-16 Kapaa Stream Bridge, Kuhio Highway and Mailihuna Road Intersection Project

SUPPORT FOR ROUNDABOUT AT INTERSECTION

Aloha Mr. Will,

Thank you for the opportunity to submit comments that will be included in the above referenced project's Environmental Assessment and considered in determining the most suitable design for the improvements.

Kauai Path's board members have discussed the present conditions and observed:

a) Northbound traffic on Kuhio Highway descends a slope and approaches a long straightaway. This combination may contribute to excessive vehicular speed.
b) Due to the preceding observation, left turns from Mailihuna Road are more complex than standard intersections.
c) High school students attending nearby Kapaa High School are relatively inexperienced drivers and comprise the demographic with the highest incidence of crashes. These young drivers will frequently drive through this intersection.
d) To accommodate bicyclists Mailihuna Road was recently stripped with sharrows in the descending lane and a climbing lane in the uphill direction.
e) Ke Ala Hele Makalae shared use path is immediately adjacent to the intersection with Mailihuna Road.
f) Pedestrians and bicyclists will access Ke Ala Hele Makalae from Mailihuna Road.

g) Due to the presence of cross traffic and pedestrians, motorists approaching Kapaa to the south or Kealia Beach to the north should not be enticed by roadway design to exceed the posted speed limits.
h) The Mailihuna Road and Kuhio Highway intersection is located in the tsunami inundation zone.
i) Bicyclists will travel both on Kuhio Highway's shoulders as well as on the parallel Ke Ala Hele Makalae.

In consideration of the observations listed above, Kauai Path's board of directors strongly endorses the construction of a roundabout at the intersection of Kuhio Highway and Mailihuna Road for the following reasons:

- A roundabout will passively regulate every vehicle's speed, addressing observations (a) & (g) in a manner that a signalized intersection cannot.
- A roundabout will eliminate the more hazardous left turn concern in observation (b) as all turns would be low speed right hand turns.
- Roundabouts are simpler for inexperienced drivers to navigate, addressing observation (c).
- Bicyclists easily navigate roundabouts due to the reduced vehicle speed, making a roundabout consistent with the bicycle friendly investments referenced in observations (d) & (e).
- To address observation (f), the thoughtful design of a roundabout is much friendlier for pedestrians if the roundabout is designed using currently favored specifications that
    - position the crosswalk between the first and second vehicles waiting to enter the roundabout,
    - provide curb-protected pedestrian refuges between the lanes, and
    - minimize each crosswalk's distance to a single lane.
- A roundabout does not require any of the electrical signaling equipment that is expensive to install and costly to maintain at a signalized intersection.
- A roundabout is not susceptible to the power interruptions that render a signalized intersection a liability, addressing concerns in observation (h).
- A roundabout can be built to withstand tsunami forces better than electrical fixtures, addressing concerns in observation (h).

With regard to the accommodations for bicyclists following Kuhio Highway's bicycle route:

- The width of the clear shoulders crossing the Kapaa Stream Bridge should be at least as wide as the designated bike routes north and south of the bridge.
- The area intended for bicyclists should be free of potentially hazardous joints or surface irregularities oriented parallel to the direction of travel.
- The bicycle routes should:
    - Encourage bicyclists to merge into the travel lane when approaching the roundabout.
    - Provide bicyclists with optional low-speed approaches to the sidewalks around the roundabout. If correctly designed, the profile of the access is flat enough to permit a bicyclist to roll from the shoulder to the sidewalk, while being sufficiently abrupt that while still on the bicycle route the

bicyclist will want to slow to an appropriate walking pace before they opt to access the sidewalk.

- Note: the Hardy & Umi Streets roundabout recently built in Lihue, Kauai provides a good example of both these design features.

Thank you for taking these comments into consideration in determining the most prudent and safest course of action in improving the roadways in the project area.

Sincerely,

Tommy A. Noyes
Executive Director, Kauai Path, Inc.

Copy via e-mail:

Mr. Lee Steinmetz
Transportation Planner, Planning Department
County of Kaua'i, lsteinmetz@kauai.gov

Mr. Michael Moule, PE, PTOE
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Ms. Kathleen Chu
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U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

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Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

March 16, 2017

In Reply Refer To:
HFPM-16

TO: TOMMY NOYES, EXECUTIVE DIRECTOR
KAUAI PATH, INC.
P.O. BOX 81
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Mr. Noyes:

Thank you for sending comments on the Draft EA by letter dated August 16, 2016. We acknowledge your preference for construction of a roundabout rather than traffic signals at the intersection of Kuhio Highway and Mailihuna Road. As explained in your letter, this preference is based on the ability of roundabouts to passively regulate vehicular speed and turning movements, and make it easier for bicyclists to navigate through the intersection and for pedestrians to cross the highway. Moreover, the roundabout does not require electrical equipment and may be better able to withstand coastal hazards. You also provided comments on the bike-friendly design of proposed improvements.

Based on more detailed engineering, comparative evaluation of environmental impacts, and public comments received, the roundabout design has been selected as the project's build alternative and is described as such in the Final EA.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc: Christine Yamasaki, HDOT; Thomas Parker, CFLHD; Kathleen Chu, CH2M HILL

August 15, 2016

Comments: Kealia Highway Bridge/Kuhio Hwy. - Malihuna Rd. Intersection

To: Central Federal Lands Highway Division – Federal Highway Administration, Lakewood, CO

CH2M HILL – Colorado/Hawaii

State of Hawaii

County of Kauai

Attn: Mike Will, Aaron Swafford, Kathleen Chu, Lee Steinmetz

To Whom It May Concern:

Thank you for the opportunity to provide comments about the above referenced projects and the Environmental Assessment you have done thus far. As the private land owner most affected by the projects I would hope our thoughts and concerns would be dealt with at the highest level of deportment for all involved. Thus far my interactions with both the government entities involved as well as CH2M HILL have been very positive and professional. I have the highest degree of confidence we can make both of the projects a win-win for the community, us as land owners, and the agencies and companies working on the projects. First of all, let me say that we are in agreement that the work should be done on both the bridge and intersection because of safety issues. Other than the visual impact, the bridge project does not affect us as much as the intersection issues. After having reviewed the renderings of the bridge in your Draft Environmental Assessment I am very happy with your projected visual presentation of what the bridge will look like after development. Congratulations on the teamwork and efforts all of you have made on that portion of the projects.

The renderings of the intersection were also well presented, however, I do have some concerns and questions about the following: our ingress and egress from the property onto Kuhio Highway or Malihuna Road, alterations made to our physical driveway, any visual impact on our property because of those alterations, and related security issues. During my conversations with CH2M HILL, Aaron Swafford, and their team, many of our concerns have been discussed and we are extremely pleased by the professionalism and skills this group has shown. The company and our Government could have no better representation than Aaron and team whose people skills, and obvious engineering skills, are extraordinary in every aspect! Duel qualities such as these are hard to find in one individual, let alone their team. On the Federal representation, we are very impressed with Mike Will and the extreme efforts he has made in a

leadership role with the project, as well as his understanding of the issues that all sides are dealing with. Also, Lee Steinmetz on the County and State level has been very helpful in addressing the issues that face Kauai. Lee has the important experience of living here and has shown a remarkable understanding of the issues facing the project from a Kauai point of view. We have confidence thus far that the changes on our physical property and ingress/egress issues will be appropriately addressed resulting in an acceptable solution to any problem needed to be worked out.

Let me address the still outstanding issue of the Roundabout versus Signalizing of the intersection. We are in favor of the Roundabout for several reasons.

1. It would be easier, and safer, for us to enter the flow of traffic at a roundabout. With a signalized intersection and us turning left out of the proposed driveway relocation, we would have to cross a right hand turn lane off of the Highway a very short distance from the intersection up the hill on Malihuna Rd. as those cars are exiting the highway and accelerating at a great speed to go up such a steep hill. In addition, the visibility to the drivers coming down Kuhio Highway from the north and turning right onto Malihuna Rd is also very poor because of the quick and extreme elevation at the entrance to Malihuna. Because cars will be more rapidly coming up Malihuna during the green light, they would have very little time, or awareness, of the fact that we might be turning left out of our driveway crossing their lane in order to get to the far lane coming down the hill. This will be our direction of egress 90 percent of the time going south to Kapaa and Lihue. Another contributing concern to the problem is that as cars are lined up at the signal coming down Malihuna it would be nearly impossible, and terribly unsafe, to cross a lane where cars are accelerating up the hill, after doing 50 miles an hour on the highway, and us attempting to turn left across that lane into a further lane that is sure to have cars backed up past our driveway entrance at certain times of the day. Currently there can be 15 to 20 cars backed up from the highway well past the proposed driveway, and even past our house. With the altered driveway our wait time just to turn left out of the driveway at rush hours could last as long as the rush hour does!
2. With the roundabout, traffic on the highway would be free flowing without lines of cars stopping in front of the house over the period of time it takes for a signal to change. Automobile exhaust pollution from the idling cars blown by the constant ocean trade winds directly into our house could be problematic.
3. A roundabout would not result in the moving of our driveway, gate, walls, landscaping and the large infrastructure costs that would have to occur with a signal.
4. The roundabout is more in keeping with the direction Kauai is taking, and would add a more pleasant local and visitor experience entering into the Kealia and Beach area.
5. Having lived at this location for over 25 years I can tell you a signalized intersection will be high maintenance endeavor for the county. The trade winds and salt air stream in

from the ocean for over two thirds of the year and the salt forces rust and corrosion to a very high degree. For instance, we have 3 TV's and they have to be replaced every 2 to 3 years. We have to replace most metal on the house every 5 yrs. The street light in front of our driveway only works half the time, didn't work for over a year between 2014/2015 and has needed to be replaced several times. Our last painter said we don't live in a house, we live in a boat! If maintenance time and costs are an issue, the signal apparatus would have to be carefully maintained, or made of non-corrosive materials if available.

In the event a roundabout is implemented, one concern is how our existing driveway would need to be slightly re-directed in order to enter the highway/roundabout. If the roundabout were situated as far south of the current driveway as possible it would let us enter the highway first and then the roundabout. If the north side roundabout entrance is adjacent to, or in front of, the driveway we would need to enter the roundabout directly, which would be doable but is not the most satisfactory design. We would be in favor of entering onto the highway for a short distance before entering the roundabout if possible. Redirecting the bottom of Malihuna Rd. slightly to the right would give the needed distance to effect the most desirable roundabout access for us; and would be far less expensive than the currently contemplated work of moving the driveway with the vast amount of dirt, walls, concrete, gates and landscaping that would need to be satisfactorily put in place.

I look forward to continuing the dialogue and am thankful for having the opportunity to address the concerns and solutions to making these two projects as efficient and acceptable as possible to all involved. Thank you for the heart felt conversations and the openness we have experienced thus far. Everyone involved with the design and implementation of these needed infrastructure enhancements to our fragile island of Kauai has been exceptional.

If you have any questions or comments please feel free to contact me at (808) 634-8800. I am currently in Utah for a few months so operating on U.S. Mountain Time which is 4 hours ahead of Hawaii.

Sincerely,

R. Gordon Oswald and Family

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
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Fax: 720-963-3596
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March 16, 2017

In Reply Refer To:
HFPM-16

TO: R. GORDON OSWALD
P.O. BOX 510052
KEALIA, HI 96751

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA)
KAPAA STREAM BRIDGE, KUHIO HIGHWAY,
AND MAILIHUNA ROAD INTERSECTION PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND
TMKS: [4] 4-6-014:024 POR., 033 POR., 090 POR., 090 POR.;
4-7-003:001 POR; AND 4-7-008:042 POR.
KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHT-OF-WAY

Dear Mr. Oswald:

Thank you for sending comments on the Draft EA by letter dated August 15, 2016. We acknowledge your preference for construction of a roundabout rather than traffic signals at the intersection of Kuhio Highway and Mailihuna Road. This preference is based on ease and safety of highway access from your property, reduced traffic congestion and the environmental effects associated with slowed traffic flow, reduced impacts on your property, consistency with the character of coastal development, and the possibility that traffic signals would have higher maintenance requirements.

Based on more detailed engineering, comparative evaluation of environmental impacts, and public comments received, the roundabout design has been selected as the project's build alternative. We will continue to coordinate project requirements with you.

If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc: Christine Yamasaki, HDOT; Thomas Parker, CFLHD; Kathleen Chu, CH2M HILL

Appendix A
Determination and Delineation of Wetlands and Other Waters of the US, For the Kapaa Stream Bridge Project, March 2015

SWCA®
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.®

Determination and Delineation of Wetlands and Other Waters of the U.S. for the Kapa‘a Stream Bridge Project

Kapa‘a, Kaua‘i Island, Hawai‘i

Prepared for

CH2M HILL

Prepared by

SWCA Environmental Consultants

March 2015

DETERMINATION AND DELINEATION OF WETLANDS AND OTHER WATERS OF THE U.S. FOR THE KAPA‘A STREAM BRIDGE PROJECT

KAPA‘A, KAUA‘I ISLAND, HAWAI‘I

Prepared for

CH2M HILL
1132 Bishop Street, Suite 1100
Honolulu, Hawai‘i 96813
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Prepared by

SWCA Environmental Consultants
Bishop Square ASB Tower
1001 Bishop Street, Suite 2800
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SWCA Project No. 27166

Submitted February 18, 2015
Revised March 20, 2015

WATERS OF THE U.S. DETERMINATION/DELINEATION SUMMARY

PROJECT NAME: Kapaʻa Stream Bridge

SITE LOCATION: Kapaʻa, Kauaʻi Island, Hawaiʻi
22°5'38.38"N, 159°18'26.14"W

OWNER: Hawaiʻi Department of Transportation

SURVEY DATES: September 29, 2014

PROJECT STAFF: Brian Nicholson, Wetland Specialist
Tiffany Bovino Agostini, Botanist/Project Manager
Bryson Luke, Field Technician

SUMMARY

SWCA Environmental Consultants (SWCA) was tasked by CH2M HILL to conduct a determination and delineation of wetlands and other potential Waters of the U.S. governed by the Clean Water Act and the Rivers and Harbors Act at nine bridge projects throughout the state of Hawaiʻi. This report summarizes the findings of the potential Waters of the U.S. delineation conducted at the Kapaʻa Stream site located in Kapaʻa, Kauaʻi on September 29, 2014.

The proposed project is to address the existing Kapaʻa Stream Bridge to amend structurally deficient conditions, narrow roadway widths, limited load capacity, substandard bridge railings, and adverse effects from hydraulic scour. Although the current assumption is to replace the entire bridge, further investigation will take place to determine if the existing bridge can be rehabilitated and widened to accommodate the wider road design and the current bridge design standards. The existing foundations, consisting of timber piles, will be replaced with deep foundations. Construction of the new bridge pier will be within the stream. It is unknown if the project will require a water diversion (e.g., cofferdam, pumping) to complete construction. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements. A temporary replacement bridge will be required for the maintenance of traffic. The current assumption is to use a two-way detour route with a temporary bridge located downstream of the existing bridge. The delineation of Waters of the U.S. was conducted in support of the environmental compliance efforts for the project.

The survey area encompasses approximately 8.2 acres (3.3 hectares). Elevations at the site range from sea level to roughly 30 feet (9.1 meters) above mean sea level. The National Wetlands Inventory (NWI) program identifies three wetland and water types within the survey area. These comprise Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded (R2UBH); Palustrine, Emergent, Persistent, Seasonally Flooded (PEM1C); and Palustrine, Emergent, Persistent, Seasonal-Tidal (PEM1R). A marine water—Marine, Intertidal, Unconsolidated Shore, Irregularly Flooded (M2USP)—is identified immediately east of the survey area. Geospatial data from the State of Hawaiʻi and the U.S. Geological Survey identify that the perennial Kapaʻa Stream flows through the survey area.

Ten wetland sampling points were evaluated within the survey area to determine whether wetlands or other Waters of the U.S. occur. A detailed field-based determination indicates that three of the ten sampling points meet the three-criterion test for wetlands (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) pursuant the 1987 *Corps of Engineers Wetland Delineation Manual* and the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawaiʻi and Pacific Islands Region*. SWCA delineated approximately 1.98 acres (0.80 hectare) of tidal, non-wetland Waters of the U.S. below the high tide line, and 0.31 acre (0.12 hectare) of tidal wetlands. The Kapaʻa Stream appears to carry a relatively permanent flow of water to the Pacific Ocean. This conclusion is subject to confirmation by the U.S. Army Corps of Engineers.

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ABBREVIATIONS

CFR	Code of Federal Regulations
CWA	Clean Water Act
CWB	Clean Water Branch
CWRM	Commission on Water Resource Management
FAC	Facultative
FACW	Facultative Wetland
ha	hectare(s)
m	meter(s)
MHW	Mean High Water
MHHW	Mean Higher High Water
mm	millimeter(s)
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OBL	Obligate
SCAP	Stream Channel Alteration Permit
SWCA	SWCA Environmental Consultants
USACE	U.S. Army Corps of Engineers
WoUS	Waters of the U.S.

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE) derives its regulatory authority over wetlands and other Waters of the U.S. (WoUS) from two federal laws: 1) Section 10 of the Rivers and Harbors Act of 1899 and 2) Section 404 of the Clean Water Act (CWA) of 1972. The Rivers and Harbors Act of 1899 prevents unauthorized obstruction or alteration of navigable WoUS. Navigable waters are defined as "subject to the ebb and flow of the tide and/or presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 Code of Federal Regulations [CFR] 325.5(c)(2)). A Section 10 permit is required for non-fill discharging activities proposed within, over, or under WoUS. The limits of jurisdiction for tidally influenced navigable waters extend to the mean high water (MHW) line or high tide line. A more conservative approach than the MHW, the mean higher high water (MHHW) line, is often used.

Under Section 404 of the CWA, dredged and fill material may not be discharged into jurisdictional WoUS (including wetlands) without a permit. According to 40 CFR 230.3, WoUS subject to agency jurisdiction under Section 404 include navigable waters and their tributaries, interstate waters and their tributaries, wetlands adjacent to these waters, and impoundments of these waters. In addition, waters are protected by the CWA if determined to have a "significant nexus" with a traditional navigable water or interstate water (Environmental Protection Agency and USACE 2011). The U.S. Supreme Court's decision in the consolidated cases *Rapanos* v. *United States* and *Carabell* v. *United States* (126 S. Ct. 2208) provides further information regarding whether a wetland or tributary is a WoUS. A Section 404 permit is required for all fill or discharge activities below (seaward or makai) of the MHW/MHHW line or high tide line in tidal waters or ordinary high water mark (OHWM) for non-tidal, non-wetland waters.

The USACE (33 CFR 230.3) and U.S. Environmental Protection Agency (40 CFR 230.3) define *wetlands* as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (40 CFR 232.3). The 1987 *Corps of Engineers Wetlands Delineation Manual* (USACE 1987 Manual; USACE 1987), as amended, outlines the technical guidelines and methods for identifying and delineating wetlands potentially subject to Section 404. This manual is supplemented by the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawaiʻi and Pacific Islands Region* (Hawaiʻi and Pacific Island Regional Supplement; USACE 2012).

CH2M HILL is reviewing the proposed Kapaʻa Stream Bridge project (hereafter *project*) pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the CWA. The project involves alterations to the existing Kapaʻa Stream Bridge to amend structurally deficient conditions, narrow roadway widths, limited load capacity, substandard bridge railings, and adverse effects from hydraulic scour. Although the current assumption is to replace the entire bridge, further investigation will take place to determine if the existing bridge can be rehabilitated and widened to accommodate the wider road design and current bridge design standards. The existing foundations, consisting of timber piles, shall be replaced with deep foundations. Construction of the new bridge pier will be within the stream. It is unknown if the project will require a water diversion (e.g., cofferdam, pumping) to complete construction. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements. A temporary replacement bridge will be required for the maintenance of traffic. The current assumption is to use a two-way detour route with a temporary bridge located downstream of the existing bridge. The delineation of WoUS was conducted in support of the environmental compliance efforts for the project.

2.0 DESCRIPTION OF THE SURVEY AREA

2.1 Location and Vicinity

The Kapaʻa Bridge site and survey area are located in the Kapaʻa area on the Island of Kauaʻi along Kūhiō Hwy (Route 56) (Figure 1). The survey area covers approximately 8.2 acres (3.3 hectares [ha]), stretching south of Mailihuna Road and north of mile post 10 near the gravel beach park parking lot. The existing Kapaʻa Bridge is approximately 150 feet (45.7 meters [m]) long and 38.5 feet (11.7 m) wide. The survey area encompasses the former cane haul road bridge, located immediately makai (seaward) of the Kapaʻa Bridge, which is part of the Kauaʻi bike and pedestrian path. A small ramp is present, adjacent to the cane haul road bridge; this may have formerly been used to launch small watercraft.

2.2 Topography and Soils

Elevations in the survey area range from sea level to roughly 30 feet (9.1 m) above sea level. The Natural Resources Conservation Service (NRCS) identifies the following five soil types in the survey area: Mokuleia fine sandy loam (Mr); Mokuleia clay loam, poorly drained variant (Mta); Lihue silty clay, 25%–40% slopes (LhE2); Beaches (BS); and Water > 40 acres (W) (Foote et al. 1972; NRCS 2013) (Figure 2). The Mokuleia clay loam, poorly drained variant (Mta) soil type is listed as a hydric soil (NRCS 2012).

2.3 Hydrology

Mean annual rainfall for this area is approximately 40.7 inches (1,034 millimeters [mm]). Rainfall is typically highest in November and lowest in June–July (Giambelluca et al. 2013). The closest rainfall gage to the site (Anahola) experienced above-average rainfall for 2014 through the end of September (National Oceanic and Atmospheric Administration/National Weather Service, Weather Forecast Office Honolulu 2014).

The National Wetlands Inventory (NWI) program identifies three wetland and water types within the survey area (Figure 3). These comprise Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded (R2UBH); Palustrine, Emergent, Persistent, Seasonally Flooded (PEM1C); and Palustrine, Emergent, Persistent, Seasonal-Tidal (PEM1R). A marine water (Marine, Intertidal, Unconsolidated Shore, Irregularly Flooded - M2USP) is identified immediately east of the survey area.

The State of Hawaiʻi and the U.S. Geological Survey identify Kapaʻa Stream transversing the survey area (Figure 1). The total length of this perennial stream is approximately 59.2 miles (95.3 kilometers) according to the *Atlas of Hawaiian Watersheds & Their Aquatic Resources* (Parham et al. 2008). Kapaʻa Stream is listed as a 303(d) Impaired Waterbody. Turbidity is listed as the cause of impairment (Hawaiʻi State Department of Health 2014).

2.4 Flora and Fauna

Flora and fauna surveys of the survey area were conducted by SWCA on the same date as the WoUS survey. Vegetation types identified during that survey include stand vegetation, ruderal weedy vegetation, and emergent wetland vegetation. The site is dominated by non-native plants, and no state or federally listed plant species were seen during the survey (SWCA 2014).

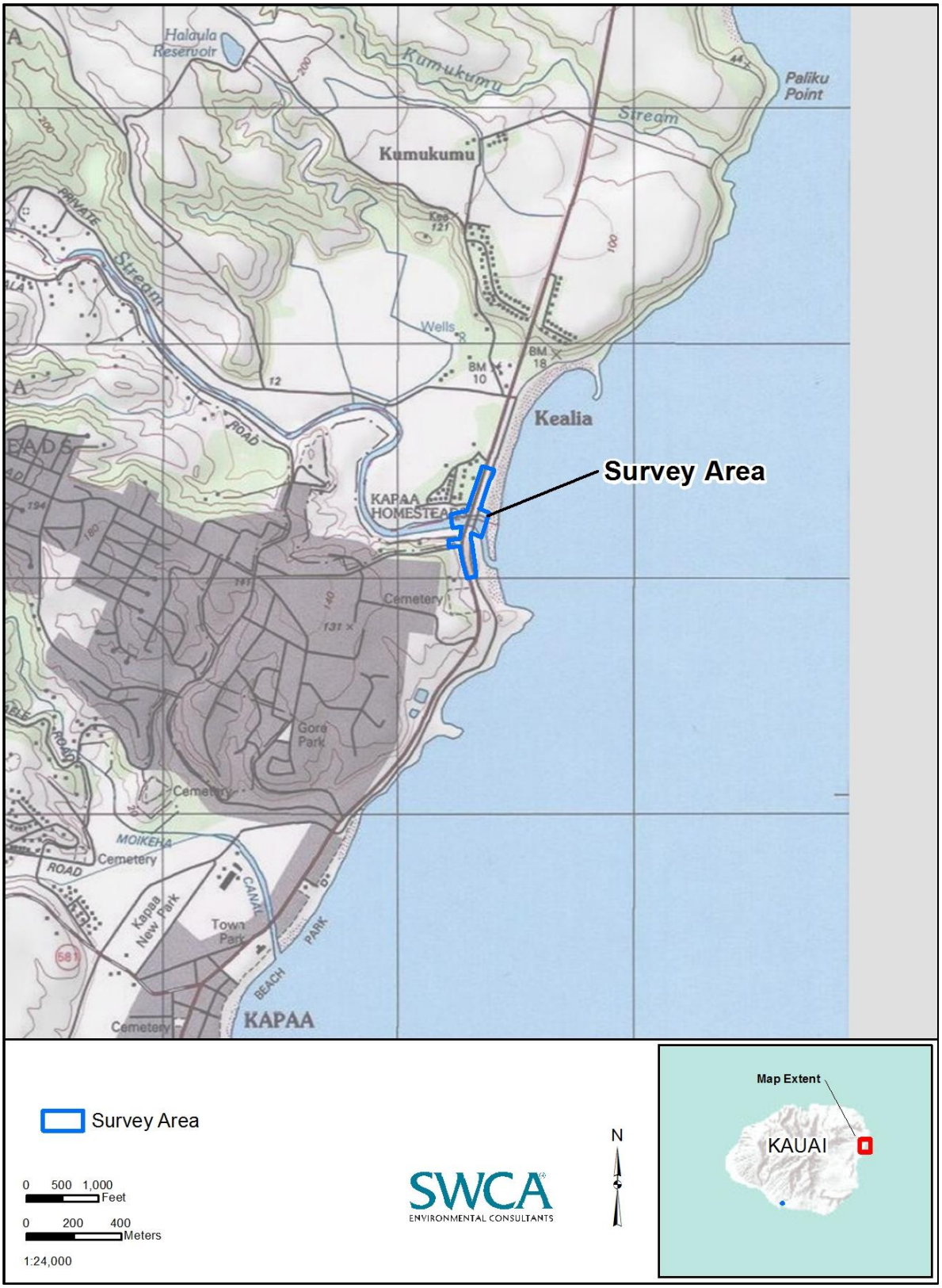

Figure 1. Location of survey area.

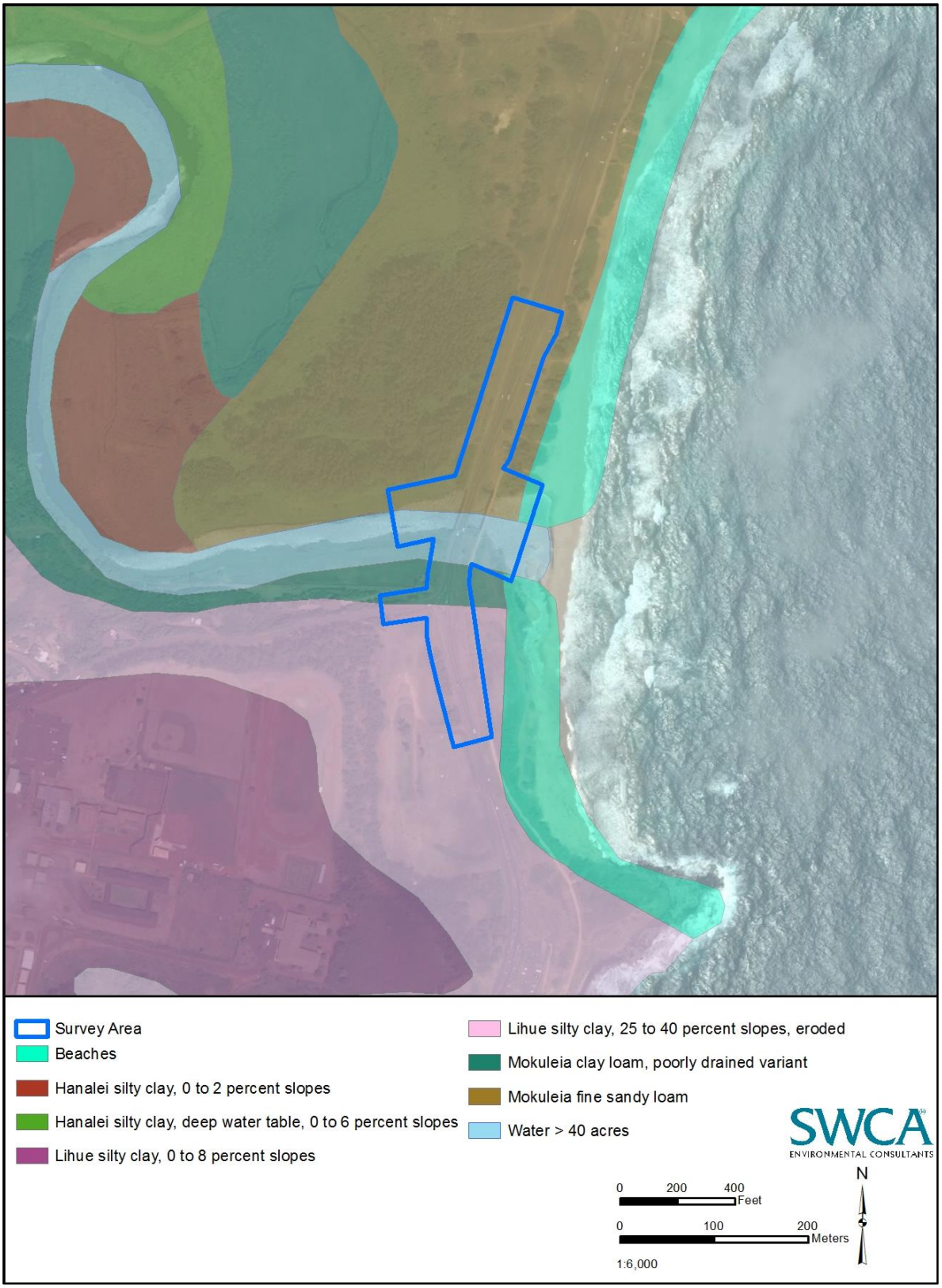

Figure 2. Soil types within the survey area.

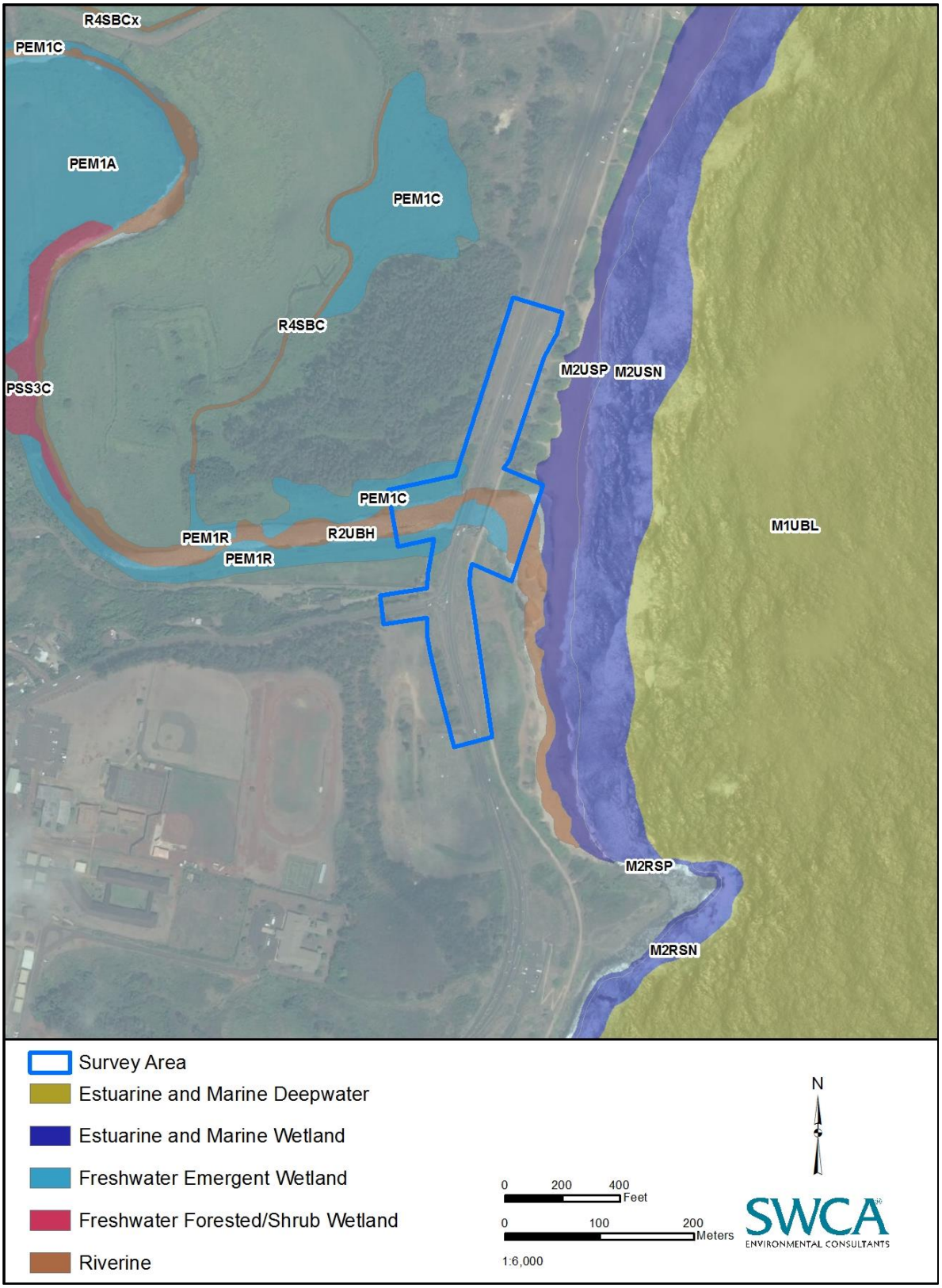

Figure 3. National Wetland Inventory classifications near the survey area.

The endangered Hawaiian gallinule or ʻalae ʻula (*Gallinula galeata sandvicensis*) was observed during the biological survey of Kapaʻa bridge. The Hawaiian gallinule, and three other species of endangered waterbirds—Hawaiian duck or koloa maoli (*Anas wyvilliana*), Hawaiian coot or ʻalae keʻokeʻo (*Fulica alai*), and Hawaiian stilt or aeʻo (*Himantopus mexicanus*)—could be present within the survey area at any time. It is possible that breeding habitat of these endangered species may occur in or near the survey area. Nēnē (*Branta sandvicensis*) may also be present on occasion and could fly over the survey area. Seabirds, particularly the endangered Hawaiian petrel (*Pterodroma sandwichensis*) and the threatened Newell's shearwater (*Puffinus auricularis newelli*), may fly over the survey area at night while travelling to and from their upland nesting sites to the ocean. Finally, the endangered Hawaiian hoary bat or ʻōpeʻapeʻa (*Lasiurus cinereus semotus*) may pass through the site or forage or roost within the survey area (SWCA 2014).

No endangered Hawaiian monk seals (*Monachus schauinslandi*) or threatened green sea turtles (*Chelonia mydas*) were observed during the survey; however, these animals may haul out or bask on the beach or be found in the marine waters nearby (SWCA 2014).

3.0 METHODOLOGY

Before visiting the survey area, aerial photographs and topographic maps were examined to identify potential wetlands or other WoUS in or near the survey area. Information was also gleaned from the NWI program, NRCS hydric soil data, as well as previous water resource reports and environmental assessments/environmental impact statements.

SWCA biologists conducted WoUS determination and delineation fieldwork on September 29, 2014. The biologists employed methods for determining the presence of wetlands as prescribed by the USACE 1987 Manual (USACE 1987) and the Hawaiʻi and Pacific Island Regional Supplement (USACE 2012). Based on these documents, jurisdictional wetlands are identified using the following three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. All three criteria must be present for an area to be considered a wetland, unless the site is disturbed. An explanation of the three wetland criteria is provided below. Wetland determination data forms prepared during the survey are included in Appendix A.

As stated above, the jurisdiction of tidal, non-wetland WoUS extends to the high tide line or MHW line. The High Tide Line is defined as the intersection of the land with the water's surface at the maximum height reached by a rising tide (33 CFR Part 328). MHW is defined as the average of the higher high water height of each tidal day observed over the National Tidal Datum Epoch. The USACE Honolulu District often suggests using the more conservative MHHW line. Contours were mapped by ControlPoint Surveying, provided to SWCA as CAD files and subsequently projected in ArcGIS. The high tide line is determined by physical characteristics or indicators.

The geographic coordinates of sampling points and non-wetland features were collected in the field with Trimble GeoXT 6000 Series global positioning system (GPS) unit and data were post-processed in ArcGIS using GPS Correct to sub-meter accuracy. The linear length and acreage of these features were calculated by projecting these point and line data files in a geographic information system.

3.1 Vegetation

The USACE defines *hydrophytic vegetation* as "the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence" (USACE 2012). *The National Wetland Plant List* (Lichvar 2012; USACE 2014) designates wetland indicator statuses for plants in the Hawaiian Islands. The use of plant indicators helps estimate the probability of a species occurring in wetlands versus uplands. Plants are considered hydrophytes if they are

classified as Obligate (OBL), Facultative Wetland (FACW), or Facultative (FAC). Descriptions of the plant indictor statuses are provided in Table 1.

Each sampling point represents a different vegetation community or NWI-designated water. At each sampling point, the absolute percentage cover was estimated for each plant species within each vegetation strata (i.e., tree, shrub, herb, woody vine). Species that individually or collectively exceeded 50% of the total cover and those with 20% of the total cover in the stratum were considered dominant (USACE 2012). These species were then compared with *The Hawaii 2014 State Wetland Plant List* (USACE 2014). Taxonomy and nomenclature follow Wagner et al. (1999, 2012) and Wagner and Herbst (2003).

Table 1. Wetland Plant Indicators

Plant Indicator	Code	Description
Obligate Wetland species	OBL	Almost always is a hydrophyte, rarely in uplands.
Facultative Wetland species	FACW	Usually is a hydrophyte, but occasionally found in uplands.
Facultative species	FAC	Commonly occurs as either a hydrophyte or non-hydrophyte.
Facultative Upland species	FACU	Occasionally is a hydrophyte, but usually occurs in uplands.
Upland species	UPL	Rarely is a hydrophyte, almost always in uplands.

Source: Lichvar et al. (2012).

3.2 Soils

A *hydric soil* is "formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (NRCS 2010). The NRCS National List of Hydric Soils (NRCS 2012) for Kauaʻi Island includes 12 hydric soils for the island. SWCA compared the NRCS National List of Hydric Soils with soils mapped in the study area by the NRCS.

This generalized soil survey does not always capture the true hydric condition of the soils on individual sites; therefore, on-site soil evaluations of wetlands by specialists are also necessary. Soil characteristics were determined in the field by digging pits using a spade. Bedrock substrate often prevented excavation to the recommended depth. SWCA biologists identified soil samples in the field with standardized color chips (i.e., Munsell Soil Color Charts; Kollmorgen Instruments Corporation 1998) of hue, value, and chroma, and by texture (sand, silt, clay, loam, muck, and peat). Anaerobic soil conditions and the presence of gleyed soils were of particular interest (USACE 1987).

3.3 Hydrology

Wetland hydrology examines the behavior of water in wetlands. Indicators of wetland hydrology are classified as primary or secondary. Examples of primary hydrologic indicators in Hawaiʻi include soil saturation, high water table, surface water, hydrogen sulfide odor, sediment and drift deposits, algal mats, iron deposits, and the presence of tilapia (*Oreochromis* sp./*Sarotherodon* sp.) redds or aquatic fauna (USACE 2012). Secondary regional hydrologic indicators include surface soil cracks and geomorphic position. One primary indictor or any two secondary indicators must be present to conclude that wetland hydrology is present (USACE 2012). SWCA evaluated both primary and secondary hydrology indicators at each sampling point.

3.4 Boundaries of Non-Wetland Waters

SWCA field personnel delineated the boundaries of tidal non-wetland waters by recording the location of the high tide line. The MHHW contour line (approximately 1 foot) provided by ControlPoint Surveying is also shown for reference.

4.0 FINDINGS

In all, approximately 1.98 acres (0.80 ha) of tidal, non-wetland WoUS (Riverine, Tidal [R1]) and 0.31 acre (0.12 ha) of tidal, wetlands (Palustrine Emergent Marsh [PEM], Tidal) were delineated within the survey area (Figure 4). The types and acreage of WoUS delineated by SWCA are summarized in Table 2.

Table 2. Potential Waters of the U.S. Delineated by SWCA in the Survey Area

WOUS ID	Type	Size (acres)
1	Riverine, Tidal (R1)	1.98
2	Palustrine Emergent Marsh [PEM], Tidal	0.28
3	Palustrine Emergent Marsh [PEM], Tidal	0.02
4	Palustrine Emergent Marsh [PEM], Tidal	0.01
	R1 subtotal	1.98
	PEM subtotal	0.31
	Total	**2.29**

4.1 Non-Wetland Waters

A single perennial non-wetland water (Kapaʻa Stream) was identified in the survey area (Figure 4). This segment of Kapaʻa Stream was determined to be tidally influenced due to the close proximity to the ocean and the presence of marine/estuarine biota (e.g., Hawaiian flagtail [*Kuhlia* spp.]) observed during SWCA's field work (SWCA 2014) and from previous surveys (AECOS 2002, Parham et al. 2008). The high tide line was determined using several factors. Near the Kapaʻa Bridge and the former Cane Haul Road Bridge, where the banks of the drainage are cemented, SWCA determined that the high tide line at the top of the vertical concrete wall (Figure 5). In the remainder of the survey area the high tide line was determined at the line of debris and shells deposited along the shore, as well as the vegetation line (Figure 6). The MHHW, located at 1.017 feet (0.31 m) above mean sea level (National Oceanic and Atmospheric Administration 2014), is also shown in Figure 4.

The mouth of Kapaʻa Stream is shaped by a variety of natural conditions, and likely shifts throughout the year. Natural conditions influencing elevation and physical features near the mouth include stream flow, sediment deposition, ocean tide, and wave action.

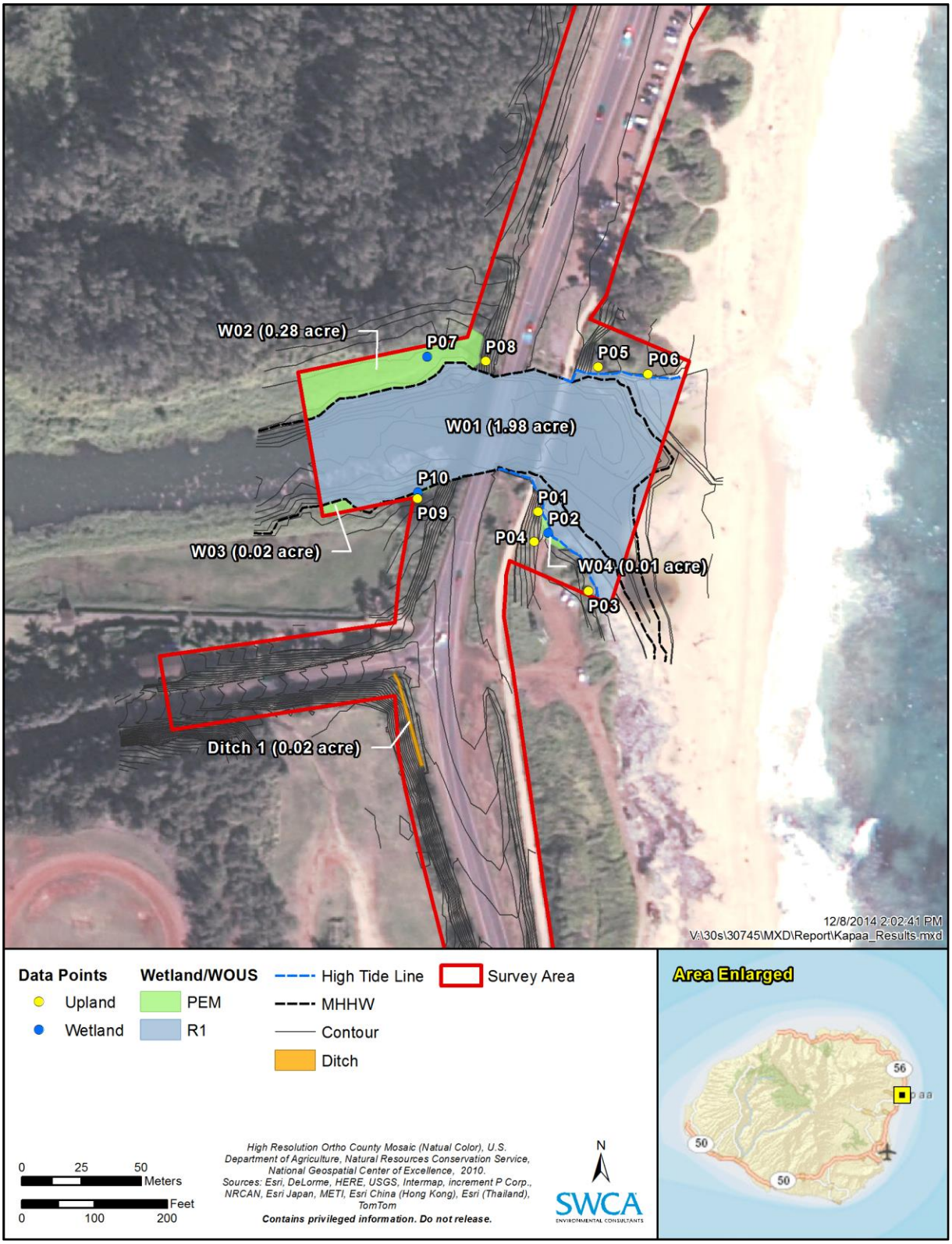

Figure 4. Survey results and delineated Waters of the U.S.

Figure 5. Cane Haul Road Bridge and Kapaʻa Stream bridge showing modifications on the left bank.

Figure 6. Looking upstream toward Kapaʻa Bridge. Note: high tide line is shown by yellow lines.

4.2 Wetlands

As shown in Table 3, three of the ten points evaluated by SWCA at the survey area met the three-criterion test indicative of wetland conditions pursuant to the USACE 1987 Manual and the Hawaiʻi and Pacific Island Regional Supplement (Figures 7–9). Upland, non-wetland points analogous to wetland points were identified where necessary, and boundary lines were delineated following changes in topography, substrate, vegetation communities, and/or soil indicators. The wetland determination data forms for the sampling points are included in Appendix A.

Table 3. Determination of Sampling Points

Sampling Point	Hydrophytic Vegetation Present?	Hydric Soil Present?	Wetland Hydrology Present?	Is the Sampling Point a Wetland?
1	N	N	N	N
2	Y	Y	Y	Y
3	N	N	N	N
4	Y	N	N	N
5	N	N	N	N
6	Y	N	N	N
7	Y	Y	Y	Y
8	N	N	N	N
9	Y	N	N	N
10	Y	Y	Y	Y

Note: Wetland sample points are highlighted in gray.

4.2.1 Vegetation

Six of the ten sampling points had hydrophytic vegetation present. The dominant plants observed at the three wetland sampling points are California grass (*Urochloa mutica*) (FACW), coconut (*Cocos nucifera*) (FACU), and tropical almond (*Terminalia catappa*) (FAC). Complete vegetation data collected at all sampling points are provided in Appendix A.

4.2.2 Soils

Hydric soils were identified in three of the ten sampling points. Of the three wetland sampling points, the NRCS soil map places Sampling Points 2 and 10 in a Water (W) feature, although they occur near the boundary of Mokuleia clay loam, a poorly drained variant (Mta) listed by the NRCS as a hydric soil (NRCS 2012). Redox Dark Surface was recorded at sampling point 7 and Muck was present at sampling point 10. Problematic hydric soils (fluvial sediments within floodplains) were observed at sample point 2; although the amount of redox in the soil pit was high, a hydric soil indicator was not met due to deposition of new material along the stream channel edge (see Appendix A). No hydric soils were identified at any other sampling points within the survey area.

4.2.3 Hydrology

Wetland hydrology indicators were observed at three of the ten sampling points. Saturation (A3) was present at all three sampling points, and a High Water Table (A2) was observed at sampling points 2 and 7. Depth of the High Water Table ranged from 8 to 12 inches (203 to 305 mm) at these sites. Sample Point 10 was covered in Surface Water (A1) at a depth of 3 inches (76 mm). A complete listing of hydrology data collected at all sampling points is provided in Appendix A.

Figure 7. View of wetland sampling point 2 on the stream side of the small ramp.

Figure 8. View of wetland sampling point 7, showing dense mat of California grass (*Urochloa mutica*).

Figure 9. View of wetland sampling point 10 along the western edge of Kapaʻa Stream, showing dense mat of California grass (*Urochloa mutica*) and *Schoenoplectus* sp.

5.0 CONCLUSIONS

SWCA sampled conditions at 10 sampling points within the survey area to determine whether wetlands or other WoUS exist and to delineate the boundaries between these resources and uplands. In SWCA's opinion, three of the points satisfy the criteria to be a wetland pursuant to the USACE 1987 Manual, or the recent Hawaiʻi and Pacific Island Regional Supplement. In addition, a tidal, non-wetland WoUS (known as Kapaʻa Stream) occurs within the survey area. SWCA delineated approximately 0.31 acre of palustrine emergent wetlands, 1.98 acres of tidal non-wetland waters, and 0.02 acre of a man-made ditch. The wetlands and stream are potential WoUS due to their connection to the Pacific Ocean. It is unknown whether the ditch has a "significant nexus" with a Traditional Navigable Water.

Because the project involves non-fill discharging activities over a WoUS, a Section 10 permit will likely be required. If the proposed project intends to place dredged or fill material within the delineated feature (e.g., bridge foundations or pillars), it could be subject to either a Section 10 or Section 404 Permit. These conclusions are subject to confirmation by the USACE Honolulu District.

The general rule regarding the State Section 401 water quality certification is, if the USACE identifies that a permit (NWP/LOP/SIP) under Section 404 is required, the applicant will likely need a Section 401 water quality certification from the State Department of Health Clean Water Branch (CWB). Often a 401 water quality certification is not required for Section 10 permits. If the CWB responds and requires a 401 water quality certification, it can take several months to a year to process. In addition, a Stream Channel Alteration Permit (SCAP) may be required from the Commission on Water Resource Management (CWRM), depending on the activities proposed. SWCA recommends submitting a Request for Determination (RFD) from CWRM. If a SCAP is required, the permit timeframe is 90 days.

6.0 LITERATURE CITED

AECOS. 2002. Aquatic Resources Survey for the Kapaa-Kealia Bikepath, Kauaʻi. Prepared for the Kapaa-Kealia Bike and Pedestrian Path Final Environmental Assessment.

Environmental Protection Agency and U.S. Army Corps of Engineers (USACE). 2011. Draft Guidance on Identifying Waters Protected by the Clean Water Act. Available at: http://water.epa.gov/lawsregs/guidance/wetlands/upload/wous_guidance_4-2011.pdf. Accessed July 3, 2013.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens. 1972. *Soil Survey of the Islands of Kauaʻi, Oʻahu, Maui, Molokaʻi, and Lanaʻi, State of Hawaiʻi.* U.S. Department of Agriculture, Soil Conservation Service.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.L. Chen, P.S. Chu, J.K. Eischeid, and D.M. Delparte. 2013. Online Rainfall Atlas of Hawaiʻi. Bull. Amer. Meteor. Soc. 94, 313–316, doi: 10.1175/BAMS-D-11-00228.1. Available at: http://rainfall.geography.hawaii.edu. Accessed on November 7, 2014.

Hawaiʻi State Department of Health. 2014. *2014 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 Sections 303(D) and 305(B), Clean Water Act (Public Law 97-117).

Kollmorgen Instruments Corporation. 1998. Munsell Soil Color Charts revised washable edition. Baltimore: Kollmorgen Instruments Corporation.

Lichvar, R.W. 2012. *The National Wetland Plant List*. ERDC/CRREL TR-12-11. Hanover, New Hampshire: U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory. Available at: http://acwc.sdp.sirsi.net/client/search/asset:asset?t:ac=$N/1012381. Accessed December 10, 2012.

———. 2013. The National Wetland Plant List: 2013 wetland ratings. *Phytoneuron* 2013(49):1–241.

Lichvar, R., N. Melvin, M. Butterwick, and W. Kirchner. 2012. National Wetland Plant List indicator rating definitions. ERDC/CRREL TN-12-1. Hanover, New Hampshire: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. Available at: http://www.fws.gov/wetlands/documents/National-Wetland-Plant-List-Indicator-Rating-Definitions.pdf. Accessed December 10, 2012.

National Oceanic and Atmospheric Administration. 2014. Exceedance Probability Levels and Tidal Datums, 1611400 Nawiliwili, HI. Available at: http://tidesandcurrents.noaa.gov/est/stickdiagram.shtml?stnid=1611400. Accessed on November 19, 2014.

National Oceanic and Atmospheric Administration/National Weather Service, Weather Forecast Office Honolulu. 2014. Hydrology in Hawaiʻi. Available at: http://www.prh.noaa.gov/hnl/hydro/pages/sep14sum.php . Accessed on November 7, 2014.

Natural Resources Conservation Service (NRCS). 2010. *Field Indicators of Hydric Soils in the United States, Version 7.0*, edited by L.M. Vasilas, G.W. Hurt, and C.V. Noble. U.S. Department of

Agriculture, Natural Resources Conservation Service, in cooperation with the National Technical Committee for Hydric Soils.

———. 2012. Hydric Soils State Lists, Hydric Soils of Hawaiʻi. Available at: ftp://ftp-fc.sc.egov.usda.gov/NSSC/Hydric_Soils/Lists/hydric_soils.xlsx. Accessed December 7, 2012.

———. 2013. Web Soil Survey. Available at: http://websoilsurvey.nrcs.usda.gov/. Accessed November 7, 2014.

Parham, J.E., G.R. Higashi, E.K. Lapp, D.G. K. Kuamoo, R.T. Nishimoto, S. Hau, J.M. Fitzsimons, D.A. Polhemus, and W.S. Devick. 2008. *Atlas of Hawaiian Watersheds & Their Aquatic Resources*. Copyrighted website published by the Hawaii Division of Aquatic Resources, Department of Land and Natural Resources. Available at: www.hawaiiwatershedatlas.com. Accessed April 9, 2013.

SWCA. 2014. *Biological Resource Assessment for the Hanapepe Bridge Project*. Draft Submitted to CH2M HILL February 18, 2015.

U.S. Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetlands Delineation Manual*. Wetlands Research Program Technical Report Y-87-1 (online edition). Vicksburg, Mississippi: U.S. Army Engineer Waterways Experiment Station. Available at: http://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf. Accessed December 10, 2012.

———. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawaiʻi and Pacific Islands Region Version 2.0,* edited by J.F. Berkowitz, J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-12-5. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

———. 2014. U.S. Army Corps of Engineers 2014 National Wetland Plant List Home v3.2 – 2014 State Lists. Available at: http://rsgisias.crrel.usace.army.mil/NWPL/. Accessed September 27, 2014.

Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999. *Manual of the Flowering Plants of Hawaiʻi.* Volumes I and II. Revised edition. Honolulu: University of Hawaiʻi Press.

Wagner, W.L., and D.R. Herbst. 2003. Supplement to the Manual of the Flowering Plants of Hawaiʻi. Version 3.1 (12 Dec 2003).

Wagner, W.L., D.R. Herbst, N. Khan, and T. Flynn. 2012. Hawaiian Vascular Plant Updates: A Supplement to the Manual of the Flowering Plants of Hawaiʻi and Hawaiʻi's Ferns and Fern Allies. Version 1.3.

Appendix A

Data Forms

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 08:30

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P1

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River bank/slope Local relief (concave, convex, none): none

Lat: 22.09360144640 N Long: -159.30706842700 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Water (W) NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Tournefortia argentea	70	Y	FACU
2.			
3.			
4.			
5.			
	70 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Scaevola sericea	20	Y	FACU
2.			
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Sphagneticola trilobata	70	Y	FAC
2. Canavalia cathartica	5	N	FACU
3. Asystasia gangetica	5	N	FACU
4. Urochloa mutica	3	N	FACW
5.			
6.			
7.			
8.			
	83 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks:

SOIL

Sampling Point: P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5 YR 3/3	100					Clay Loam	Charcoal pieces, 10 YR 2/1
6-8	10 YR 5/3	100					Clay Loam	
8-24	5 YR 4/6	100					Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Soil has some amount of mixing and/or deposition. Found charcoal, plastic garbage, coral

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Some evidence of depositional processes. Buried garbage in pit but site is above OHWM and HTL.

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 8:50

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P2

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River bank/slope Local relief (concave, convex, none): none

Lat: 22.09352080680 N Long: -159.30702593200 W Datum: NAD UTM 4N Slope (%): 0-1

Soil Map Unit Name: Water (W) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Cocos nucifera	10	Y	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	80	Y	FACW
2. Sphagneticola trilobata	15	N	FAC
3. Megathyrsus maximus	10	N	FAC
4.			
5.			
6.			
7.			
8.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	80	x 2 =	160
FAC species	25	x 3 =	75
FACU species	10	x 4 =	40
UPL species		x 5 =	
Column Totals:	115 (A)		275 (B)

Prevalence Index = B/A = 2.39

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

Prevalence test conducted due to high cover of herbaceous species compared to single tree.

SOIL

Sampling Point: P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10 YR 3/1	100					Clay Loam	Lots of organic mat.
10-24	10 YR 5/3	60	7.5 YR 4/6	40	C	M	Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Sandy Mucky Mineral (S1)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Soil is considered a problematic hydric soil due to fluvial sediments within floodplains. The point is on a vegetated bar on the edge of the stream channel and likely does not show soil indicators (e.g., sandy redox) due to deposition of new material or low organic matter content. However, given the amount of redox (40%), some anaerobic conditions are present.

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches):

Water Table Present? Yes X No ___ Depth (inches): 8

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 8

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 9:10

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P3

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River bank/slope Local relief (concave, convex, none): slope

Lat: 22.09330074760 N Long: -159.30686234500 W Datum: NAD UTM 4N Slope (%): 12

Soil Map Unit Name: Mokuleia clay loam, poorly drained variant (Mta) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Tournefortia argentea	70	Y	FACU
2.			
3.			
4.			
5.			
	70 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Scaevola sericea	20	Y	FACU
2.			
3.			
4.			
5.			
	20 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Sphagneticola trilobata	70	Y	FAC
2. Canavalia cathartica	5	N	FACU
3. Asystasia gangetica	5	N	FACU
4. Urochloa mutica	3	N	FACW
5.			
6.			
7.			
8.			
	83 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	N/A = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	3	x 2 =	6
FAC species	70	x 3 =	210
FACU species	100	x 4 =	400
UPL species		x 5 =	
Column Totals:	173 (A)		616 (B)

Prevalence Index = B/A = 3.56

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks:

Same vegetation community as P1

SOIL

Sampling Point: P3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	5 YR 4/4	100					Sandy Loam	Some charcoal pieces, 10 YR 2/1

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Sandy Mucky Mineral (S1)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Lots of ants in soil

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Edge of OHWM/HTL

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 9:35

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P4

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): Slope Local relief (concave, convex, none): None

Lat: 22.09348790410 N Long: -159.30708295200 W Datum: NAD UTM 4N Slope (%): 8

Soil Map Unit Name: Water (W) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Soil at sampling point 4 is composed of road-based fill material composing a slope up to road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	100	x 2 =	200
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

SOIL

Sampling Point: P4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	5 YR 3/4	100						Road-fill base

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Sandy Mucky Mineral (S1)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Fill

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 9:50

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P5

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): Terrace Local relief (concave, convex, none): None

Lat: 22.09415066550 N Long: -159.30682556500 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Mokuleia fine sandy loam (Mr) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Cocos nucifera	20	Y	FACU
2. Casuarina equisetifolia	60	Y	FACU
3.			
4.			
5.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Scaevola sericea	15	Y	FACU
2.			
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	20	Y	FACW
2. Sphagneticola trilobata	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	25	= Total Cover	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	20	x 2 =	40
FAC species	5	x 3 =	15
FACU species	95	x 4 =	380
UPL species		x 5 =	
Column Totals:	120 (A)		435 (B)

Prevalence Index = B/A = 3.62

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks:
Cyperacea in river.

SOIL

Sampling Point: P5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10 YR 4/4	100					Sand	
4-24	10 YR 6/4	100					Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** X

Remarks:
No Redox

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? Yes _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No groundwater

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 10:30

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P6

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River Terrace Local relief (concave, convex, none): None

Lat: 22.09412454330 N Long: -159.30662103900 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Mokuleia fine sandy loam (Mr) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Terraced sand bar above HTL/OHWM

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Scaevola sericea	50	Y	FACU
2. Sphagneticola trilobata	40	Y	FAC
3. Ipomoea pes-caprae	30	Y	FAC
4. Canavalia sp	2	N	FACU
5.			
6.			
7.			
8.			
	122 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	70	x 3 =	210
FACU species	52	x 4 =	208
UPL species		x 5 =	
Column Totals:	122 (A)		418 (B)

Prevalence Index = B/A = 3.42

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

SOIL

Sampling Point: P6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10 YR 4/4	100					Sand	
3-18	10 YR 6/4	100					Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:
No Redox

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 10:45

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P7

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: _____

Landform (hillslope, coastal plain, etc.): floodplain Local relief (concave, convex, none): None

Lat: 22.09418880530 N Long: -159.30752055200 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Mokuleia fine sandy loam (Mr) NWI classification: PEM1C

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Near edge of tidal stream along OHWM, veg type change.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	100	Y	FACW
2. Macroptilium atropurpureum	20	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	120 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	100	x 2 =	200
FAC species	20	x 3 =	60
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	120 (A)		260 (B)

Prevalence Index = B/A = 2.17

Hydrophytic Vegetation Indicators:

- [x] 1 - Rapid Test for Hydrophytic Vegetation
- [x] 2 - Dominance Test is >50%
- [x] 3 - Prevalence Index is ≤3.0[1]
- [ ] Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

Vine grows on top of California grass (Urochloa mutica)

SOIL

Sampling Point: P7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5 YR 3/2	90	2.5 YR 4/8	10	C	PL	Clay Loam	Redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Sandy Mucky Mineral (S1)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Redox Features

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches):

Water Table Present? Yes X No ___ Depth (inches): 12"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches):

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Oxidized Rhizospheres on roots (C3)

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 11:10

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P8

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): Flood plain Local relief (concave, convex, none): none

Lat: 22.09417175440 N Long: -159.30728294600 W Datum: NAD UTM 4N Slope (%): 0

Soil Map Unit Name: Mokuleia fine sandy loam (Mr) NWI classification: UPL

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Road fill slope with no hydric indicators, Soil is Road-Fill

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Leucaena leucocephala	60	Y	UPL
2. Ricinus communis	40	Y	FACU
3.			
4.			
5.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Megathyrsus maximus	40	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	N/A = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks:

SOIL

Sampling Point: P8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	5YR 3/4	100						Road Fill

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Sandy Mucky Mineral (S1)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Road fill on slope

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 11:30

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P9

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): River bank/slope Local relief (concave, convex, none): slope

Lat: 22.09365041550 N Long: -159.30755950000 W Datum: NAD UTM 4N Slope (%): 5

Soil Map Unit Name: Water (W) NWI classification: PEM1R

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Terminalia catappa	100	Y	FAC
2.			
3.			
4.			
5.			
	100 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Megathyrsus maximus	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	N/A = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	130	x 3 =	390
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	130 (A)		390 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

SOIL

Sampling Point: P9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	5 YR 4/4	100					Clay Loam	
3-5	5 YR 4/4	90	2.5 YR 4/6	10			Clay Loam	Redox
5-20	5 YR 4/4	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches):

Water Table Present? Yes _____ No X Depth (inches):

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches):

Wetland Hydrology Present? **Yes** _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydric indicators.

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Kapaa Stream Bridge City: Kapaa Sampling Date: 9.29.2014 Time: 12:00

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P10

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: 4-6-014-999-0000

Landform (hillslope, coastal plain, etc.): Floodplain Local relief (concave, convex, none): None

Lat: 22.09367348130 N Long: -159.30755697900 W Datum: NAD UTM 4N Slope (%): 1

Soil Map Unit Name: Water (W) NWI classification: PEM1R

Are climatic /hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Terminalia catappa	10	Y	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 15')			
1. Urochloa mutica	80	Y	FACW
2. Megathyrsus maximus	15	N	FAC
3. Schoenoplectus sp	15	N	OBL
4.			
5.			
6.			
7.			
8.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	15	x 1 = 15
FACW species	80	x 2 = 160
FAC species	35	x 3 = 105
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	130 (A)	280 (B)

Prevalence Index = B/A = 2.15

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain in Remarks or in the delineation report)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** _____

Remarks:

Schoenoplectus is either S. californicus or S. tabernaemontani. Species was not flowering or fruiting.

SOIL

Sampling Point: P10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
5	black	99						Muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
X Muck Presence (A8)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Dark Surface (S7)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Stratified Layers (A5)
___ Sandy Mucky Mineral (S1)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Muck (A8), lots of roots. Surface water

HYDROLOGY

Wetland Hydrology Indicators: (Explain observations in Remarks, if needed.)

Primary Indicators (minimum of one required; check all that apply)

☒ Surface Water (A1)
☒ High Water Table (A2)
☒ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Tilapia Nests (B17)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Salt Deposits (C5)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 3

Water Table Present? Yes X No ___ Depth (inches):

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches):

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

5 feet to OHWM toward river
1 foot to upland way from river

Appendix B
Summary of EDR Radius Map Report™ with GeoCheck®, May 13, 2015

Kapaa Bridge
Kuhio Hwy/Mailihuna Road
Kapaa, HI 96746

Inquiry Number: 4293170.2s
May 13, 2015

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

KUHIO HWY/MAILIHUNA ROAD
KAPAA, HI 96746

COORDINATES

Latitude (North):	22.0939000 - 22˚ 5' 38.04''
Longitude (West):	159.3073000 - 159˚ 18' 26.28''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	468300.5
UTM Y (Meters):	2443109.5
Elevation:	0 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	22159-A3 KAPAA, HI
Most Recent Revision:	Not reported

MAPPED SITES SUMMARY

Target Property Address:
KUHIO HWY/MAILIHUNA ROAD
KAPAA, HI 96746

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	4-1532 KUHIO HWY, SI	4-1532 KUHIO HWY	SHWS	Higher	1648, 0.312, NNE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

CERCLIS ..... Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ..... Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ..... CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls

LUCIS ..... Land Use Control Information System

Federal ERNS list

ERNS ..... Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Permitted Landfills in the State of Hawaii

State and tribal leaking storage tank lists

LUST ..... Leaking Underground Storage Tank Database
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ..... Underground Storage Tank Database
INDIAN UST ..... Underground Storage Tanks on Indian Land
FEMA UST ..... Underground Storage Tank Listing

State and tribal institutional control / engineering control registries

ENG CONTROLS ..... Engineering Control Sites
INST CONTROL ..... Sites with Institutional Controls

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Response Program Sites

State and tribal Brownfields sites

BROWNFIELDS ..... Brownfields Sites

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ..... Clandestine Drug Labs
CDL ..... Clandestine Drug Lab Listing
US HIST CDL ..... National Clandestine Laboratory Register

Local Land Records

LIENS 2 ..... CERCLA Lien Information

EXECUTIVE SUMMARY

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
SPILLS	Release Notifications
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
US MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
RMP	Risk Management Plans
UIC	Underground Injection Wells Listing
DRYCLEANERS	Permitted Drycleaner Facility Listing
AIRS	List of Permitted Facilities
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
LEAD SMELTERS	Lead Smelter Sites
PRP	Potentially Responsible Parties
2020 COR ACTION	2020 Corrective Action Program List
COAL ASH DOE	Steam-Electric Plant Operation Data
PCB TRANSFORMER	PCB Transformer Registration Database
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
US AIRS	Aerometric Information Retrieval System Facility Subsystem
Financial Assurance	Financial Assurance Information Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR US Hist Auto Stat	EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List

EXECUTIVE SUMMARY

RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank
RGA HWS..... Recovered Government Archive State Hazardous Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Health.

A review of the SHWS list, as provided by EDR, and dated 12/02/2014 has revealed that there is 1 SHWS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
4-1532 KUHIO HWY, SI	4-1532 KUHIO HWY	NNE 1/4 - 1/2 (0.312 mi.)	1	7

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 11 records.

Site Name	Database(s)
KAPAA CHEVRON	RCRA-CESQG, FINDS
KAPAA SHELL	RCRA-CESQG
LONGS DRUGS KAPAA	FINDS
KAPAA SHELL	FINDS
KAPAA CHEVRON	FINDS
KAUAI ELECTRIC, TRANSFORMER KAPAA	SPILLS
KAPAA SUPER SERVICE	RGA LUST
LEONARD'S KAPAA CHEVRON	RGA LUST
LEONARD'S KAPAA CHEVRON	RGA LUST
KAPAA SUPER SERVICE	RGA LUST
KAPAA CHEVRON	RGA LUST

OVERVIEW MAP - 4293170.2S

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

- Indian Reservations BIA
- County Boundary
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Kapaa Bridge ADDRESS: Kuhio Hwy/Mailihuna Road Kapaa HI 96746 LAT/LONG: 22.0939 / 159.3073	CLIENT: CH2M Hill Corporation CONTACT: Lyna Black INQUIRY #: 4293170.2s DATE: May 13, 2015 5:20 pm

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DETAIL MAP - 4293170.2S

0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Kapaa Bridge ADDRESS: Kuhio Hwy/Mailihuna Road Kapaa HI 96746 LAT/LONG: 22.0939 / 159.3073	CLIENT: CH2M Hill Corporation CONTACT: Lyna Black INQUIRY #: 4293170.2s DATE: May 13, 2015 5:22 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		0	0	1	0	NR	1
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR US Hist Auto Stat	0.250		0	0	NR	NR	NR	0
EDR US Hist Cleaners	0.250		0	0	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
RGA HWS	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	0	1	0	0	1

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 NNE 1/4-1/2 0.312 mi. 1648 ft. | **4-1532 KUHIO HWY, SITE ASSESSMENT DETERMINATION**
4-1532 KUHIO HWY
KAPAA, HI 96746 | **SHWS** | **1006820389**
N/A

Relative: Higher

Actual: 0 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Kauai
Environmental Interest:	4-1532 Kuhio Hwy. Site Assessment
HID Number:	Not reported
Facility Registry Identifier:	110013783405
Lead Agency:	HEER
Program:	State
Project Manager:	Unassigned
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Kauai
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	4-1532 Kuhio Hwy. Site Assessment
HID Number:	Not reported
Facility Registry Identifier:	110013783405
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Not reported
Nature of Residual Contamination:	benzo[a]pyrene in groundwater
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	11/10/1999
Document Number:	1999-509-BH
Document Subject:	SA Determination for 4-1532 Kuhio Hwy
Project Manager:	Unassigned
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

Count: 11 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
KAPAA	1016709230	LONGS DRUGS KAPAA	SOUTH CORNER OF KUHIO HIGHWAY	96746	FINDS
KAPAA	1015915582	KAPAA SHELL	1125 KUHIO HWY	96746	FINDS
KAPAA	S116402362	KAPAA SUPER SERVICE	1125 KUHIO HIGHWAY		RGA LUST
KAPAA	1016675624	KAPAA CHEVRON	994 KUHIO HWY	96746	RCRA-CESQG, FINDS
KAPAA	1006819267	KAUAI ELECTRIC, TRANSFORMER KAPAA	1065 KUHIO HWY		SPILLS
KAPAA	1015857629	KAPAA CHEVRON	4 KUHIO HIGHWAY	96746	FINDS
KAPAA	S116402636	LEONARD'S KAPAA CHEVRON	994 KUHIO HWY		RGA LUST
KAPAA	S116402634	LEONARD'S KAPAA CHEVRON	994 KUHIO HWY.		RGA LUST
KAPAA	S116402363	KAPAA SUPER SERVICE	1125 KUHIO HWY		RGA LUST
KAPAA	S116402361	KAPAA CHEVRON	4-994 KUHIO HWY		RGA LUST
KAPAA	1009398540	KAPAA SHELL	1125 KUHIO HWY	96746	RCRA-CESQG

Appendix C
Endangered Species Act Section 7 Consultation Documentation

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

July 8, 2016

In Reply Refer To:
HFPM-16

Mary Abrams, Field Supervisor
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, HI 96850

Re: Section 7 Consultation for Proposed Kapaa Bridge Replacement and Mailihuna Intersection Improvements, Kuhio Highway (Route 56), Kauai Island, Hawaii

Dear Ms. Abrams:

The Central Federal Lands Highway Division (CFLHD) of the Federal Highway Administration (FHWA), in cooperation with the State of Hawaii Department of Transportation (HDOT) is proposing to replace the Kapaa Stream Bridge along Kuhio Highway and reconfigure the Mailihuna Road Intersection, in the Kawaihau District on Kauai, Hawaii. The purpose of the project is to improve the Kapaa Stream crossing and Mailihuna Road intersection which are required to maintain a safe and functional regional transportation system for highway users.

The enclosed biological assessment (BA) addresses potential project impacts on federally listed threatened and endangered species, including three seabirds (the endangered Hawaiian petrel [*Pterodroma sandwichensis*], the threatened Newell's shearwater [*Puffinus auricularis newelli*], and the proposed endangered band-rumped storm petrel [*Oceanodroma castro*]), four waterbirds (the endangered Hawaiian coot [*Fulica alai*], the endangered Hawaiian gallinule [*Gallinula chloropus sandvicensis*], the endangered Hawaiian stilt [*Himantopus mexicanus knudseni*], and the endangered Hawaiian duck [*Anas wyvilliana*]), the endangered Hawaiian goose (*Branta sandvicensis*), the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), the endangered Hawaiian monk seal (*Neomonachus schauinslandi*), and two sea turtles (the threatened Green sea turtle [*Chelonia mydas*] and endangered Hawksbill sea turtle [*Eretmochelys imbricata*]). The BA concludes the following:

- The Hawaiian petrel, Newell's shearwater and band-rumped storm-petrel are unlikely to occur in the action area because suitable habitat does not exist; however, these seabirds may be attracted to construction lights as they fly over the action area. The proposed project *would not likely adversely impact* the Hawaiian petrel and Newell's shearwater. And it is *not likely to jeopardize the continued existence* of the Band-rumped storm petrel.
- The Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, and Hawaiian duck may occur in the action area, as there is suitable habitat in and around the action area. The possibility of adversely affecting water birds as a result of the proposed project is likely small and the effect determination for these species is *may affect, but is not likely to adversely affect*.

- The Hawaiian goose may occur in the action area, as there is suitable foraging habitat. However, impacts would be discountable, such that the project *may affect, but is not likely to adversely affect* the Hawaiian goose.
- The action area contains habitat that could support roosting and foraging for the Hawaiian hoary bat. However, the timing of construction and minimal construction footprint will preclude any major or long-term effects, such that the project *may affect, but is not likely to adversely affect* the Hawaiian hoary bat.
- The shoreline area near the project could provide suitable foraging habitat for the Hawaiian monk seal. Because conservation measures would be taken, direct and indirect impacts would be insignificant and the proposed project *may affect, but is not likely to adversely affect*, individuals or populations of the species. Recently designated monk seal terrestrial critical habitat occurs within the action area, with surrounding waters designated as marine critical habitat. All impacts on the Hawaiian monk seal critical habitat would be discountable or insignificant, therefore the proposed action is *not likely to destroy or adversely modify* critical habitat of the species.
- Sea turtle species could use marine and riverine habitats in the action area for foraging and hauling-out to rest or bask. Because impacts to the Green sea turtle and Hawksbill sea turtle would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

To comply with Section 7(a) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(ESA), FHWA is requesting informal consultation with the U.S. Fish and Wildlife Service on the Hawaiian petrel, Newell's shearwater, Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, Hawaiian duck, Hawaiian goose, Hawaiian hoary bat, Hawaiian monk seal, Green sea turtle, and Hawksbill sea turtle, as well as the proposed endangered band-rumped storm petrel.

In parallel, FHWA is also requesting consultation with the National Marine Fisheries Service for the marine listed species.

If you require further information or have questions, please contact Thomas Parker, Environmental Protection Specialist, by email at thomas.w.parker@dot.gov or by phone at (720) 963-3688. We appreciate your assistance with this project.

Sincerely,

Michael Will
Project Manager

Enclosure:
Biological Assessment for the Proposed Kapaa Bridge Project, Kauai, Hawaii

cc:
Michael Tosatto, National Marine Fisheries Service
David Smith, Hawaii Division of Forestry and Wildlife
Bruce Anderson, Hawaii Divison of Aquatic Resources
Christine Yamasaki, Hawaii Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

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July 8, 2016

In Reply Refer To:
HFPM-16

Michael Tosatto, Administrator
National Marine Fisheries Service
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818

Re: Section 7 Consultation for Proposed Kapaa Bridge Replacement and Mailihuna Intersection Improvements, Kuhio Highway (Route 56), Kauai Island, Hawaii

Dear Mr. Tosatto:

The Central Federal Lands Highway Division (CFLHD) of the Federal Highway Administration (FHWA), in cooperation with the State of Hawaii Department of Transportation (HDOT) is proposing to replace the Kapaa Stream Bridge along Kuhio Highway and the regonfiguration of Mailihuna Road Intersection, in the Kawaihau District on Kauai, Hawaii. The purpose of the project is to improve the Kapaa Stream crossing and Mailihuna Road intersection which are required to maintain a safe and functional regional transportation system for highway users.

The enclosed biological assessment (BA) addresses potential project impacts on federally listed threatened and endangered species, including the endangered Hawaiian monk seal (*Neomonachus schauinslandi*), the threatened Green sea turtle (*Chelonia mydas*), and the endangered Hawksbill sea turtle (*Eretmochelys imbricata*).
The BA concludes the following:

- The shoreline area near the project could provide suitable foraging habitat for the Hawaiian monk seal. Because conservation measures would be taken, direct and indirect impacts would be insignificant and the proposed project *may affect, but is not likely to adversely affect*, individuals or populations of the species. Recently designated monk seal terrestrial critical habitat occurs within the action area, with surrounding waters designated as marine critical habitat. All impacts on the Hawaiian monk seal critical habitat would be discountable or insignificant, therefore the proposed action is *not likely to destroy or adversely modify* critical habitat of the species.
- Sea turtle species could use marine and riverine habitats in the action area for foraging and hauling-out to rest or bask. Because impacts to the Green sea turtle and Hawksbill sea turtle would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

To comply with Section 7(a) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA), FHWA is requesting informal consultation with National Marine Fisheries Service on the Hawaiian monk seal, the Green sea turtle, and the Hawksbill sea turtle.

In parallel, FHWA is also requesting consultation with U.S. Fish and Wildlife Service for these and several non-marine listed species. As detailed in the BA, these include three seabirds (the

endangered Hawaiian petrel [*Pterodroma sandwichensis*], the threatened Newell's shearwater [*Puffinus auricularis newelli*], and the proposed endangered band-rumped storm petrel [*Oceanodroma castro*]), four waterbirds (the endangered Hawaiian coot [*Fulica alai*], the endangered Hawaiian gallinule [*Gallinula chloropus sandvicensis*], the endangered Hawaiian stilt [*Himantopus mexicanus knudseni*], and the endangered Hawaiian duck [*Anas wyvilliana*]), the endangered Hawaiian goose (*Branta sandvicensis*), and the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*).

If you require further information or have questions, please contact Thomas Parker, Environmental Protection Specialist, by email at thomas.w.parker@dot.gov or by phone at (720) 963-3688. We appreciate your assistance with this project.

Sincerely,

Michael Will
Project Manager

Enclosure:
Biological Assessment for the Proposed Hanapepe Bridge Project, Kauai, Hawaii

cc:
Mary Abrams, U.S. Fish and Wildlife Service
David Smith, Hawaii Division of Forestry and Wildlife
Bruce Anderson, Hawaii Divison of Aquatic Resources
Christine Yamasaki, Hawaii Department of Transportation

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Biological Assessment for the Proposed Kapaʻa Bridge and Mailihuna Intersection Project, Kūhiō Highway, Route 56, Kapaʻa, Kauaʻi Island, Hawaiʻi

Prepared for

Federal Highway Administration,
Central Federal Lands Highway Administration

and

CH2M HILL

Prepared by

SWCA Environmental Consultants

July 2016

BIOLOGICAL ASSESSMENT FOR THE PROPOSED KAPAʻA BRIDGE AND MAILIHUNA INTERSECTION PROJECT, KŪHIŌ HIGHWAY, ROUTE 56, KAPAʻA, KAUAʻI ISLAND, HAWAIʻI

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SWCA Project No. 27166

July 7, 2016

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1. INTRODUCTION

The Federal Highway Administration (FHWA), Central Federal Lands Highway Division (CFLHD), in partnership with the Hawaiʻi Department of Transportation (HDOT) is proposing to 1) replace Kapaʻa Stream Bridge (project) to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches and 2) improve the intersection at Kūhiō Highway and Mailihuna Road. Two alternatives are described below. CH2M HILL contracted SWCA Environmental Consultants (SWCA) on behalf of FHWA to complete a biological assessment (BA) for the proposed action. The purpose of this BA is to evaluate the proposed action in sufficient detail to determine its potential effects on federally listed threatened and endangered species, candidate and proposed species for listing, and critical habitat.

The Kapaʻa Stream Bridge is in the Kapaʻa area on the east side of the Island of Kauaʻi along Kūhiō Highway (Route 56) at approximately milepost 9.8 (Figure 1). Kūhiō Highway serves as the primary route between Lihue and the Kauaʻi's East and North Shore communities, and is the main corridor for local circulation in the town of Kapaʻa. From Lihue to the Kapaʻa Stream Bridge, the roadway is classified as an urban principal arterial. Kapaʻa Stream Bridge and the highway are under the jurisdiction of HDOT, whereas Mailihuna Road is under the jurisdiction of the County of Kauaʻi.

Mailihuna Road extends mauka from Kūhiō Highway at milepost 9.84. It is a narrow, two-lane, undivided collector with narrow shoulders and vegetation on both sides. The intersection of Kūhiō Highway and Mailihuna Road is three-legged, with stop controls only on Mailihuna Road.

Section 7(a)(1) of the Endangered Species Act (ESA) of 1973 (as amended) directs all federal agencies to participate in the conservation and recovery of threatened and endangered species. Section 7(a)(2) of the ESA states that each federal agency shall consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. The proposed action would be federally funded, and FHWA is the lead agency for the Section 7 consultation. Because this BA includes impacts for terrestrial and marine species, it will be submitted to the USFWS and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS).

1.1. Consultation to Date

Michael Will, Project Manager from the U.S. Department of Transportation, FHWA-CFLHD sent a letter to the USFWS on November 21, 2014, requesting a list of federally threatened and endangered species, candidate species, plants and animals of special concern, and critical habitats near the proposed action. USFWS replied to the letter on December 22, 2014, listing the species that may occur on Kauaʻi along with recommended measures that USFWS believes will reduce impacts on each species (USFWS 2014a). Conservation measures that will be incorporated into the proposed project are listed in section 2.6.

On March 13, 2015, CH2M HILL hosted a meeting in their Honolulu Office to discuss the program with the FHWA-Central Federal Lands Highway Division, USFWS, CH2M HILL, State of Hawaiʻi Division of Aquatic Resources, NOAA, Environmental Protection Agency, and SWCA. On December 11, 2014, CH2M HILL and SWCA also met with the U.S. Army Corps of Engineers at their Honolulu District Office to discuss the Hawaiʻi Bridges Program. The purpose of these meetings was to introduce the project locations, and generally discuss potential biological and regulatory issues associated with the Hawaiʻi Bridges Program.

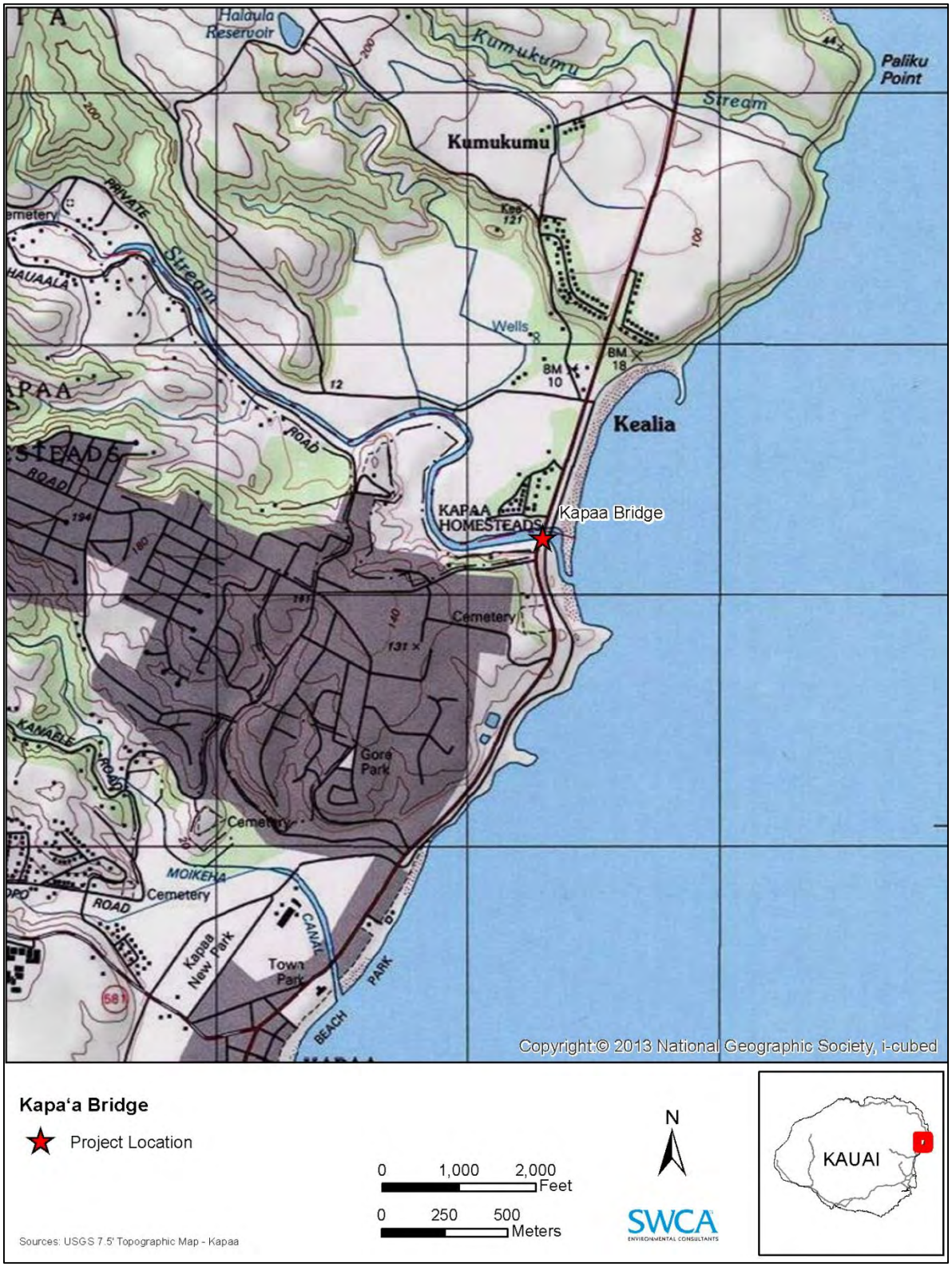

Figure 1. Proposed project location.

2. PROPOSED ACTION AND PROJECT DESCRIPTION

The proposed action consists of improving the Kūhiō Highway and Mailihuna Road intersection through the addition of full traffic and pedestrian signals and crosswalks with either new turn lanes or a roundabout, and replacing the existing Kapaʻa Stream Bridge with a single-span bridge. The highway section at the bridge would be closed during the construction period, and a two-way bypass route and temporary crossing would be provided makai of the highway. The project encompasses a total area of 4.9 acres (2.0 hectares [ha]), comprising 2.8 acres (1.1 ha) of a permanent impact area and 2.1 acres (0.9 ha) of a temporary impact area (Figure 2). Components of the proposed action; construction considerations; descriptions of the project area, survey area, and action area; and conservation measures to be incorporated into the project are described below.

2.1. Intersection Improvements

The proposed project would reconfigure the Kūhiō Highway and Mailihuna Road Intersection to improve safety. Two alternative designs are being considered and are described in detail below. As part of the intersection improvements, a private driveway would be relocated approximately 110 feet farther mauka on Mailihuna Road.

All of these intersection improvements would take place inside the project area as defined by this document and shown in Figure 2.

2.1.1. Signalized Intersection Alternative

Under this alternative, the intersection at Mailihuna Road and Kūhiō Highway would be reconfigured by adding full traffic and pedestrian signals and crosswalks. A left-turn pocket would be added to the northbound side of Kūhiō Highway before Mailihuna Road, providing approximately 180 feet of storage for vehicles waiting to turn. In addition, a right-turn pocket, approximately 150 feet in length, would be added to the southbound side of the highway. The right-turn lane would allow greater separation between vehicles that are traveling at different speeds as vehicles decelerate before making the right turn.

Marked crosswalks and pedestrian push buttons would be provided on all approaches, and improved signage and street lighting would be installed, addressing the need to improve the safety and mobility for non-motorized modes of crossing Kūhiō Highway.

The installation of drainage infrastructure, such as catch basins, grated drain inlets, drain manholes, pipe culverts, and an outlet, at the southwest corner of the intersection would prevent flooding and would control runoff during heavy rains, thereby improving traffic operations and safety.

2.1.2. Single-Lane Roundabout Alternative

Under this alternative, a single-lane roundabout would be constructed in the location of the existing Mailihuna Road intersection. The single circulating lane would be 18 feet wide, and the inscribed circle diameter would be at least 130 feet. The roundabout would include splitter islands and marked crosswalks on each approach.

The roundabout would seek to alleviate congestion and reduce delays on the eastbound, stop-controlled approach by providing yield-control on all legs. Its design would eliminate conflicting left-turn movements from northbound Kūhiō Highway and from eastbound Mailihuna Road, because only right turns are made into and out of the roundabout.

The roundabout alternative would require reconstruction of Mailihuna Road for the approach to tie in vertically at an 8% maximum profile grade, for a small distance away from the intersection. Retaining walls would be required along Mailihuna Road, and these would measure approximately 350 feet long with an average height of 10 feet.

The installation of drainage infrastructure, such as catch basins, grated drain inlets, drain manholes, pipe culverts, and an outlet, at the southwest corner of the intersection would prevent flooding and would control runoff during heavy rains, thereby improving traffic operations and safety.

2.2. Bridge Replacement

The existing two-lane two-span structure was built in 1953 and is approximately 150 feet (45.72 meters [m]) long and 38.50 feet (11.73 m) wide. The structure currently accommodates two, 12-foot-wide (3.65-m-wide) travel lanes with a 2.5-foot (0.76-m) shoulder on both sides. Concrete piers and abutments on timber piles support the concrete deck, with an asphaltic concrete driving surface. The concrete bridge rail transitions to a metal guardrail on both sides of the roadway. The posted speed on the bridge is 40 miles per hour (64.37 kilometers per hour [kph]) and would remain so under the proposed action.

The existing Kapaʻa Stream Bridge would be demolished and replaced with a single-span bridge. The new bridge would be approximately 190 feet (57.91 m) long, with a deck width of 44 feet (13.41 m), and a superstructure depth of 6 feet (1.82 m). It would carry two 12-foot-wide (3.65-m-wide) travel lanes, two 8 foot-wide (2.40-m-wide) shoulders, and 2-foot-thick (0.60-m-thick) guardrails on each side. The proposed design would comply with roadway width and bridge standards, live load and seismic requirements, and applicable crash test requirements for bridge railings. Permanent bridge widening would occur within the existing 100-foot (30.48-m) right-of-way (ROW).

The foundation would consist of 4-foot-diameter (1.21-m-diameter) drilled shafts. The new drilled shafts would be offset approximately 4 feet (1.21 m) behind the existing abutment footing. The top portion of the existing abutment would be removed to allow the new girders to extend between the new abutments. The remainder of the existing abutments would be left in place to serve as a retaining/channel wall, a secondary role that they are currently performing. New bridge abutments would be designed for the estimated total scour depths. The existing center pier would be abandoned in place to reduce obstruction to streamflow and to improve hydraulics. Unlike the existing bridge, the replacement bridge would be designed as a clear span with no instream pier.

Bridge railings would consist of a concrete beam and post with metal rail. Both the bridge railings and transitions would meet a minimum crash test level TL-3, which meets all the safety requirements and closely resembles the existing bridge rail. Conventional concrete retaining walls would need to be installed on the mauka side of the bridge at both approaches due to a grade difference between the roadway elevation and surrounding natural flood area.

2.2.1. Mauka Walkway

The existing Kapaʻa Stream Bridge has a 4-foot-wide sidewalk on each side of the bridge structure in the space between the concrete bridge railings and guardrails. A walkway is being considered on the *mauka* side of the replacement bridge, continuing along Kūhiō Highway to the Mailihuna Road intersection. The walkway would tie into an existing concrete sidewalk on the north side of the bridge that extends to the Kealia Road intersection. The design of the walkway would comply with the Americans with Disabilities Act. There would be no walkway on the makai side of the replacement bridge. Pedestrians traveling on the makai side of Kūhiō Highway would be able to use Ke Ala Hele Makalae, the parallel, shared-use

path. The walkway would be built inside the project area as defined by this document and shown in Figure 2.

2.3. Construction Activities

A potential staging area is located in a grassy area along the northern approach to the bridge, mauka of the highway. This potential staging area is approximately 25 feet (7.62 m) wide and 450 feet (137.16 m) long. Demolition debris would require disposal at an approved landfill. Disposal of any dredged material and water from dewatering would be conducted in accordance with the appropriate regulatory agency approvals.

The intersection and bridge approaches are on generally flat terrain, but some fill is anticipated on the approaches. Reinforced-concrete or concrete rubble masonry retaining walls are not anticipated for this project because of the culvert's vertical concrete walls.

The highway would remain in its present alignment. However, the roadway approach at the bridge would include 12-foot-wide (3.65-m-wide) lanes and 8-foot-wide (2.43-m-wide) shoulders and would need to transition to tie into the existing lanes and shoulders before and after the bridge. Minor adjustments may be needed to accommodate the new wider bridge within the existing 60-foot (18.28-m) ROW.

Utility relocations (temporary or permanent) may be required for this project and would be confirmed during final design. Activities may include relocating a utility pole and associated overhead electrical lines, telephone lines, and fiber optic lines on the mauka side of the highway.

Construction would occur both during normal work hours and on weekends. To minimize impacts to the surrounding residential areas, night work is not anticipated.

A temporary bypass bridge is proposed to maintain traffic while constructing the new bridge. It would be located immediately makai of the Kapaʻa Stream Bridge and mauka of Ke Ala Hele Makalae, the shared use path. It would provide 10-foot-wide (3.04-m-wide) lanes in each direction, a 2-foot-wide (0.60-m-wide) shoulder, and barriers as needed. The posted speed of the temporary bypass road would be 25 mph (40.23 kph). The function of Ke Ala Hele Makalae to provide access for foot and bicycle traffic would not be impacted. The temporary bypass would extend outside the existing ROW, necessitating a construction parcel or easement.

Normal construction dewatering would be needed to build the abutments. No center pier would be required, therefore work in the channel is limited to removing the existing pier.

Figure 2. Kapaʻa Bridge project area, survey area, and action area, showing permanent and temporary impact areas.

2.4. Project Area and Survey Area

The Kapaʻa Bridge is in the Kapaʻa area on the Island of Kauaʻi along Kūhiō Highway (Route 56). The survey area was originally based on the expected project footprint in September 2014; however, the project area, defined as all areas where **direct impacts** (permanent and temporary) are proposed to occur, changed slightly after the field survey. A small portion of the project area was not surveyed, as shown in Figure 2.

The project area encompass a total area of 4.9 acres (2.0 ha), comprising 2.8 acres (1.1 ha) of a permanent impact area and 2.1 acres (0.9 ha) of a temporary impact area (see Figure 2). The project area stretches approximately 1,600 feet (487.68 m) along Kūhiō Highway. Along Mailihuna Road, the length of the project area would be just over 300 feet (91.44 m) up the steep grade mauka of the intersection, whereas the width would extend beyond the County of Kauaʻi's ROW. Where Kapaʻa Stream crosses beneath the bridge, the project area would extend approximately 60–80 feet (18.28–24.38 m) mauka and makai of the bridge, to include considerations for construction and hydraulics. Kapaʻa Stream Bridge is at an elevation of approximately 18 feet (5.48 m) above mean sea level (amsl).

The survey area covers approximately 8.2 acres (3.3 ha), stretching south of Mailihuna Road and north of milepost 10 near the gravel beach park parking lot (see Figure 2).

The Kauaʻi bike and pedestrian path passes through the project area. The center of Kapaʻa town is approximately 1.5 miles (2.4 km) south of Kapaʻa Bridge. Kapaʻa High School and Mahelona Medical Center are just southwest of the survey area.

2.5. Action Area

The ESA defines an *action area* as the area within which all of the **direct and indirect impacts** of the project would occur (50 Code of Federal Regulations 402.02). In other words, it is the geographic area that would be affected by construction and maintenance of the project. The Kapaʻa Bridge action area was determined based on potential for in-air construction noise to travel through the surrounding areas. This is because noise would be the most far-reaching impact resulting from the proposed action. The Kapaʻa Bridge action area (see Figure 2) extends a minimum of 1,000 feet (305 m) from the project area, covering a total of 162.3 acres (65.7 ha). The 1,000-foot (305-m) buffer defines the action area based on the distance a 100-A-weighted-decibel (dBA) noise (such as a rock drill, paver, or impact pile driver) would attenuate to background levels (approximately 50 dBA) over flat terrain with little to no vegetation. This area is conservatively defined and likely encompasses an area larger than the area within which all impacts would occur. The actual distance that noise effects would occur is likely smaller than the action area because quieter equipment would be used and local topography and vegetation would shield the produced noise.

The use of an additional action area based on underwater noise impacts was considered but rejected. Underwater sound travels in a straight line and is absorbed by land. Construction noise occurring in the river is not expected to travel past the upstream northward river bend. It is also not expected to extend to the ocean when the Kealia Beach sand bar is present. This sand bar is most likely to be present during the dry summer period between May 1 and October 31, although it could be breached temporarily by a heavy rain event. During the winter, the sand bar could be breached for an extended period, or it could rebuild quickly. The size and depth of the breach depends on the intensity of the rainfall event. The breach can form a deep gouge that stretches the width of the river mouth, or it can form a small outlet (personal communication, Don Heacock, Aquatic Resources Biologist, Department of Lands and Natural Resources, June 14 and 16, 2016). The outlet most often makes a sharp southward bend and runs parallel

to the coastline before contacting the ocean, but occasionally it pushes eastward through the sand bar and directly into the ocean. For these reasons, the area within which underwater noise impacts could occur is captured within the action area as defined above. Conservation measures described for monk seals and sea turtles (section 2.6) will also ensure underwater noise impacts are contained within the action area.

2.6. Conservation Measures

Implementation of the proposed action would include a variety of conservation measures to reduce or eliminate project-related impacts and avoid adverse effects to listed species. Conservation measures for the proposed action include the following:

Waterbirds

- In areas where vegetated streambanks would be disturbed, waterbird nest searches will be conducted by a qualified biologist before any work is conducted and after any subsequent delay in work of 3 or more days (during which birds may attempt nesting). The results of the pre-construction survey will be submitted to the USFWS.
- If a waterbird nest with eggs or chicks/ducklings is discovered in the construction limits, work will not begin until the chicks/ducklings have fledged.
- Waterbird nests, chicks, or broods found in the survey area before or during construction will be reported to the USFWS within 48 hours.
- A biological monitor will be present on the project site during all construction activities to ensure that Hawaiian waterbirds and nests are not adversely impacted.
- If an endangered Hawaiian waterbird is present or flies into the area during ongoing activities, all activities within 100 feet (30 m) of the bird will cease, and the bird will also not be approached. Work may continue after the bird leaves the area of its own accord.

Nēnē or Hawaiian Goose (*Branta sandvicensis*)

- All regular on-site staff will be trained to identify nēnē and will know the appropriate steps to take if nēnē are present on-site.
- If a nēnē is found in the area during ongoing activities, all activities within 100 feet (30 m) of the bird will cease, and the bird will not be approached. If a nest is discovered, USFWS will be contacted. If a nest is not discovered, work may continue after the bird leaves the area of its own accord.

Seabirds

- To avoid the use of nighttime lighting that could attract seabirds, construction activity will be restricted to daylight hours as much as practicable during the seabird peak fallout period (September 15–December 15). Dark sky procedures will be used outside the peak fallout period if night work is required.
- All outdoor lights will be shielded to prevent upward radiation. This has been shown to reduce the potential for seabird attraction (Reed et al. 1985; Telfer et al. 1987). A selection of acceptable seabird-friendly lights can be found online at the Kauaʻi Seabird Habitat Conservation website (2013).
- Outside lights that are not needed for security and safety will be turned off from dusk through dawn during the peak fledgling fallout period (September 15–December 15).

Hawaiian Hoary Bat (*Lasiurus cinereus semotus*)

- Any fences that are erected as part of the project will have barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire. No fences in the survey area were

observed with barbed wire during the survey; however, if fences are present, the top strand of barbed wire will be removed or replaced with barbless wire.

- No trees taller than 15 feet (4.6 m) will be trimmed or removed as a result of this project between June 1 and September 15, when juvenile bats that are not yet capable of flying may be roosting in the trees.

Hawaiian Monk Seal (*Neomonachus schauinslandi*) and Sea Turtles

- To ensure underwater noise does not extend to the marine environment, work within the wetted channel will only be conducted when the Kealia Beach sand bar is in place and parallel to the coastline such that it will absorb the sound waves.
- If the Kealia Beach sand bar is breached such that the sound waves will reach the marine environment, all work conducted within the wetted channel to remove the existing mid-channel pier will be isolated by a dewatering structure such as a cofferdam. All work conducted below the ordinary high water mark and above the mean higher high water will occur in the dry, further reducing the potential for underwater noise as a result of project construction to enter marine waters. Cofferdams will be removed following in-water or in-channel work.
- Construction activities will not take place if a Hawaiian monk seal or sea turtle is in the construction area or within 150 feet (46 m) of the construction area. Construction can only begin after the animal voluntarily leaves the area. If a monk seal/pup pair is present, a minimum 300-foot (91-m) buffer will be observed.
- Any construction-related debris that may pose an entanglement threat to Hawaiian monk seals and sea turtles will be removed from the construction area at the end of each day and at the conclusion of the construction project.
- Workers will not attempt to feed, touch, ride, or otherwise intentionally interact with any listed species.
- Shielded lighting will be considered to reduce direct and ambient light to potential nearby beach habitat.

The following conservation measures to protect marine water quality are recommended by the NMFS Protected Resources Division (NOAA NMFS 2015a). The applicability of these conservation measures to the proposed project will depend on the site-specific construction means and methods chosen.

- A contingency plan to control toxic materials will be developed.
- Appropriate materials to contain and clean potential spills will be stored at the work site and be readily available.
- All project-related materials and equipment placed in the water will be free of pollutants.
- The project manager and heavy equipment operators will perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations will be postponed or halted should a leak be detected, and they will not proceed until the leak is repaired and the equipment is cleaned.
- Fueling of land-based vehicles and equipment will take place at least 50 feet (15.24 m) away from the water, preferably over an impervious surface. Fueling of vessels will be done at approved fueling facilities.
- Turbidity and siltation from project-related work will be minimized and contained through the appropriate use of erosion control practices, effective silt containment devices, and the curtailment of work during adverse weather and tidal/flow conditions.
- A plan will be developed to prevent debris and other wastes from entering or remaining in the marine environment during the project.

3. METHODOLOGY AND SPECIES COVERED IN THE EVALUATION OF POTENTIAL IMPACTS

The USFWS maintains lists of endangered, threatened, proposed, and candidate species known or thought to occur in Hawaiʻi. The USFWS also designates critical habitat in the state for some listed species. Endangered and threatened species are protected under the ESA (16 United States Code [USC] 1531 et seq.). The ESA specifically prohibits *take*, which is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct" of a listed species. *Harm* includes "significant habitat modification or degradation that kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

All information on the vegetation and wildlife in the action area was derived from biological surveys conducted by SWCA in September 2014. In addition to recording wildlife and plants during the surveys, SWCA evaluated habitat for the possible occurrence of federally listed species. As part of that habitat evaluation effort, the presence of any water, wetlands, and special soils was documented.

The species evaluated in this report consist solely of federally protected (endangered and threatened) species and candidates for federal listing.

The determination of potential for local species occurrence was based on 1) existing information on distribution and 2) qualitative comparisons of the habitat requirements of each species with vegetation communities, landscape features, and/or water quality conditions in the survey area. Possible impacts to these species were evaluated based on reasonably foreseeable project-related activities and the local loss of habitat.

Federally listed species were evaluated for potential to occur in the action area using the following categories:

- *Known to occur:* The species was documented in the action area either during or before the field surveys by a reliable observer.
- *May occur:* The action area is within the species' currently known range, and vegetation communities, soils, water quality conditions, etc., resemble those known to be used by the species.
- *Unlikely to occur:* The action area is within the species' currently known range, but vegetation communities, soils, water quality conditions, etc., do not resemble those known to be used by the species, or the survey area is clearly outside the species' currently known range.

Species with the potential to occur in the action area were then further evaluated for possible impacts from the proposed action. However, effect determination categories are defined differently based on the exact legal status of a species and the mandates and responsibilities of the agency tasked to manage or protect that species. Federally protected (i.e., threatened or endangered) species were assigned to one of three categories of possible effect, following USFWS guidelines.

- *No effect:* A determination of no effect means there are absolutely no effects to the species and its critical habitat, either positive or negative. It does not include small effects or effects that are unlikely to occur.
- *May affect, is not likely to adversely affect:* Under this effect determination, all effects to the species and its critical habitat are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without adverse effects to the species (for example, there cannot be "balancing," so that the benefits of the action will outweigh the adverse effects). Insignificant effects relate to the magnitude of the impact and should not reach the scale where take occurs. Discountable effects are considered extremely unlikely to occur. Based on best

judgment, a person will not 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur. Determinations of "not likely to adversely affect, due to beneficial, insignificant, or discountable effects" require written concurrence from the USFWS.

- *May affect, is likely to adversely affect:* This effect determination means that the proposed action will have an adverse effect on the species or its critical habitat. Any action that will result in "take" of an endangered or threatened species is considered an adverse effect. A combination of beneficial and adverse effects is still considered "likely to adversely affect," even if the net effect is neutral or positive. The effect on the species and/or critical habitat must be extremely small to qualify as a discountable effect. Likewise, an effect that can be detected in any way or that can be meaningfully articulated in a discussion of the results of the analysis is not discountable; it is an adverse effect.

As directed by the USFWS, critical habitat and species proposed or that are candidates for listing are evaluated using the following effect determination categories listed below. *Jeopardy* is defined under the ESA as occurring when "an action is reasonably expected, directly or indirectly, to diminish a species' numbers, reproduction, or distribution so that the likelihood of survival and recovery in the wild is appreciably reduced."

- No effect.
- Not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat.
- Likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat.

Once a species becomes federally listed as endangered or threatened, it becomes listed under the same classification (endangered or threatened) in the State of Hawaiʻi (Hawaiʻi Revised Statutes 195D-4).

4. AFFECTED ENVIRONMENT

The description of the affected environment is based on literature review and a field reconnaissance of the survey area. A field reconnaissance was conducted by SWCA biologists on September 17, 2014, and September 29, 2014. Representative portions of the area were driven or walked to describe vegetation types, fauna, and wetlands or streams, as well as known or suspected threatened, endangered, or candidate wildlife or plant species and habitat.

SWCA also reviewed available scientific and technical literature regarding natural resources in and near the survey area and action area. This literature review encompassed a thorough search of refereed scientific journals, technical journals and reports, environmental assessments and environmental impact statements, relevant government documents, and unpublished data that provide insight into the natural history and ecology of the area. SWCA also reviewed available geospatial data, aerial photographs, and topographic maps of the survey area and action area.

4.1. Soils and Hydrology

The action area is underlain by alluvium, beach deposits, and Kōloa Volcanics, which erupted 0.15–3.85 million years ago (Sherrod et al. 2007). The Natural Resources Conservation Service identifies the following five soil types in the project area: Mokuleia fine sandy loam (Mr); Mokuleia clay loam, poorly drained variant (Mta); Lihue silty clay, 25%–40% slopes (LhE2); Beaches (BS); and Water > 40 acres (W) (Foote et al. 1972).

Mean annual rainfall for the Kapaʻa Bridge area is approximately 40.7 inches (1,034 millimeters [mm]). Rainfall is typically highest in November and lowest in June and July (Giambelluca et al. 2013). The closest rainfall gage to the site (Anahola) experienced above-average rainfall for 2014 through the end of September (NOAA/National Weather Service, Weather Forecast Office Honolulu 2014).

The Kapaʻa Bridge action area is in the Kapaʻa Watershed, which encompasses roughly 16.5 square miles (42.7 km^2) (Parham et al. 2008). The total length of Kapaʻa Stream is approximately 59.2 miles (95.3 km), and it is identified as perennial by the State of Hawaiʻi and the U.S. Geological Survey. The Hawaiʻi Division of Aquatic Resources (DAR) Watershed Atlas (Parham et al. 2008) indicates that the estuary extends roughly 1.5 miles (2.4 km) upstream from the survey area. Kapaʻa Stream is diverted in the upper reaches. Seaward of the bridge, the stream flows southwest and passes through a beach berm before emptying into the Pacific Ocean.

The National Wetlands Inventory program identifies several wetland and water types in the area (Figure 3). These include Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded (R2UBH); Palustrine, Emergent, Persistent, Seasonally Flooded (PEM1C); and Palustrine, Emergent, Persistent, Seasonal-Tidal (PEM1R). A marine water (Marine, Intertidal, Unconsolidated Shore, Irregularly Flooded - M2USP) is identified immediately east of the survey area. Kapaʻa Stream is listed as a 303(d) Impaired Waterbody. Turbidity is listed as the cause of impairment (Hawaiʻi State Department of Health 2014).

During SWCA's wetlands and Waters of the U.S. (WoUS) survey (SWCA 2015), approximately 1.98 acres (0.80 ha) of tidal, non-wetland WoUS (Riverine, Tidal [R1]) and 0.31 acre (0.12 ha) of tidal, wetlands (Palustrine Emergent Marsh [PEM], Tidal) were delineated in the survey area (Figure 4). This segment of Kapaʻa Stream was determined to be tidally influenced due to the close proximity to the ocean and the presence of marine/estuarine biota (e.g., Hawaiian flagtail [*Kuhlia* spp.]) observed during SWCA's field work (SWCA 2014) and from previous surveys (AECOS 2002; Parham et al. 2008).

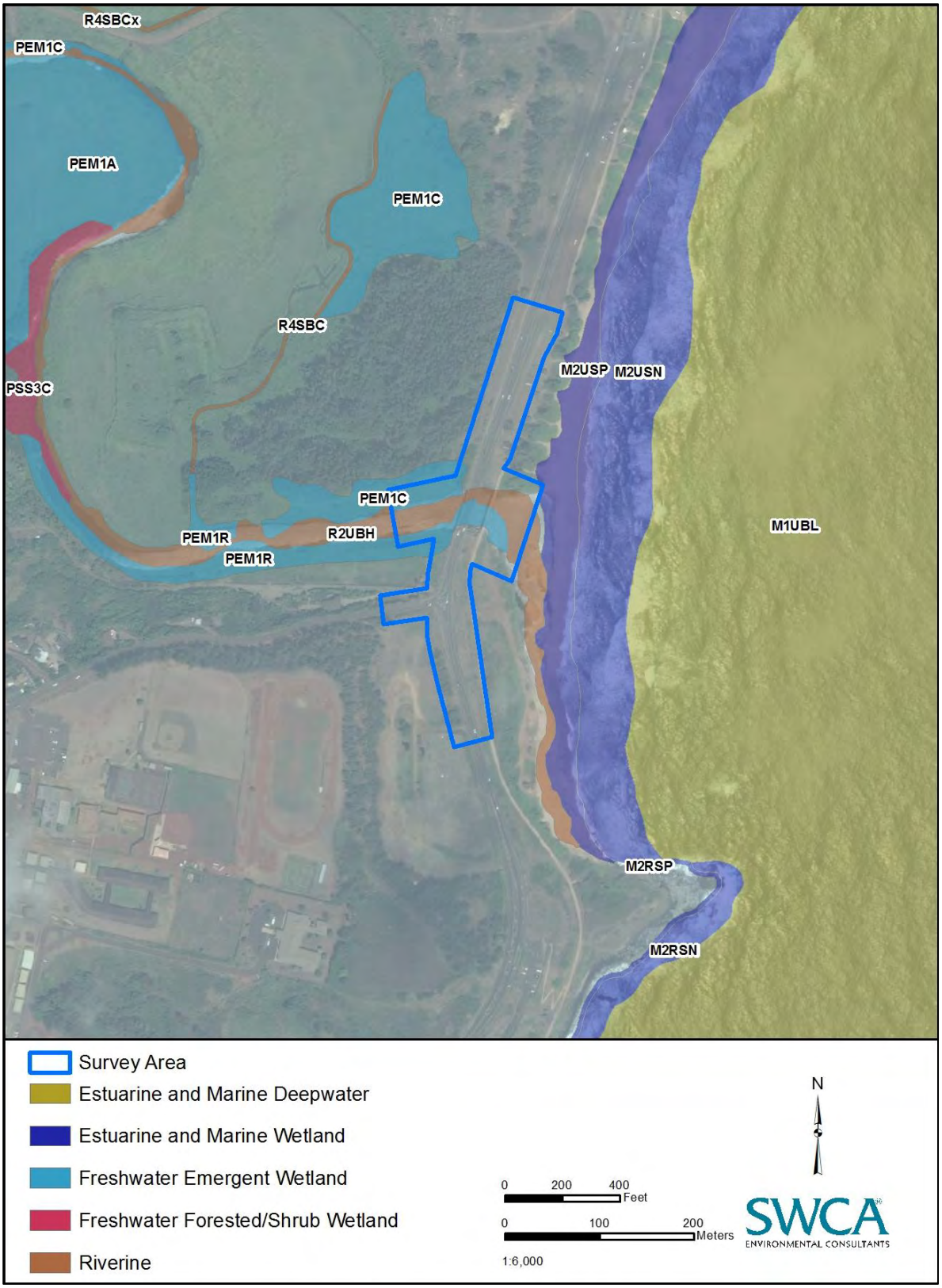

Figure 3. Kapaʻa Stream and National Wetlands Inventory classification in and near the survey area.

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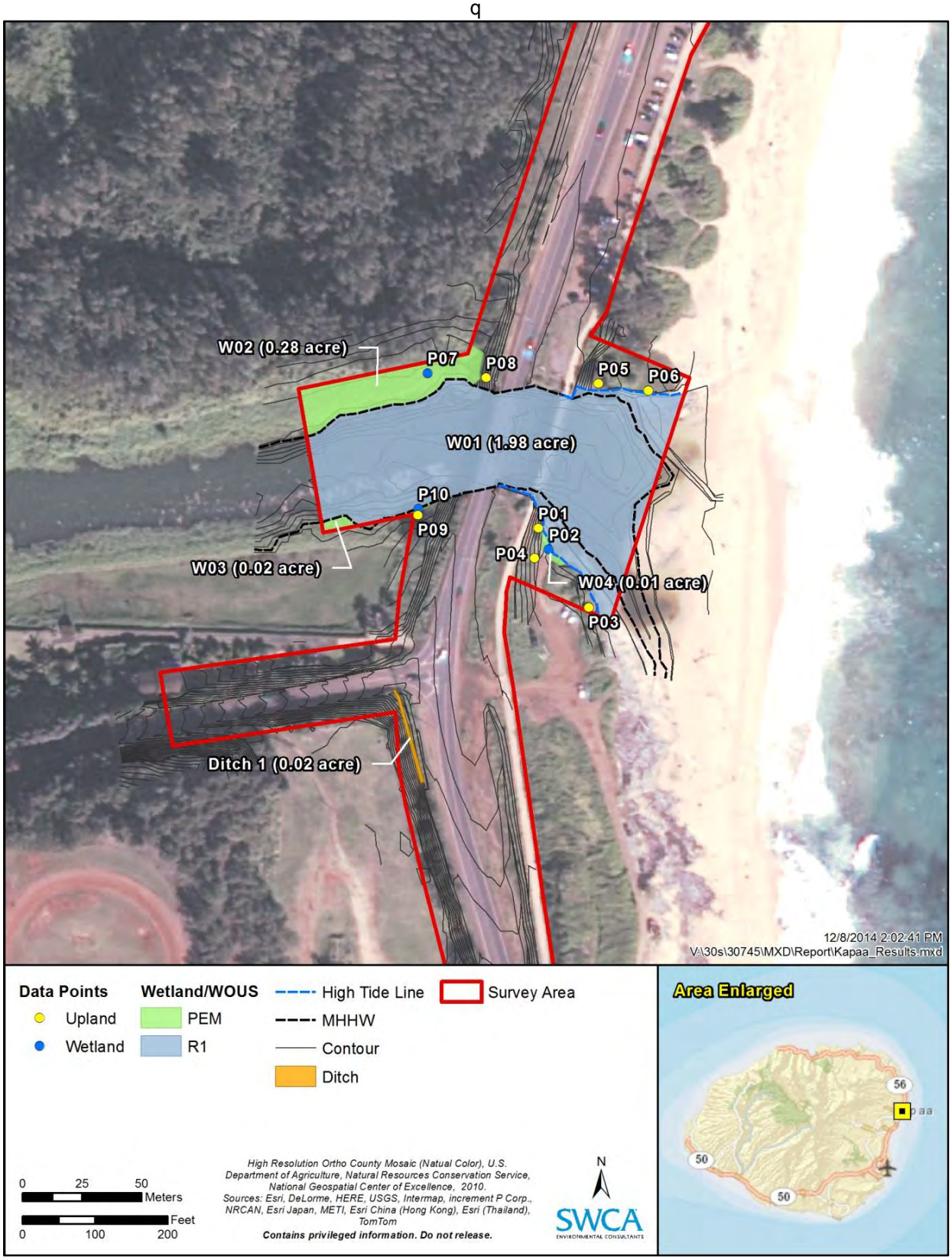

Figure 4. Survey results and delineated Waters of the U.S.

4.2. Vegetation

No state or federally listed threatened, endangered, or candidate plant species were recorded in the survey area. Three native Hawaiian plants—kīpūkai (*Heliotropium curassavicum*), naupaka (*Scaevola taccada*), and pōhuehue (*Ipomoea pes-caprae* ssp. *brasiliensis*) —were seen during the survey. These species are indigenous, or found in Hawaiʻi and elsewhere. None of these species are considered rare (Wagner et al. 1999).

The vegetation in the survey area is composed of three main vegetation types: Strand, Ruderal, and Emergent Wetland. Native plants are common in the Strand vegetation type. The other two types largely comprise non-native plants.

Strand Vegetation: This vegetation type occurs near the shoreline in the makai portion of the survey area, which is strongly influenced by salt spray, saline soil, strong winds, low moisture, high rates of evaporation, and other shoreline processes. Pōhuehue is the most abundant plant in the northeast portion of the survey area, forming low-growing mats along the sand dunes (Appendix A, Figure A1). To the south of Kapaʻa Stream, non-native California grass (*Urochloa mutica*) is dominant, forming dense mats (Appendix A, Figure A2). Naupaka and wedelia (*Sphagneticola trilobata*) are also common throughout the Strand vegetation. Tree heliotrope (*Tournefortia argentea*) and coconut (*Cocos nucifera*) are widely scattered along the south side of the stream, and a small ironwood (*Casuarina equisetifolia*) grove is on the north side, adjacent to the bridge.

Ruderal Vegetation: This vegetation type occurs in and along the highway ROW and adjacent to parking areas. It is dominated by a mix of non-native plants. Abundant and common herbaceous species found in the Ruderal vegetation type are Guinea grass (*Urochloa maxima*), swollen fingergrass (*Chloris barbata*), wire grass (*Eleusine indica*), Bermuda grass (*Cynodon dactylon*), *Macroptilium atropurpureum*, khaki weed (*Alternanthera pungens*), Dallis grass (*Paspalum dilatatum*), and *Ipomoea obscura*. These weedy areas are likely mowed occasionally. On the mauka (inland) side of the survey area, trees and shrubs are more common, including small stands of koa haole (*Leucaena leucocephala*) and ironwood, as well as scattered castor bean (*Ricinus communis*) and *Pluchea* spp.

Emergent Wetland: This vegetation type is dominated by a dense mat of the non-native California grass (Appendix A, Figure A3). It occurs on the mauka side of the bridge immediately adjacent to Kapaʻa Stream. On the south side of the stream, California grass is interspersed with bulrush (*Schoenoplectus* sp.). It appears to be the non-native kaluhā or California bulrush (*Schoenoplectus californicus*), which looks very similar to the indigenous ʻakaʻakai (*Schoenoplectus tabernaemontani*).

4.3. Wildlife

Fauna surveys consisted of a pedestrian survey on September 17 and 29, 2014, *before* 11 am or *after* 4 pm when wildlife are most likely active. Field observations of birds were conducted using 8 × 42–mm binoculars. Visual and auditory observations were included in the survey results. All observed birds, mammals, reptiles, amphibians, fish, and invertebrate species were noted during the surveys.

Acoustic surveys for the endangered Hawaiian hoary bat or ʻōpeʻapeʻa (*Lasiurus cinereus semotus*) were not conducted; however, areas of suitable habitat for foraging and roosting were noted when present.

The following section describes common wildlife observed during the September 2014 field surveys.

4.3.1. Birds

The bird species observed in and near the survey area are species typically found in disturbed lowland areas. In all, 10 bird species were documented (Table 1). Seven species are introduced to the Hawaiian Islands. Two species of migrant shorebirds, the Pacific golden-plover (*Pluvialis fulva*) and sanderling (*Calidris alba*), were observed foraging on the sand downstream of the bridge. One species of endangered waterbird, the Hawaiian gallinule was observed foraging along the vegetated streambank upstream of the bridge.

Table 1. Birds Observed by SWCA in and near the Survey Area

Common Name	Scientific Name	Status*
Cattle egret	*Bubulcus ibis*	NN
Chestnut munia	*Lonchura malacca*	NN
Common myna	*Acridotheres tristis*	NN
Domestic chicken	*Gallus*	NN
Hawaiian gallinule	*Gallinula galeata sandvicensis*	E
Japanese white-eye	*Zosterops japonicus*	NN
Pacific golden-plover	*Pluvialis fulva*	M
Sanderling	*Calidris alba*	M
Spotted dove	*Streptopelia chinensis*	NN
Zebra dove	*Geopelia striata*	NN
Total		**10**

* Status: E = Endangered, NN = non-native established species, M = migrant

4.3.2. Mammals

Dogs (*Canis familiaris*) were seen in the survey area during the survey. Cats (*Felis catus*), although not observed, are also likely to enter the area. Other mammals that can be expected on-site include mouse (*Mus musculus*) and rat (*Rattus* spp.).

4.3.3. Reptiles and Amphibians

No reptiles or amphibians were seen during the survey. None of the terrestrial reptiles or amphibians in Hawaiʻi are native to the islands.

4.3.4. Terrestrial Invertebrates

Two species of introduced bees were noted during the survey: the Sonoran carpenter bee (*Xylocopa sonorina*) and the honey bee (*Apis mellifera*). The non-native garden spider (*Argiope appensa*) was also present.

4.3.5. Fish and Aquatic Invertebrates

Table 2 lists the aquatic species observed by SWCA during the survey, species recorded for the Kapaʻa estuary in the Hawaiʻi DAR Watershed Atlas (Parham et al. 2008), and species recorded during a previous stream survey by AECOS (2002) in the lower and estuarine reaches. The table does not list all species recorded throughout the entire stream system.

Table 2. Aquatic Species Observed by SWCA during the Survey, and Species Reported by Parham et al. (2008) and AECOS (2002) in the Kapaʻa Estuary

Common Name	Scientific Name	Status	Source
Mollusks			
Asiatic flume clam	*Corbicula fluminea*	NN	AECOS
Hapawai	*Neritina vespertina*	E	AECOS
Melanid snail	*Melanoides tuberculata*	NN	AECOS
Crustaceans			
Crayfish	*Procambarus clarkii*	NN	DAR
ʻŌpae kalaʻole	*Atyoida bisulcata*	E	DAR
ʻŌpae ʻoehaʻa	*Macrobrachium grandimanus*	I	DAR
Tahitian prawn	*Macrobrachium lar*	NN	AECOS
Insects			
Asian dragonfly	*Crocothemis servilia*	NN	AECOS
Fish			
Āholehole, Hawaiian flagtail	*Kuhlia* spp.	E/I	SWCA; AECOS
ʻAmaʻama, mullet	Mugilidae	?	AECOS
Goby	Gobiid sp.	?	DAR; SWCA
Guppy	*Poecilia reticulata*	NN	AECOS
Kaku, great barracuda	*Sphyraena barracuda*	I	AECOS
Mexican molly	*Poecilia mexicana*	NN	AECOS
Mosquito fish	*Gambusia affinis*	NN	AECOS
ʻOʻopu naniha	*Stenogobius hawaiiensis*	E	AECOS
ʻOʻopu nākea	*Awaous stamineus*	E	AECOS
Papio	*Caranx melampygus*	I	AECOS
Swordtail	*Xiphophorus helleri*	NN	DAR
Tilapia	*Oreochromis* sp./ *Sarotherodon* sp.	NN	SWCA; AECOS
Amphibia			
Tadpoles	–	NN	SWCA; AECOS

Notes: E = Endemic, I = Indigenous, NN = non-native.

In the entire Kapaʻa Stream, Parham et al. (2008) documented five native crustaceans (including both ʻōpae kalaʻole [*A. bisulcata*] and ʻōpae ʻoehaʻa [*M. grandimanus*]), that were seen in the estuary. Eighteen species of fish, including all five native amphidromous gobioid species, were listed by Parham et al. (2008) as occurring in Kapaʻa Stream. In addition, two endemic *Neritina* mollusks have been recorded (Parham et al. 2008). All these native animals are amphidromous, and so must pass through the estuarine part of the stream twice in their life cycles.

5. SPECIES AND CRITICAL HABITAT CONSIDERED

The species evaluated in this report consist of all federally protected (i.e., endangered and threatened) and proposed or candidate species with potential to occur around Kapaʻa, Kauaʻi (USFWS 2014a). Critical habitat for the Hawaiian monk seal occurs in the Kapaʻa Bridge action area.

5.1. Species

The USFWS and NOAA list 12 species that may occur in the Kapaʻa Bridge action area: nine endangered species, two threatened species, and one proposed endangered species (Table 3). Based on current distribution and habitat requirements, nine of these species—the Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, Hawaiian duck, nēnē, Hawaiian hoary bat, Hawaiian monk seal, green sea turtle and hawksbill sea turtle —have the potential to use the habitat of the action area. The Hawaiian petrel (*Pterodroma sandwichensis*), Newell's shearwater (*Puffinus auricularis newelli*) and band-rumped storm petrel (*Oceanodroma castro*) are unlikely to occur in the action area because suitable habitat does not exist; however, these seabirds may be attracted to construction lights as they fly over the action area. These species are discussed in further detail in section 6.1.6.

Table 3. Species Federally Listed as Endangered, Threatened, Proposed, or Candidate with Potential to Occur near Kapaʻa, Kauaʻi

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Birds				
Hawaiian coot (*Fulica alai*)	Endangered	Found in freshwater and brackish-water marshes and ponds. This species is associated with emergent marsh habitat in lowland valleys, reservoirs, and occasionally in high-elevation plunge pools. Nests are built on floating vegetation.	Known to occur; suitable nesting and foraging habitat occurs in the Emergent Wetland vegetation type in the action area.	May affect, but is not likely to adversely affect.
Hawaiian gallinule (*Gallinula chloropus sandvicensis*)	Endangered	Found in freshwater marshes, taro patches, irrigation ditches, reservoirs, and wet pastures. This species favors dense emergent vegetation near open water, floating or barely emergent mats of vegetation, and water depths of less than 3 feet. It prefers freshwater over saline or brackish water. Nesting occurs throughout the year.	Known to occur; suitable nesting and foraging habitat occurs in the Emergent Wetland vegetation type in the action area.	May affect, but is not likely to adversely affect.

Table 3. Species Federally Listed as Endangered, Threatened, Proposed, or Candidate with Potential to Occur near Kapaʻa, Kauaʻi

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Hawaiian stilt (*Himantopus mexicanus knudseni*)	Endangered	Prefers a variety of aquatic habitats but is limited by water depth and vegetation cover. This species likes to loaf in open mudflats, sparsely vegetated pickleweed mats, and open pasturelands. Specific water depths of 5 inches are required for optimal foraging. Nest sites are frequently separated from feeding sites, and stilts move between these areas daily. Nesting sites are adjacent to or on low islands within bodies of fresh, brackish, or salt water.	May occur; suitable nesting and foraging habitat occurs in the Emergent Wetland vegetation type in the action area.	May affect, but is not likely to adversely affect.
Hawaiian duck (*Anas wyvilliana*)	Endangered	Found in lowland wetlands, river valleys, and mountain streams. Nesting occurs on the ground near water (USFWS 2011a).	May occur; suitable nesting habitat occurs in the Strand vegetation type and foraging habitat occurs in the Ruderal and Emergent Wetland vegetation types in the action area.	May affect, but is not likely to adversely affect.
Nēnē (*Branta* sandvicensis)	Endangered	Frequents scrubland, grassland, golf courses, sparsely vegetated slopes, and open lowland country. They do not require standing or flowing water for successful breeding but will use it when available. Nest sites include various habitat types ranging from beach strand, shrubland, and grassland to lava rock, and elevations ranging from coastal lowlands to alpine areas (Banko 1988; Banko et al. 1999).Their current distribution has been highly influenced by captive-bred releases into the wild.	May occur; suitable foraging and nesting habitat occurs in the Ruderal and Strand vegetation types in the action area.	May affect, but is not likely to adversely affect.
Hawaiian petrel *(Pterodroma sandwichensis)*	Endangered	Breeding season is from March to October, during which time this species nests in some of the main Hawaiian Islands, notably on Maui, Lānaʻi, and Kauaʻi. They nest in burrows, primarily in remote montane locations, along large rock outcrops, under cinder cones, under old lichen-covered lava, or in soil beneath dense vegetation. This species was once abundant on all main Hawaiian islands except Niʻihau. Today, the largest known breeding colonies are found at Haleakala Crater on Maui and on the summit of Lānaʻi. Other colonies are on Kauaʻi, the Island of Hawaiʻi, and possibly Molokaʻi.	Unlikely to occur in the action area. Hawaiian petrels may fly over the action area at night while transiting between nest sites and the ocean, but they are not likely to land or use habitat because nesting habitat does not occur in the action area.	May affect, but is not likely to adversely affect.

Table 3. Species Federally Listed as Endangered, Threatened, Proposed, or Candidate with Potential to Occur near Kapaʻa, Kauaʻi

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Newell's shearwater (*Puffinus auricularis newelli*)	Threatened	During their 9-month breeding season from April through November, this species nests in burrows under ferns on forested mountain slopes and needs an open downhill flight path through which it can become airborne. These burrows are used year after year and usually by the same pair of birds. The Newell's shearwater was once abundant on all main Hawaiian islands. Today, Newell's shearwater breed on Kaua'i, the Island of Hawaiʻi, Moloka'i, and Lehua.	Unlikely to occur in the action area. Newell's shearwater may fly over the action area at night while transiting between nest sites and the ocean, but are not likely to land or use habitat because nesting habitat does not exist in the action area.	May affect, but is not likely to adversely affect.
Band-rumped Storm Petrel (*Oceanodroma castro*)	Proposed endangered	This species is found in several areas of the subtropical Pacific and Atlantic Oceans. In Hawaiʻi, it is known to nest on Kauaʻi, Lehua Islet, and the Island of Hawaiʻi. It likely nests in remote cliff locations. Only three inactive nests have ever been found in the Hawaiian Islands; all were located in small caves or crevices. Adults visit the nest site after dark. When not at nest locations, it forages on the open ocean.	Unlikely to occur in the action area. Band-rumped storm petrel may fly over the action area at night while transiting between nest sites and the ocean, but are not likely to land or use habitat because nesting habitat does not exist in the action area.	Not likely to jeopardize the continued existence.
Mammals				
Hawaiian monk seal (*Neomonachus schauinslandi*)	Endangered	Endemic to the Hawaiian archipelago and found mostly in the Northwestern Hawaiian Islands. Increasing sightings reported from the Main Hawaiian Islands. Hawaiian monk seals spend most of their time in the ocean but rest on sandy beaches, and sometimes use beach vegetation as shelter from wind and rain.	Known to occur in the action area. The action area does contain habitat that could support Hawaiian monk seal pupping, nursing, and haul-out.	May affect, but is not likely to adversely affect.
Hawaiian hoary bat (*Lasiurus cinereus semotus)*	Endangered	This species is found primarily from sea level to 7,500 feet, although it has also been observed above 13,000 feet. Most of the available documentation suggests that this elusive bat roosts among trees in forested areas. It has been observed on the Islands of Hawaiʻi, Maui, Molokaʻi, Oʻahu, and Kauaʻi.	May occur in the action area. Bat roosting could occur in the Strand vegetation type of the action area, and foraging could occur over the Ruderal and emergent vegetation habitats and the Kapaʻa Stream.	May affect, but is not likely to adversely affect.

Table 3. Species Federally Listed as Endangered, Threatened, Proposed, or Candidate with Potential to Occur near Kapaʻa, Kauaʻi

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Reptiles				
Green sea turtle (*Chelonia mydas*)	Threatened	The green sea turtle is found worldwide in warm seas. They occupy three habitat types: open beaches, open sea, and feeding grounds in shallow, protected waters. In Hawaiʻi, nesting occurs throughout the Hawaiian archipelago.	Known to occur in the shallow, protected waters of the action area. The action area contains beach habitat that could support nesting and shallow water habitat that supports green turtle foraging.	May affect, but is not likely to adversely affect.
Hawksbill sea turtle (*Eretmochelys imbricata*)	Endangered	The hawksbill sea turtle is found in warm tropical waters worldwide. The hawksbill turtle is a shy tropical reef–dwelling species that feeds on jellyfish, sea urchins, and sea sponges. It may also eat algae that grows on the reef. In Hawaiʻi, nesting occurs on the Islands of Hawaiʻi, Maui, Molokaʻi, and Oʻahu.	May occur in the shallow, protected waters of the action area. The action area contains beach habitat that could support nesting and shallow water habitat that supports hawksbill sea turtle foraging.	May affect, but is not likely to adversely affect.

*** Federal (USFWS) status definitions:**

Endangered: Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. *Take* is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

Threatened: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The ESA specifically prohibits the take (see definition above) of a species listed as threatened.

Proposed: Any species of fish, wildlife, or plant that is proposed in the *Federal Register* to be listed under Section 4 of the ESA.

† Unless otherwise noted, data are from USFWS (2014b).

5.2. Critical Habitat

Critical habitat for the Hawaiian monk seal occurs in the action area (Figure 5). Critical habitat was first designated for the Hawaiian monk seal in 1986, and expanded in 1988. In 2008, NMFS received a petition to further expand the existing critical habitat designation in the Main Hawaiian Islands (MHI) and the Northwestern Hawaiian Islands (NWHI), and a revised critical habitat area became effective in September 2015 (NOAA 2015).

The current configuration of monk seal designated critical habitat comprises 16 specific areas of terrestrial and marine habitats within the Hawaiian Archipelago. In the NWHI, 10 specific areas are around Kure Atoll, Midway Islands, Pearl and Hermes Reef, Lisianski Island, Laysan Island, Maro Reef, Gardner Pinnacles, French Frigate Shoals, Necker Island, and Nihoa Island. In the MHI, there are six specific areas; these include marine habitat from the 656-foot (200-m) depth contour line (including the seafloor and all subsurface waters and marine habitat within 32 feet [10 m] of the seafloor) through the water's edge, and the terrestrial environment to 15 feet (5 m) inland from the shoreline between identified boundary points on the Islands of Kaʻula, Niʻihau, Kauaʻi, Oʻahu, Kahoʻolawe, Lānaʻi, Maui, Molokaʻi, and Hawaiʻi (NOAA 2015). *Shoreline* is defined by the USFWS as "upper reaches of the wash of waves, other than storm or seismic waves, at high tide during the season in which the highest wash of the wave occurs, usually evidenced by the edge of vegetation growth or the upper limit of debris" (USFWS 2011b).

Each of the 16 areas contains one or a combination of physical or biological features essential to conservation of the species, and that may require special management consideration or protections. Two terrestrial and one marine essential feature have been identified for the Hawaiian monk seal critical habitat. These essential features are as follows:

- Terrestrial areas and the adjacent shallow sheltered aquatic areas with characteristics preferred by Hawaiian monk seals for pupping and nursing.
- Marine areas from 0 to 656 feet (0 to 200 m) deep that support adequate prey quality and quantity for juvenile and adult Hawaiian monk seal foraging.
- Significant areas used by Hawaiian monk seals for hauling-out, resting, or molting.

Kauaʻi provides approximately 28 miles (45 km) of coastline that support preferred pupping and nursing areas and significant haul-out areas, as well as 215 square miles (557 km^2) of marine foraging habitat essential to Hawaiian monk seal conservation (NOAA 2015). The critical habitat in the action area consists of the entirety of Kealia Beach, which is approximately 212 feet (64.62 m) from the project.

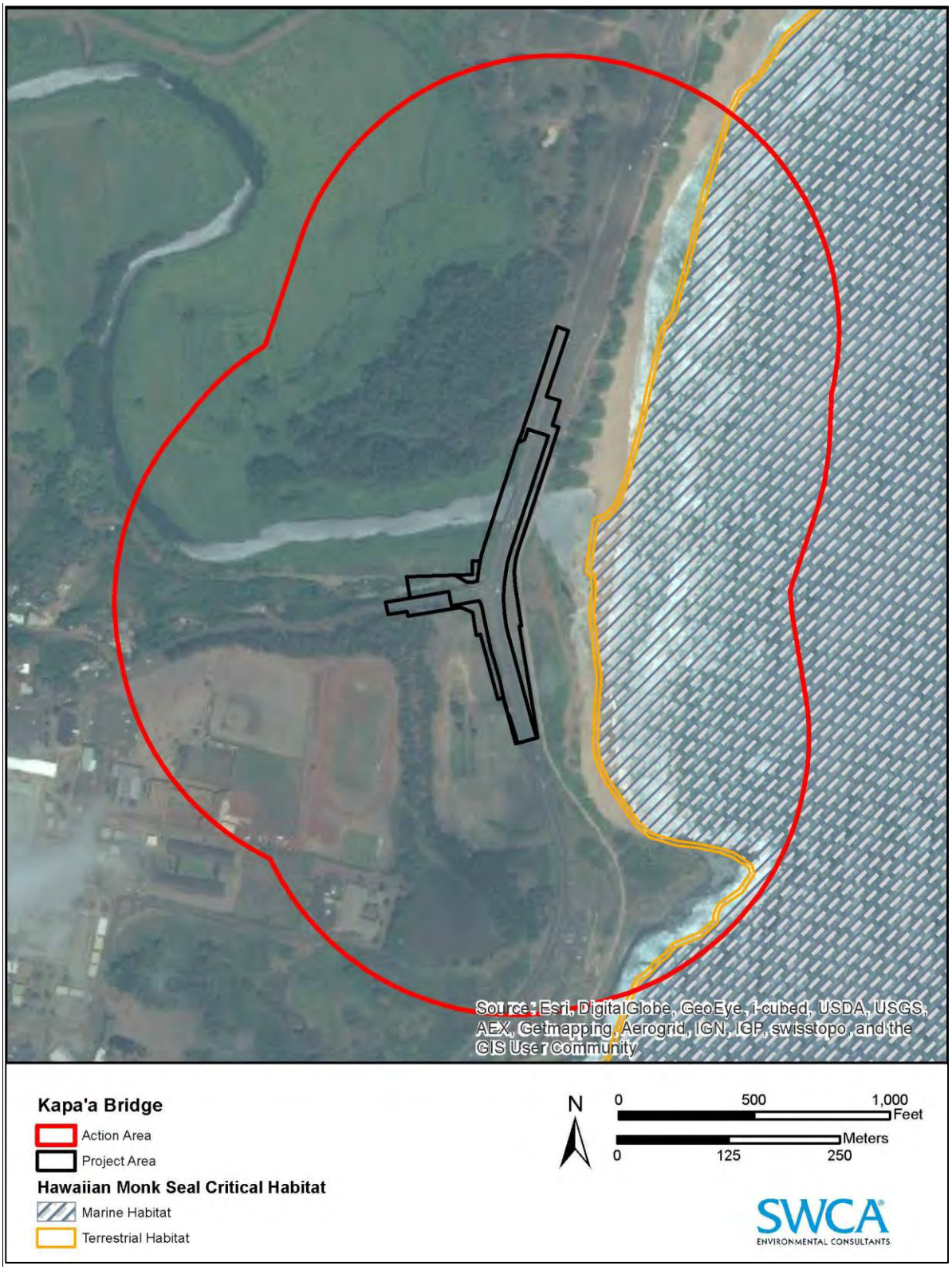

Figure 5. Monk seal critical habitat in the Kapaʻa Bridge action area.

6. EFFECTS ANALYSIS

Federally protected species that may be affected by the proposed action are discussed in detail in this section[1]. These species are Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, and Hawaiian duck (collectively referred to as waterbirds); nēnē; Hawaiian petrel, Newell's shearwater, and band-rumped storm petrel (collectively referred to as seabirds); Hawaiian hoary bat; Hawaiian monk seal; and green sea turtle and hawksbill sea turtle (collectively referred to as sea turtles).

6.1.1. Waterbirds

The Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, and Hawaiian duck constitute the waterbird group. Because these species share similar habitat needs and biological characteristics, they can be discussed as a single group. These waterbirds were listed as endangered species in 1967 under the federal ESA and are also listed on the State of Hawaiʻi's Endangered Species List. The Hawaiian coot, Hawaiian gallinule, and Hawaiian duck nest throughout the year. The breeding season for the Hawaiian stilt is between February and August (Robinson et al. 1999).

Hawaiian waterbirds are most likely to be found in areas associated with wetlands and waterways, such as the Strand and Emergent Wetland vegetation types, and Kapaʻa Stream habitats. These waterbirds are found in a variety of wetland habitats such as freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, kalo or taro (*Colocasia esculenta*) loʻi or patches, irrigation ditches, sewage treatment ponds, and in the case of the Hawaiian duck, montane streams and marshlands (USFWS 2011a).

The Hawaiian coot occurs on all the main Hawaiian Islands except Kahoʻolawe, with an estimated population of 1,000–2,000 individuals. On Kauaʻi, the Hawaiian coot is usually found in lowland valleys (USFWS 2014b). The population has been increasing over the past 30 years (Reed et al. 2011; USFWS 2011a). This species is associated with emergent freshwater and brackish water marsh habitat in lowland valleys, reservoirs, and occasionally in high-elevation plunge pools (USFWS 2011). Hawaiian coots forage in mud, sand, on the water surface; can dive in water up to 4 feet (1.21 m) deep; and may graze at grassy sites adjacent to wetlands (USFWS 2011a). Nests are typically built on floating aquatic vegetation or in clumps or wetland vegetation, although nests have been documented on shorelines and rocky islets (USFWS 2011a).

The Hawaiian gallinule is only found on Oʻahu and Kauaʻi. The Kauaʻi population is found in lowland wetlands and valleys. A sizable population is found at the Hanalei National Wildlife Refuge (USFWS 2014b). The overall population is thought to be increasing or stable (Reed et al. 2011; USFWS 2011a). This species favors dense emergent vegetation near open water, floating or barely emergent mats of vegetation, and water depths of less than 3 feet (0.91 m). It prefers freshwater over saline or brackish water. Nest are typically constructed in areas with standing freshwater less than 2 feet (0.60 m) deep by folding emergent vegetation over into a platform. In areas where emergent vegetation is lacking, nests can be made on the ground if tall vegetative cover is nearby (USFWS 2011a).

Hawaiian stilt abundance varied between 1,100 and 1,783 individuals between 1997 and 2007, with fewer than 500 occurring on Kauaʻi (USFWS 2014b, 2011a). The statewide population has been increasing over the past 30 years (Reed et al. 2011; USFWS 2011a). Hawaiian stilts use a variety of aquatic habitats, but they prefer to loaf in open mudflats, sparsely vegetated pickleweed mats, and open pasture lands. Specific water depths of 5 inches (12.7 centimeters [cm]) are required for optimal

[1] Species that become federally listed as endangered or threatened also become listed under the same classification (endangered or threatened) in the State of Hawaiʻi (Hawaii Revised Statutes 195D-4).

foraging. Nest sites are frequently separated from feeding sites, and they are adjacent to or on low islands within bodies of fresh, brackish, or salt water.

The Hawaiian duck population was estimated at 2,525 individuals in 2002, with approximately 2,000 occurring on Kauaʻi and Niʻihau (USFWS 2014b). The Hawaiian duck may use a variety of wetland habitats for nesting and foraging, including freshwater marshes, flooded grasslands, coastal ponds, streams, montane pools, and forest swamplands at elevations ranging from sea level to 9,900 feet (3,000 m) (USFWS 2011a). Nests occur on the ground near water, but little else is known of specific nesting habits (USFWS 2011a).

The most significant causes of decline for all four waterbird species are loss and degradation of wetland habitat and predation by introduced animals (e.g., rat, dog, cat, American bullfrog [*Rana catesbeiana*], fish, and mongoose [*Herpestes javanicus*]). Other factors that have contributed to waterbird population declines include modification of hydrology, alteration of habitat structure and vegetation composition by invasive non-native plants, loss of riparian vegetation and water quality degradation due to grazing, disease, and environmental contaminants (USFWS 2011a).

6.1.1.1. EFFECTS ANALYSIS

The Hawaiian gallinule was the only waterbird observed in the survey area during the 2014 surveys. The Hawaiian coot is known to occur in the area, and the Hawaiian stilt and Hawaiian duck may occur in the Kapaʻa Bridge action area. The vegetated streambanks along the Kapaʻa Stream provide Strand and Emergent Wetland vegetation types that are suitable for foraging and nesting for all four waterbirds.

Permanent removal of foraging and nesting habitat would constitute a long-term *direct* impact. Approximately 3.1 acres (1.26 ha) of upland vegetation would be removed under the proposed action, a portion of which constitutes foraging habitat for waterbirds. Approximately 0.15 acre (0.061 ha) of emergent marsh wetland would also be removed, an area that could serve as nesting habitat for the Hawaiian coot, Hawaiian gallinule, and Hawaiian duck. Of this vegetation removal, 1.8 acre (0.7 ha), or 55%, would be temporary because the area (e.g., staging area and access roads) would be reclaimed following construction. This impact would be discountable due to the small area of impact and availability of adjacent foraging and nesting habitat for displaced waterbirds to use.

Short-term direct impacts to waterbirds could occur if human activity, noise, and removal of vegetation disrupt nesting adults, causing temporary or permanent abandonment of nest, ducklings, and/or chicks, which could in turn increase the likelihood of nest failure, predation, exposure, or trauma. Disturbance to duckling- and/or chick-rearing areas can result in separation of young from adults, which often results in duckling/chick mortality due to predation, exposure, and/or trauma. However, short-term direct impacts are unlikely to occur because of the conservation measures listed for waterbirds in section 2.6.

Human noise and disturbance associated with construction activities could cause a short-term indirect impact by the temporarily displacement of waterbirds and could reduce the amount of nest, roost, and/or forage habitats available. This displacement could alter an individual's typical nesting, foraging, and roosting patterns. This impact would be insignificant because the displacement would only occur while construction activities last.

Because all impacts on the Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, and Hawaiian duck would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of these species.

6.1.2. Nēnē

The nēnē is adapted to a terrestrial and largely non-migratory lifestyle in the Hawaiian Islands, with negligible dependence on freshwater habitat. The nēnē is capable of both inter-island and high-altitude flight (Banko et al. 1999; Miller 1937). After nearly becoming extinct in the 1940s and 1950s, the nēnē population has been slowly rebuilt through captive-breeding programs. Wild populations of nēnē occur on Hawaiʻi, Maui, and Kauaʻi, and have recently been documented on Oʻahu. The nēnē was listed as an endangered species in 1967 under the ESA and is listed on the State of Hawaiʻi's Endangered Species List. The population of nēnē was estimated in 2010 at 1,888–1,978 individuals, with the largest population on Kauaʻi (USFWS 2011c). Approximately 400 birds were slated to be moved from Kauaʻi to Maui, Molokaʻi, and Hawaiʻi under an emergency declaration by then-governor Abercrombie. A significant portion of these birds has been moved to Hawaiʻi Island.

The nēnē has an extended breeding season, with eggs observed in all months except May, June, and July, although most nest during the rainy season between October and March (Banko et al. 1999; Kear and Berger 1980). Nēnē nest on the ground in a shallow scrape in the dense shade of a shrub or other vegetation. During molt, adults are flightless for a period of 4–6 weeks. Molt occurs after egg hatching, such that the adults generally attain their flight feathers at about the same time as their offspring. When flightless, goslings and adults are extremely vulnerable to predators such as dogs, cats, and mongoose. From June to September, family groups join others in post-breeding flocks, often far from nesting areas.

Nēnē occupy various habitat types including beach strand, shrubland, grassland, and lava rock at elevations ranging from coastal lowlands to alpine areas (Banko 1988; Banko et al. 1999). The geese eat plant material, and the composition of their diet depends largely on the vegetative composition of their surrounding habitats. Most nēnē food items are leaves and seeds of grasses and sedges, leaves and flowers of various herbaceous composites, and fruits of several species of shrubs (Banko et al. 1999; Black et al. 1994). They appear to be opportunistic in their choice of food plants as long as the plants meet their nutritional demands (Banko et al. 1999; Woog and Black 2001).

The main factor limiting the recovery of nēnē populations is predation by introduced mammals, most notably cats, rats, and mongoose (USFWS 2004). Additional threats include limited access or availability to nutritional resources during breeding, and anthropomorphic disturbances, including car strikes, disturbance of nesting and feeding, and fatalities at golf courses. Breeding habitat, particularly at low elevations, may be limited (USFWS 2004).

6.1.2.1. EFFECTS ANALYSIS AND DETERMINATION

Although nēnē were not observed during the field surveys, suitable nesting and foraging habitat is present in the Strand and Ruderal vegetation types along the river banks (see Appendix A, Figure A1).

Permanent removal of foraging and nesting habitat would constitute a long-term *direct* impact. Approximately 3.1 acres (1.26 ha) of upland vegetation would be removed under the proposed action, only a portion of which is currently suitable for nēnē. Of this vegetation removal, roughly 1.8 acre (0.7 ha), or 55%, would be temporary because the areas (e.g., staging area and access roads) would be reclaimed following construction. This impact would be discountable due to the small area of impact and availability of adjacent foraging and nesting habitat for displaced nēnē to use.

In the short term, the human noise and disturbance associated with construction activities could temporarily displace nēnē from foraging habitat. Displacement from available forage could impact the health of these individuals; however, because a small amount of foraging habitat would be removed, it

would not likely affect nest success or population growth. Furthermore, abundant foraging habitat is available adjacent to the project area along the Kapaʻa Stream, into which the nēnē could move.

Implementation of the proposed action would not increase the potential for vehicle strike. This is because the replacement bridge would not increase the width of the current bridge (two 12-foot-wide [3.65-m-wide] travel lanes); therefore, the distance at which the birds would be susceptible to vehicle strike while crossing the bridge would not change. Wildlife is more susceptible to vehicle strike on roads with higher speeds (Forman et al. 2002). The posted speed on the bridge is 40 miles per hour (64.37 kph) and would remain so under the proposed action; therefore, the potential for vehicle strikes would remain the same.

Because all impacts on the nēnē would be discountable, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

6.1.3. Seabirds

The endangered Hawaiian petrel, threatened Newell's shearwater, and proposed endangered band-rumped storm-petrel constitute the seabirds group. Because these species share similar habitat needs and biological characteristics, they are discussed as a single group.

The Hawaiian petrel was listed as an endangered species on March 11, 1967 and is listed on the State of Hawaiʻi's Endangered Species List. The Hawaiian petrel was once abundant on all main Hawaiian Islands except Niʻihau (Mitchell et al. 2005). The population was most recently estimated to consist of approximately 20,000 individuals, with 4,000–5,000 breeding pairs (Spear et al. 1995).

The Newell's shearwater was listed as a threatened species by the USFWS in 1975 and is listed as threatened by the State of Hawaiʻi. The largest breeding population of Newell's shearwater occurs on Kauaʻi (Ainley et al. 1995, 1997; Day et al. 2003; Telfer et al. 1987). This species has also been documented on Hawaiʻi (Reynolds et al. 1997), Molokaʻi (Day and Cooper 2002), and Oʻahu (Day and Cooper 2008).

The band-rumped storm petrel is a proposed for listing as endangered and is on the State of Hawaiʻi's Endangered Species List. Listing of the band-rumped storm petrel under the ESA is anticipated to occur in 2016. Band-rumped storm petrels are considered the rarest breeding seabird in Hawaiʻi (Banko et al. 1991; Slotterback 2002). In the Pacific Ocean, breeding colonies have been documented only in the Galapagos Islands, Japan, the Hawaiian Islands, and possibly Cocos Island near Costa Rica (Pyle and Pyle 2009; USFWS 2012).

The types of habitat used for seabird nesting are diverse and range from xeric environments with little or no vegetation, such as at Haleakalā National Park on Maui, to wet forests dominated by ʻōhiʻa (*Metrosideros polymorpha*) with uluhe (*Dicranopteris linearis*) understory, such as those found on Kauaʻi (Mitchell et al. 2005). Nests are located in various naturally occurring features such as lava tubes, cracks in tumuli (fractured hills on the surface of pāhoehoe flows), spaces created by uplift of pāhoehoe slabs, and other miscellaneous natural features (Hu et al. 2001; Mitchell et al. 2005; Pyle and Pyle 2009).

The main factors contributing to population declines of these ground-nesting seabirds are habitat degradation; the loss of nesting habitat; predation of eggs, hatchlings, and adults at nesting sites by introduced mammals (e.g., dog, mongoose, cat, rat, and pig [*Sus scrofa*]); and urban lighting associated with disorientation and fall-out of juvenile birds (Ainley et al. 1997; Banko et al. 1991; Hays and Conant 2007; Mitchell et al. 2005).

6.1.3.1. EFFECTS ANALYSIS AND DETERMINATION

The action area does not provide suitable nesting or foraging habitat for these seabirds. However, breeding individuals may fly over the action area at night while travelling between upland nesting and ocean foraging sites. Disorientation and fall-out as a result of light attraction could occur to individuals attracted to nighttime construction lighting. The conservation measures regarding nighttime lighting, as listed in section 2.6, would avoid and minimize the potential for light-attraction impacts to these species. Conservation measures include working during daylight hours, turning off unnecessary lights during the peak seabird fallout period, and shielding night time lighting to prevent upward radiation. Implementation of these measures would reduce the potential for adverse impacts to unlikely and discountable.

Because all impacts on the Hawaiian petrel and Newell's shearwater would be discountable, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of these species.

Because all impacts on the band-rumped storm petrel would be discountable, the proposed action is *not likely to jeopardize the continued existence* of individuals or populations of the species.

6.1.4. Hawaiian Hoary Bat

The Hawaiian hoary bat was listed as an endangered species on October 13, 1970, under the ESA and is listed on the State of Hawaiʻi's Endangered Species List. The Hawaiian hoary bat is found on Hawaiʻi, Maui, Molokaʻi, Oʻahu, and Kauaʻi, and has been observed from sea level to approximately 13,000 feet (3,963 m) (USFWS 2014b).

The Hawaiian hoary bat is the only native terrestrial mammal that is still extant within the Hawaiian Islands (USFWS 1998). Hawaiian hoary bats use both closed habitats near vegetation such as tunneled roadways, and open habitats adjacent to forests, above tree canopies, and over open oceans (Jacobs 1996). Hawaiian hoary bats are insectivores and are regularly observed foraging over streams, reservoirs, and wetlands up to 300 feet (100 m) offshore (U.S. Department of Agriculture 2009). Hawaiian hoary bats forage in open, wooded, and linear habitats within a wide range of vegetation types (USFWS 2014b). The bat typically roosts in dense canopy foliage or in the subcanopy when canopy is sparse, with open access for launching into flight (U.S. Department of Agriculture 2009).

Hawaiian hoary bats are believed to be threatened by habitat loss, pesticides, predation, and roost disturbance. Reduction of tree cover and indirect impacts from the use of pesticides may be the primary causes of recent declines (USFWS 2014b).

6.1.4.1. EFFECTS ANALYSIS AND DETERMINATION

Acoustic surveys for Hawaiian hoary bats were not conducted, but areas of suitable habitat for roosting and foraging were noted during the biological survey. The Kapaʻa Stream corridor and the Ruderal and Emergent Wetland vegetation types in the action area are suitable for bat foraging. The Hawaiian hoary bat has been observed roosting in coconut trees and therefore could roost in the Strand vegetation habitat (see Appendix A, Figure A1) type in the action area.

Direct impacts on bats could occur during vegetation removal if a juvenile bat that is too small to fly but too large to be carried by a parent is present in a tree or branch that is cut down. However, because of the conservation measure that trees would not be cut during the breeding season (June 1 through September 15), direct impacts are unlikely to occur. The potential for direct impacts would also be reduced by ensuring the top wire strand of surrounding fences (if present) is barbless, as listed in the conservation measures.

In the short term, the human noise and disturbance associated with construction activities could temporarily displace bats from roosting and/or foraging habitats. This displacement could alter an individual's typical foraging and roosting patterns, forcing it to expend energy to search for new foraging and roosting locations. Displacement from roosting habitat could lead to increased predation on individual bats, especially if a bat is forced to leave its roost during daylight hours, making it more visible to potential predators. The potential for these impacts is low considering the project would occur on and immediately adjacent to a heavily traveled roadway, and therefore the bats present would already be accustomed to high levels of background noise. Furthermore, high-quality roosting and foraging areas occur in the action area, into which bats could be displaced.

Because all impacts on the Hawaiian hoary bat would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

6.1.5. Hawaiian Monk Seal

The Hawaiian monk seal is one of the rarest marine mammals on earth. The Hawaiian monk seal is listed as endangered under the ESA and is listed on the State of Hawaiʻi's Endangered Species List. It is also protected by the Marine Mammal Protection Act of 1972.

Hawaiian monk seals spend most of their lives at sea, but also rely on land habitat for resting, molting, pupping, nursing, and avoiding marine predators. Monk seals can often be seen hauling-out on sand, corals, and volcanic rock to rest during the day and to give birth, preferring protected beaches surrounded by shallow waters when pupping (NOAA NMFS 2015b). Pupping has been observed in a variety of terrestrial coastal habitats mostly consisting of sandy, protected beaches adjacent to shallow sheltered aquatic areas (NOAA 2015).

Hawaiian monk seals are considered foraging generalists, and the characteristics of their foraging habitat are variable. They generally hunt outside of the immediate shoreline in waters 60–300 feet (18–90 m) deep, but have been known to forage at depths of up to 1,000 feet (330 m) (NOAA NMFS 2015b). There are also accounts of seals traveling up rivers and streams, particularly on Hawaiʻi Island and Kauaʻi, to feed and rest (personal communication, C. Littnan, NMFS, September 3, 2015).

The best current population estimate provided for the Hawaiian monk seal is 1,209 individuals (Carretta et al. 2013). The population is often discussed and managed as two subpopulations, even though they are not genetically distinct. One subpopulation occurs in the NWHI and one occurs in the MHI. Seals from the MHI subpopulation may occur in the action area.

Approximately 85% of the Hawaiian monk seal population occurs in the NWHI. The MHI subpopulation was estimated at 150–200 individuals in 2011 (personal communication, C. Littnan, NMFS, August 18, 2015). Seal abundance in the NWHI subpopulation remains in decline. The MHI subpopulation is experiencing increasing abundance and reproductive success, which is thought to be a result of a lower overall seal density and the lack of large predators that compete for food and kill pups (NOAA NMFS 2007). Trends in abundance may also be linked to changes in ocean productivity that are determined by various climate patterns (NOAA 2015).

Threats to Hawaiian monk seals differ in each subpopulation. In the MHI subpopulation, human threats in the form of interactions with fishing gear, boat strikes, disturbances of mothers and their pups on beaches, and exposure to disease are threats. Other threats include loss of haul-out and pupping beaches due to erosion, male aggression toward females, and low genetic diversity (Antonelis et al. 2006; Johanos et al. 2010; NOAA NMFS 2015b). Shark predation, food limitation, competition, and entanglement in marine

debris are threats to the NWHI subpopulation. The subpopulation in the low-lying NWHI is particularly susceptible to the habitat loss as a result of climate change.

6.1.5.1. EFFECTS ANALYSIS AND DETERMINATION

Monk seals may occur in the action area. Between 2005 and 2014, there were 184 reported sightings of monk seals at Kealia Beach. Of these sightings, 112 reports consisted of 26 uniquely identifiable seals (Mercer 2015). During aerial surveys in 2000, 2001, and 2008, no Hawaiian monk seals were sighted in the action area, and they were not incidentally observed during SWCA's field surveys. Suitable foraging habitat is present in the nearshore marine waters and riverine habitat of the action area (see Figure 5). Suitable haul-out and pupping habitat is present on Kealia Beach, which is a sandy and protected beach adjacent to a shallow and sheltered aquatic area. Although suitable pupping habitat is present, no monk seal pups are known to have been born in the action area.

Monk seals could also be temporarily displaced from nearshore marine and riverine foraging areas during construction. Sound waves generated by percussive pile driving can affect marine mammals in several ways such as altered behavior, physical injury, or even mortality. However, evidence suggests that Hawaiian monk seals have less sensitive hearing in water than do other pinnipeds (Muñoz et al. 2011); therefore, the magnitude of noise impacts may be less for monk seals foraging in the water. Conservation measures regarding the Kealia Beach sand bar would ensure monk seals would not be displaced from the nearshore marine environment due to underwater noise (section 2.6), although they could still be displaced due to noise occurring above the water. If monk seals are displaced from nearshore marine habitats, they would flee to deeper waters or to other foraging locations along the shoreline. Displacement from riverine foraging habitat would not have a significant impact on monk seals, because foraging individuals could find similar resources upstream or downstream from the construction site or return to marine habitats. Furthermore, if construction in the wetted channel were to take place when the Kealia Beach sand bar was breached in such a way that underwater noise could reach the marine environment, conservation measures would be followed regarding the use of cofferdams so that all work would be conducted where it is dry. This would eliminate underwater noise disturbances in both the riverine and marine environments.

Female monk seals could be discouraged from pupping on Kealia Beach due to the noise and human activity associated with construction. These females would be displaced into other pupping areas north or south of the action area. However, because pupping has never been observed on that beach, this effect is discountable and unlikely. The female and pup would be afforded a 300-foot (91.44-m) buffer (section 2.6), ensuring that no direct effects to the mother and pup would occur.

In the short term, activities associated with construction (noise, movement of equipment, light) could temporarily displace monk seals from preferred haul-out areas that occur within the Kapaʻa Bridge action area. Evidence from observations of individuals from the MHI subpopulation suggests that basking Hawaiian monk seals are surprisingly tolerant of human activity (NOAA NMFS 2015c). When disturbed, the response is usually for the seal to return to the water. Temporary displacement from haul-out sites could alter an individual's typical energetic expenditure, forcing it to seek out other haul-out sites.

Disturbance from harassment by construction workers would not occur because workers would be informed not to feed, touch, ride, or otherwise intentionally interact with any listed species, including the monk seal. Construction activities would not occur if a monk seal is in the construction area or within 150 feet (46 m) of the construction area. Construction would only begin after the animal voluntarily leaves the area.

Because monk seal conservation measures (shielded nighttime lighting, buffers from individuals and pups, preventing human interaction, and reducing underwater noise) would be taken, direct impacts would

be insignificant. The primary threats to monk seals in the MHI (entanglement in fishing gear, impact from boats, and predation by fishermen) are not expected to increase as a result of the proposed action.

Indirect harm from the accidental introduction of contaminants or construction-related debris into Kapaʻa Stream has the potential to reduce water quality in the bay. However, these impacts would be unlikely and discountable because conservation measures, such as those described in section 2.6, would be in place to minimize the potential for spills and contamination. These conservation measures include fueling equipment away from the water, inspecting and cleaning all equipment before daily operations, training personnel for emergency spill prevention, and cleaning all potential contaminants from the site.

Because all impacts on the Hawaiian monk seal would be discountable or insignificant, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

6.1.5.2. CRITICAL HABITAT EFFECTS ANALYSIS AND DETERMINATION

There is no monk seal designated critical habitat in the project area; therefore, no direct effects would occur on designated critical habitat. However, recently designated monk seal terrestrial critical habitat occurs within the action area, with surrounding waters designated as marine critical habitat for the Hawaiian monk seal (see Figure 5). The essential critical habitat features for this species are 1) terrestrial areas and adjacent shallow, sheltered aquatic areas with characteristics preferred for pupping and nursing; 2) marine areas from 0 to 656 feet (0 to 200 m) deep that support adequate prey quality and quantity for juvenile and adult monk seal foraging; and 3) significant areas used by monk seals for hauling out, resting, or molting.

Indirect effects on these three features consist of temporary construction impacts to water quality (turbidity, siltation, pollutants, and debris) and noise and light disturbances. Impacts on water quality would be discountable due to implementation of best management practices (BMPs) that would maintain water quality. Low levels of light and noise from the construction activities could impact critical habitat; however, the conservation measures regarding nighttime lighting, as listed in section 2.6, would minimize the impact of lighting, reducing it to an unlikely and discountable impact. In-air noise levels elevated to the point at which Hawaiian monk seal behavior is disrupted would be unlikely due to the distance of the critical habitat from construction activities (approximately 262 feet [80 m] at a minimum) coupled with vegetation shielding. Underwater noise impacts in the marine environment would not occur due to the conservation measures regarding the Kealia Beach sand bar (section 2.6). Noise and light effects would occur in the short term, and would cease after construction is completed.

Because all impacts on the Hawaiian monk seal critical habitat would be discountable or insignificant, the proposed action *is not likely to destroy or adversely modify* critical habitat of the species.

6.1.6. Sea Turtles

The green and hawksbill sea turtles constitute the sea turtle group. Because these species share similar habitat requirements and biological characteristics, as well as potential project impacts and conservation measures, they can be discussed as a single group. No sea turtle critical habitat has been designated in the waters of Hawaiʻi.

The green sea turtle is widely distributed throughout the world and found primarily in tropical and subtropical waters. They are the most common sea turtle found in the Hawaiian archipelago. Green turtles in Hawaiʻi are genetically distinct from other green sea turtle populations (Bowen et al. 1992). In 1978, the species was listed as threatened throughout most of its range, except for the breeding populations in

Florida and Mexican Pacific Coasts, which were listed as endangered (USFWS and NOAA 2015). The green turtle is also listed as threatened by the State of Hawaiʻi. Green sea turtles are generally common along all coastlines of the MHI from the shore out to at least the 100-foot (30.48-m) bathymetry contour, and they are expected to use the coastal waters and shoreline within the action area and have been have been observed transiting Hawaiʻi rivers up to 2 miles (3 km) inland (Clarke et al. 2012).

The hawksbill sea turtle was listed as an endangered species in 1970 and is listed on the State of Hawaiʻi's Endangered Species List. The hawksbill sea turtle is found circumtropically in waters of the Atlantic, Pacific, and Indian Oceans. Current global estimates are between 60,000 and 78,000 nesting adult female hawksbills. One hundred adult females were tagged on the Island of Hawaiʻi between 1991 and 2009 (Sietz et al. 2012). Hawksbill sea turtle hatchlings are believed to inhabit the pelagic environment, taking shelter in floating algal mats and drift lines of flotsam and jetsam. After a few years, small juveniles recruit to coastal foraging grounds (NOAA NMFS 2014). Coral reef ledges and caves provide shelter for resting hawksbill sea turtle both during the day and at night. Hawksbill sea turtles are known to exhibit high site fidelity, returning to the same resting spot night after night. They can also be found near rocky outcrops and high energy shoals, which are optimum sites for sponge growth, a preferred species of forage (NOAA NMFS 2014).

In Hawaiʻi, disease and habitat loss (i.e., coral reef communities) are the primary threats to the green and hawksbill sea turtle, respectively. Other threats include marine debris (e.g., ingestion and entanglement), boat strikes, water contamination (e.g., runoff, dredging and noise), harvesting (e.g., eggs, consumption, and commercial product), loss or degradation of nesting habitat (e.g., artificial lighting and encroaching non-native vegetation), and nest and hatchling predation (NOAA NMFS 2015d).

6.1.6.1. EFFECTS ANALYSIS AND DETERMINATION

No sea turtles were incidentally observed during SWCA's field survey, but suitable habitat for basking, nesting, foraging, and predator avoidance was noted. Kealia Beach provides suitable beach habitat for basking and nesting, the surrounding marine waters provide suitable foraging and resting habitat, and the Kapaʻa Stream provides foraging and predator avoidance habitat.

Construction activities (e.g., noise and light) could impact sea turtles by displacing individuals from the beach, marine, and riverine habitats in the Kapaʻa action area. This displacement could alter an individual's typical energy expenditure by forcing it to search for new foraging and basking locations. If they are disturbed, the likely response would be to return to the shallow water's edge and swim away.

Noise and light from construction may also temporarily discourage turtles from using the area as a nesting location. With regard to noise, the main concern would be loud, low-frequency sounds during the nesting period. Conservation measures regarding the Kealia Beach sand bar would ensure sea turtles would not be displaced from the nearshore marine environment by underwater noise (section 2.6), although they could still be displaced due to noise occurring above the water. If sea turtles are displaced from nearshore marine habitats, they would flee to deeper waters or to other foraging locations along the shoreline. Displacement from riverine foraging habitat would not have a significant impact on sea turtles, because foraging individuals could find similar resources upstream or downstream from the construction site or return to marine habitats. Furthermore, if construction in the wetted channel were to take place when the Kealia Beach sand bar was breached in such a way that underwater noise could reach the marine environment, conservation measures would be followed regarding the use of cofferdams so that all work would be conducted where it is dry. This would eliminate underwater noise disturbances both in the riverine and marine environments.

Increased lighting during the breeding season evening hours is likely to dissuade turtles from emerging to lay eggs on afflicted beaches. Artificial lighting is known to disorient hatchlings, which orient toward brighter lights after emerging from their nest. The conservation measures regarding nighttime lighting, such as restricting construction work to daylight hours and using shielded lights (see section 2.6), would minimize the impact of lighting, reducing it to an unlikely and discountable impact.

Human-related disturbance (e.g., harassment) and mortality (e.g., impact from boat propellers, gill net entanglement, and fishing activities) are not likely to increase as a result of the proposed action. The implementation of the conservation measures in section 2.6 regarding nighttime lighting (e.g., not working within 150 feet [46 m] of sea turtles, removing construction-related entanglement threats and potential for human interaction, and using shielded lighting) would reduce construction activities to an unlikely and discountable impact.

Indirect harm from the accidental introduction of contaminants or construction-related debris into Kapaʻa Stream has the potential to reduce water quality in the bay. However, the potential for these impacts would also be unlikely and discountable by ensuring appropriate BMPs are in place, as described in the conservation measures. These include fueling equipment away from the water, inspecting and cleaning all equipment before daily operations, training personnel for emergency spill prevention, and cleaning up. To avoid exacerbating the incidences of disease such as fibropapillomatosis in green sea turtles as a result of the proposed action, BMPs would be implemented to ensure that the proposed action does not increase nitrogen or other nutrient loads to nearshore waters. These contaminants are known to promote algae growth into the surrounding waters (Smith et al. 2010).

Because all impacts on sea turtles would be discountable or insignificant with BMPs, the proposed action *may affect, but is not likely to adversely affect*, individuals or populations of the species.

7. CONCLUSION

In conclusion, the proposed project *may affect, but is not likely to adversely affect,* the federally listed Hawaiian petrel, Newell's shearwater, Hawaiian stilt, Hawaiian coot, Hawaiian gallinule, Hawaiian duck, nēnē, green sea turtle, hawksbill sea turtle, Hawaiian hoary bat, and Hawaiian monk seal. The proposed project is *not likely to jeopardize the continued existence* of the band-rumped storm petrel, which is proposed for listing. The proposed project *is not likely to destroy or adversely modify* critical habitat of the Hawaiian monk seal.

8. LITERATURE CITED

AECOS. 2002. *Aquatic Resources Survey for the Kapaa-Kealia Bikepath, Kauaʻi*. Prepared for the Kapaa-Kealia Bike and Pedestrian Path Final Environmental Assessment.

Ainley, D. G., L. DeForest, N. Nur, R. Podolsky, G. Spencer, and T. C. Telfer. 1995. Status of the threatened Newell's Shearwater on Kauaʻi: Will the population soon be endangered?

Ainley, D.G., T.C. Telfer, and M.H. Reynolds. 1997. Townsend's and Newell's Shearwater (*Puffinus auricularis*). In *The Birds of North America*, No. 297, edited by A. Poole and F. Gill. Philadelphia, Pennsylvania: The Birds of North America, Inc.

Antonelis, G.A., J.D. Baker, T.C. Johanos, R.C. Braun, and A.L. Harting, 2006. Hawaiian monk seal (*Monachus schauinslandi*): status and conservation issues. *Atoll Research Bulletin* 543:75–101.

Banko, P.C. 1988. Breeding biology and conservation of the Nēnē, Hawaiian goose (*Nesochen sandvicensis*). Ph.D. dissertation, University of Washington, Seattle. 255 pp.

Banko, P.C., J.M. Black, and W.E. Banko. 1999. Hawaiian Goose (Nēnē) (*Branta sandvicensis*). In *The Birds of North America, No. 434*, edited by A. Poole and F. Gill. Philadelphia, Pennsylvania: The Birds of North America, Inc.

Banko, W.E., P.C. Banko, and R E. David. 1991. Specimens and probable breeding activity of the Band-rumped Storm petrel on Hawaiʻi. *The Wilson Bulletin* 103:650–655.

Black, J.M., Prop, J., J.M. Hunter, F. Woog, A. Marshall, and J. Bowler. 1994. Foraging behaviour and energetics of the Hawaiian Goose *Branta sandvicensis*. *Wildfowl* 45:65–109.

Bowen, B.W., A.B. Meylan, J.P. Ross, C.J. Limpus, G.H. Balazs, and J.C. Avise. 1992. Global population structure and natural history of the green turtle (*Chelonia mydas*) in terms of matriarchal phylogeny. *Evolution* 865–881.

Carretta, J.V., E. Oleson, D.W. Weller, A.R. Lang, K.A. Forney, J. Baker, B. Hanson, K. Martien, M.M. Muto, M.S. Lowry, J. Barlow, D. Lynch, L. Carswell, R.L. Brownell Jr., D.K. Mattila, M.C. Hill. 2013. U.S. Pacific marine mammal stock assessments: 2012. U.S. Department of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-504.

Clarke, D.L., G. Balazs, and S. Hargrove. 2012. Hawaiian Green Turtles Up and Down the Anahulu River. In *Proceedings of the Thirty-First Annual Symposium on Sea Turtle Biology and Conservation*.

Day, R.H. and B.A. Cooper. 2002. *Petrel and shearwater surveys near Kalaupapa, Molokai Island, June 2002.* Final report prepared for the National Park Service, Hawaiʻi National Park. Fairbanks, Alaska: ABR, Inc.—Environmental Research & Services.

———. 2008. *Results of Endangered Seabird and Hawaiian Hoary Bat Surveys on Northern Oahu Island, Hawaii, October 2007 and July 2008.* Report prepared for First Wind. Fairbanks, Alaska, and Forest Grove, Oregon: ABR, Inc. – Environmental Research & Services.

Day, R.H., B.A. Cooper, and T.C. Telfer. 2003. Decline of Townsend's (Newell's) Shearwaters (*Puffinus auricularis newelli*) on Kauai, Hawaiʻi. *The Auk* 120:669–679.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens. 1972. *Soil Survey of the Islands of Kauaʻi, Oʻahu, Maui, Molokaʻi, and Lanaʻi, State of Hawaiʻi.* U.S. Department of Agriculture, Soil Conservation Service.

Forman, R.T.T., D. Sperling, J.A. Bissonette, A.P. Clevenger, C.D. Cutshall, V.H. Dale, L. Fahrig, R. L. France, C.R. Goldman, K. Heanue, J. Jones, F. Swanson, T. Turrentine, and T.C. Winter. 2002. *Roadside Ecology. Science and Solutions*. Washington, D.C.: Island Press.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.L. Chen, P.S. Chu, J.K. Eischeid, and D.M. Delparte. 2013. Online Rainfall Atlas of Hawaiʻi. Bull. Amer. Meteor. Soc. 94, 313–316, doi: 10.1175/BAMS-D-11-00228.1. Available at: http://rainfall.geography.hawaii.edu. Accessed November 20, 2014.

Hawaiʻi State Department of Health (DOH). 2014. *2014 State of Hawaiʻi Water Quality Monitoring and Assessment Report*. Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress Pursuant to Sections 303(D) and 305(B), Clean Water Act (Public Law 97-117).

Hays, W.S.T., and S. Conant. 2007. Biology and Impacts of Pacific Island Invasive Species. 1. A Worldwide Review of Effects of the Small Indian Mongoose, Herpestes javanicus (Carnivora: Herpestidae). *Pacific Science* 61:3–16.

Hu, D., C. Glidden, J.S. Lippert, L. Schnell, J.S. MacIvor, and J. Meisler. 2001. Habitat use and limiting factors in a population of Hawaiian Dark-rumped Petrels on Mauna Loa, Hawaiʻi. *Studies in Avian Biology* 22:234–242.

Jacobs, D.S. 1996. Morphological divergence in an insular bat, *Lasiurus cinereus semotus*. *Functional Morphology* 10:622–630

Johanos, T.C., B.L. Becker, J.D. Baker, T.J. Ragen, W.G. Gilmartin, and T. Gerrodette. 2010. Impacts of sex ratio reduction on male aggression in the critically endangered Hawaiian monk seal *Monachus schauinslandi*. *Endangered Species Research* 11:123–132.

Kear, J. and A.J. Berger 1980. T*he Hawaiian goose: and experiment in conservation.* Vermillion, South Dakota: Buteo Books.

Mercer, T. 2015. *Hawaiian Monk Seal Use of Kealia, Kauai*. Pacific Islands Fisheries Science Center, National Marine Fisheries Service.

Miller, A.H. 1937. Structural modifications in the Hawaiian goose (*Nesochen sandvicensis*): a study in adaptive evolution. *University of California Publications in Zoology* 42(1):1–80.

Mitchell, C., C. Ogura, D.W. Meadows, A. Kane, L. Strommer, S. Fretz, L. Leonard, and A. McClung. 2005. *Hawaii's Comprehensive Wildlife Conservation Strategy*. Submitted to the National Advisory Acceptance Team, October 1, 2005. Honolulu, Hawaiʻi: Department of Land and Natural Resources.

Muñoz, G. A.A. Karamanlidis, P. Dendrinos, and J.A. Thomas. 2011. Aerial Vocalizations by Wild and Rehabilitating Mediterranean Monk Seals (*Monachus monachus*) in Greece. *Aquatic Mammals* 37(3):262–279.

National Oceanic and Atmospheric Administration (NOAA). 2015. Endangered and Threatened Species: Final Rulemaking To Revise Critical Habitat for Hawaiian Monk Seals. *Federal Register* 80(162):50926–50988.

National Ocean and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). 2007. *Recovery plan for the Hawaiian Monk Seal (Monachus schauinslandi).* Second Revision. Silver Spring, Maryland: NOAA NMFS.

———. 2014. Hawksbill Turtle (*Eretmochelys imbricata*). Available at: http://www.nmfs.noaa.gov/pr/species/turtles/hawksbill.htm. Accessed August 21, 2015.

———. 2015a. *Best Management Practices (BMP) for General In-Water Work Including Boat and Diver Operations.* Protected Resources Division. January 2015.

———. 2015b. Hawaiian Monk Seal (*Neomonachus schauinslandi*). Available at: http://www.fisheries.noaa.gov/pr/species/mammals/seals/hawaiian-monk-seal.html. Accessed October 29, 2015.

———. 2015c. Good Neighbors: How to Share Hawaii's Beaches with Endangered Monk Seals. Available at: http://www.fpir.noaa.gov/PRD/prd_good_neighbors.html. Accessed November 5, 2015.

———. 2015d. Green Sea Turtle. Available at: http://www.fpir.noaa.gov/PRD/prd_green_sea_turtle.html. Accessed August 21, 2015.National Oceanic and Atmospheric Administration (NOAA) National Weather Service, Weather Forecast Office Honolulu. 2014. Hydrology in Hawaiʻi. Available at: http://www.prh.noaa.gov/hnl/hydro/pages/sep14sum.php. Accessed November 21, 2014.

Parham, J.E., G.R. Higashi, E.K. Lapp, D.G.K. Kuamoo, R.T. Nishimoto, S. Hau, J.M. Fitzsimons, D.A. Polhemus, and W.S. Devick. 2008. *Atlas of Hawaiian Watersheds & Their Aquatic Resources*. Copyrighted website published by the Hawaii Division of Aquatic Resources, Department of Land and Natural Resources. Available at: www.hawaiiwatershedatlas.com. Accessed June 20, 2015.

Pyle, R.L., and P. Pyle. 2009. The Birds of the Hawaiian Islands: Occurrence, History, Distribution, and Status. Version 1. Honolulu, Hawaiʻi: B.P. Bishop Museum. Available at: http://hbs.bishopmuseum.org/birds/rlp-monograph/. Accessed January 26, 2015.

Reed, J.M., C.S. Elphick, E.N. Ieno, and A.F. Zuur. 2011. Long-term population trends of endangered Hawaiian waterbirds. *Population Ecology* 53:473–481.

Reed, J.R., J.L. Sincock, and J.P. Hailman. 1985. Light attraction in endangered procelliariiform birds: Reduction by shielding upward radiation. *The Auk* 102:377–383.

Reynolds, M.H., B.A. Cooper, and R.H. Day. 1997. Radar study of seabirds and bats on windward Hawaii. *Pacific Science* 51:97–106.

Robinson, J.A., J.M. Reed, J.P. Skorupa, and L.W. Oring. 1999. Black-necked Stilt (*Himantopus mexicanus*). In *The Birds of North America Online*, *No. 449*, edited by A. Poole. Ithaca, New York: Cornell Lab of Ornithology. Available at: http://bna.birds.cornell.edu/bna/species/449/articles/introduction. Accessed November 9, 2015.

Seitz, W.A., K.M. Kagimoto, B. Luehrs, and L. Katahira. 2012. *Twenty years of conservation and research findings of the Hawaiʻi Island Hawksbill Turtle Recovery Project, 1989 to 2009.* Technical Report No. 178. Honolulu, Hawaiʻi: The Hawaiʻi-Pacific Islands Cooperative Ecosystem Studies Unit & Pacific Cooperative Studies Unit, University of Hawaiʻi.

Sherrod, D.R., J.M. Sinton, S.E. Watkins, and K.M. Brunt. 2007. *Geologic Map of the State of Hawaiʻi.* U.S. Geological Survey Open-File Report 2007-1089, 83 p., 8 plates, scales 1:100,000 and 1:250,000, with GIS database.

Slotterback, J. 2002. Band-rumped StormPetrel (Oceanodroma castro) and Tristram's Storm- Petrel (Oceanodroma tristrami). No. 675. In *The Birds of North America,* edited by A. Poole and F. Gill. The Birds of North America, Inc. Philadelphia, Pennsylvania.

Smith, J.E., C.L. Hunter, and C.M. Smith. 2010. The effects of top-down versus bottom-up control on benthic coral reef community structure. *Oecologia* 163.2:497–507.

Spear, L.B., D.G. Ainley, N. Nur, and S.N.G. Howell. 1995. Population size and factors affecting at-sea distributions of four endangered procellariids in the tropical Pacific. *The Condor* 97:613–638.

SWCA Environmental Consultants (SWCA). 2015. *Determination and Delineation of Wetlands and Other Waters of the U.S. for the Kapaʻa Stream Bridge Project*. Prepared for CH2M Hill.

Telfer, T.C., J.L. Sincock, G.V. Byrd, and J.R. Reed. 1987. Attraction of Hawaiian seabirds to lights: conservation efforts and effects of moon phase. *Wildlife Society Bulletin* 15:406–413.

U.S. Department of Agriculture. 2009. *Bats of the U.S. Pacific Islands*. Biology Technical Note No. 20. Natural Resources Conservation Service, Pacific Islands Area.

U.S. Fish and Wildlife Service (USFWS). 1998. *Recovery Plan for the Hawaiian Hoary Bat (*Lasiurus cinereus semotus*).* Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.

———. 2004. *Draft Revised Recovery plan for the Nēnē or Hawaiian Goose (*Branta sandvicensis*).* Portland, Oregon: U.S. Fish and Wildlife Service, Region 1.

———. 2011a. *Recovery Plan for Hawaiian Waterbirds, Second Revision*. Portland, Oregon.

———. 2011b. Endangered and Threatened Wildlife and Plants: Proposed Rulemaking To Revise Critical Habitat for Hawaiian Monk Seals; Proposed Rule. *Federal Register* 76(106):32025–32063.

———. 2011c. *Nēnē or Hawaiian Goose (*Branta sandvicensis*) 5-Year Review Summary and Evaluation.* Available at: http://ecos.fws.gov/docs/five_year_review/doc3864.pdf. Accessed August 25, 2015.

———. 2014a. Species List for Hawaii Bridges Program, Hawaiʻi, Kauaʻi, and Oʻahu. Pacific Islands USFWS, Honolulu, Hawaiʻi. Letter from Aaron Nadig, USFWS. December 22, 2015.

———. 2014b. Endangered Species in the Pacific Islands. Available at: http://www.fws.gov/pacificislands/teslist.html. Accessed July 2015.

U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA). 2015. Endangered and Threatened Species; Identification and Proposed Listing of Eleven Distinct Population Segments of Green Sea Turtles (*Chelonia mydas*) as Endangered or Threatened and Revision of Current Listings; Proposed Rule. *Federal Register* 80(55):15272–15337.

Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999. *Manual of the Flowering Plants of Hawaiʻi.* Volumes I and II. Revised edition. Honolulu, Hawaiʻi: University of Hawaiʻi Press.

Woog F. and J.M. Black. 2001. Foraging behavior and the temporal use of grasslands by nene: implications for management. *Studies in Avian Biology* 22:319–328.

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Appendix A

Photographs of the Survey Area

Figure A1. Native pōhuehue with the Strand vegetation type makai of Kapaʻa Bridge.

Figure A2. Dense mat of non-native California grass makai of Kapaʻa Stream.

Figure A3. Emergent Wetland vegetation type on the mauka (inland) side of the bridge dominated by California grass.

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OCT 24 2016

Michael Will
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Central Federal Lands Highway Division
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Dear Mr. Will:

This letter responds to your July 8, 2016 letter requesting consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the proposed Federal Highway Administration's (FHWA) action, in cooperation with the State of Hawaii Department of Transportation (HIDOT), to replace the Kapa'a bridge and improve the Mailihuna intersection on the Kuhio Highway (Route 56) on Kauai.

In your request letter you determined that the proposed resurfacing project is not likely to adversely affect (NLAA) endangered or threatened species under our jurisdiction, and requested our concurrence under section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. §1531 *et seq.*), with that determination. Your request for consultation determined that the proposed action is NLAA listed marine species.

Proposed Action

The proposed action is described in your above referenced letter and in your July 2016 Biological Assessment (BA). In summary, the FHWA proposes to: 1) replace the Kapaa Stream bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions and bridge approaches, and; 2) improve the intersection at Kuhio Highway and Mailihuna Road.

The Kapaa Stream bridge is in the Kapaa area on the east side of the Island of Kauai along the Kuhio Highway (Route 56) at approximately milepost 9.8. The Kuhio Highway serves as the primary route between Lihue and the east and north shore communities on Kauai. Mailihuna Road extends inland from the Kuhio Highway at milepost 9.84 and is a narrow, two lane undivided road with narrow shoulders and vegetation on both sides. The intersection is three-legged with stop controls on Mailihuna Road. Two alternatives are being considered for intersection improvements. One is to reconfigure with full traffic and pedestrian signals and crosswalks and the other is construction of a single-lane roundabout.

The existing bridge over the Kapaa Stream was built in 1953 and accommodates two 12-foot wide travel lanes with a 2.5 foot shoulder on each side. Concrete piers and abutments on timber piles support the concrete deck with asphalt overlay. This bridge would be demolished and replaced with a single-span bridge 190 feet long with a deck width of 44 feet to accommodate two 12-foot wide lanes and two 8-foot shoulders and guardrails on each side.

In-water work is limited to removal of the existing center pier of the bridge, which will require isolation from flow. This will be accomplished by driving a sheet pile barrier around the pier, dewatering and removing the concrete pier, and removal of the sheet pile. The new bridge will be full spanning and will not require a center pier.

Action Area

The action area for the proposed project is based on potential noise, short-term disturbance and turbidity to the water column near the shore and intertidal areas. It is estimated to extend upstream 300 feet from the bridge and downstream to the extent of river flow, to include the marine shoreline 300 feet in either direction up and down the beach. The action area is pictured in Figure 1.

Figure 1. Map of the proposed action area.

Listed Species

The FHWA has determined that the proposed action is NLAA all species listed in Table 1. No other ESA-listed marine species are expected to be affected by the proposed action. Detailed information about the biology, habitat, and conservation status of sea turtles and marine mammals can be found in their status reviews, critical habitat designations, recovery plans, and other sources at http://www.nmfs.noaa.gov/pr/species/esa/.

Table 1. Scientific name, ESA status, listing date, and Federal Register reference for listed species considered in this consultation.

Species	Scientific Name	ESA Status	Listing Date	Federal Register Reference
Hawaiian Monk Seal[1]	*Neomonachus schauinslandi*	Endangered	11/23/1976	41 FR 51612
Green Sea Turtle North Central Pacific DPS	*Chelonia mydas*	Threatened	5/6/2016	81 FR 20057
Hawksbill Sea Turtle	*Eretmochelys imbricata*	Endangered	7/28/1978	43 FR 32800

[1]Critical Habitat was designated for Hawaiian Monk Seals on 5/26/1988 (53 FR 18990) and revised on 8/21/2015 (80 FR 50925)

Critical Habitat

In designated areas of the Main Hawaiian Islands (MHI), CH for monk seals includes the marine environment with a seaward boundary that extends from the 200-meter depth contour line (relative to mean lower low water), including the seafloor and all subsurface waters and marine habitat within 10 meters of the seafloor, through the water's edge 5 meters into the terrestrial environment. Detailed information on Hawaiian monk seal critical habitat can be found at http://www.fpir.noaa.gov/PRD/prd_critical_habitat.html.

Analysis of Effects

In order to determine that a proposed action is NLAA listed species, NMFS must find that the effects of the proposed action are expected to be insignificant, discountable, or beneficial as defined in the joint USFWS-NMFS Endangered Species Consultation Handbook: (1) insignificant effects relate to the size of the impact and should never reach the scale where take occurs; (2) discountable effects are those that are extremely unlikely to occur; and (3) beneficial effects are positive effects without any adverse effects (USFWS & NMFS 1998). This standard, as well as consideration of the probable duration, frequency, and severity of potential interactions, was applied during the analysis of effects of the proposed action on ESA-listed marine species, as described in the consultation request and BA.

The proposed action has the potential to interact directly and indirectly with ESA-listed species through the following stressors:

- Exposure to underwater noise from pile driving
- Disturbance from human activity and heavy equipment operation
- Exposure to construction wastes and discharges
- Exposure to elevated turbidity

The FHWA determined that with strict adherence to site-specific and species-specific Best Management Practices (BMPs, attached), all project-related effects to listed sea turtles or mammals resulting from disturbance would be insignificant; that potential effects from exposure to wastes and discharges would be insignificant, and; there would be insignificant temporary effects from elevated turbidity. They also concluded that potential impacts to designated CH would be insignificant.

Considering the information and assessments presented in the consultation request and BA, and in the best scientific information available about the biology and expected behaviors of the ESA-listed marine species considered in this consultation; NMFS agrees that 1) the list of ESA-listed species and critical habitats exposed to the effects of the action is correct, 2) the suite of identified stressors is comprehensive, and 3) the assessment of exposure risk and significance of exposure to those stressors is

accurate. The FHWA will ensure all employees or workers on site will be informed of all BMPs and requirements to avoid and minimize exposure and project-related effects to listed species and their habitat.

The FHWA may affect listed species exposed to construction related noises, both above-water and underwater. Man-made sounds can affect animals exposed to them in three ways: non-auditory damage to gas-filled organs, hearing loss expressed in permanent threshold shift (PTS) or temporary threshold shift (TTS), and behavioral responses or changes. All underwater noises generated by construction in this project will be too low to cause non-auditory injury. The sounds generated during construction include intense sounds from pile driving that can carry for long distances, to common construction noises from hand tools that are less intense.

Potential effects from underwater noise from vibratory driving of sheet pile are expected to be minimal because with implementation of all BMPs, and working when the berm keeps listed species from entering the river, exposure of listed marine species is unlikely to occur. While underwater noise from steel sheet pile driven by a vibratory hammer in shallow water can average 160 dB_{RMS} (Thalheimer, 2014), this noise level will not be experienced by any listed marine species because the berm at the mouth of the stream and monitoring will prevent exposure. Even if exposure occurred, levels lower than permanent threshold shift (PTS) thresholds (185 dB_{CUM}) and behavior response thresholds for impulsive sounds (160 dB_{RMS}) are expected and there is no certainty that this type and level of underwater noise affects sea turtles or monk seals in any meaningful way.

Above-ground noise from sheet pile driving and other construction activities may affect monk seals or sea turtles on the beach some distance away from the construction site. The noise may disturb listed species that may cause reactions such as startle responses, flight, or avoidance of the construction area. Because ambient noise of traffic and other activities is high during the day when construction will take place, and this additional noise will be attenuated to some degree by distance, it is not expected to occur at a level to cause harm to listed species.

We concur that potential effects from disturbance and heavy equipment use near water would be insignificant because the FHWA will ensure that contractors follow all applicable BMPs, which includes scanning the area for sea turtles and Hawaiian monk seals and delaying or halting construction if they are within sight of the construction site to avoid exposure. The FHWA will also ensure construction is limited to daylight hours to avoid exposing sea turtles to lights at night which could disorient them. In-water work would take place only when the sand berm at the mouth of the stream is in place, keeping marine species out of the stream. Should exposure occur, NMFS does not anticipate potential effects to listed turtles or seals that would rise to the level of take.

NMFS also concurs that the effects of exposure to construction wastes and discharges will be insignificant because the FHWA will ensure the contractor implements all proposed BMPs to prevent or minimize potential exposure and effects from spills to listed marine species. This includes: working exclusively with properly maintained equipment; having contingency plans, on-site equipment and material for immediate recovery of chemicals; proper disposal of associated waste, and; measures to ensure roadway surfacing material does not enter the water. Even if exposure should occur, we expect the limited spatial and temporal effects to be insignificant.

We concur that the effects of temporarily elevated turbidity will be insignificant because the FHWA will ensure the contractor implement all BMPs such as using silt containment devices and curtailing work during adverse tidal or weather conditions. Other BMPs such as halting construction when listed sea

turtles or marine mammals are in the action area would further avoid exposure. Some turbidity is expected to leave the work site but not at levels, duration, or distribution that would harm listed species. Potential effects to designated Hawaiian monk seal CH were determined to be insignificant, and we concur with that determination. Neither sea turtles nor monk seals are known to frequent the area or use the adjacent beach as a nesting, haul out or basking site (Jaime T., pers. comm. 2016). No work is proposed near the beach or in grassy areas adjacent to the beach, which is approximately 212 feet (65 meters) from the project area. Potential pupping and nursing areas and seal haul-out areas would therefore not be directly impacted by project activities. Implementation of all proposed BMPs will ensure potential temporary indirect effects such as elevated turbidity, pollutants, noise and increased light remain at insignificant levels.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

NMFS recommends the FHWA factor climate change and sea level rise into engineering of all new transportation projects occurring near marine waters. A major factor affecting the status and recovery of the listed marine species and habitat considered in this consultation is climate change. Sea surface height is anticipated to rise by 2.5 to 6.8 feet over the next 100 years (NOAA, 2012), which would significantly affect existing infrastructure, including roads and bridges, near marine waters.

NMFS also recommends that a thorough consideration of stormwater treatment options be undertaken as part of this and future FHWA projects in the Pacific Islands Region. Increased impervious surface resulting from more and more concrete and asphalt required for larger bridges and intersections will increase runoff of pollutants into streams and the nearshore and we recommend infiltration/treatment of surface runoff and use of all Low Impact Development (LID) techniques to control pollutants entering surface waters.

Several native plants were noted growing in significant quantities in the area, including naupaka (*Scaevola sericea*), and we recommend that care be taken when working around these beneficial plants. The native plants may provide ecological benefits to listed species, and we recommend moving rather than destroying the plants if disturbance cannot be avoided.

Conclusion

NMFS concurs with your determination that the Kapaa Stream bridge replacement project is NLAA ESA-listed green and hawksbill sea turtles, Hawaiian monk seals, and designated monk seal CH. Our concurrence is based on the finding that potential effects of the proposed action are expected to be insignificant. This concludes your consultation responsibilities under the ESA for species under NMFS's jurisdiction. However, this consultation focused solely on compliance with the ESA. Any additional compliance review that may be required of NMFS for this action (such as assessing impacts on Essential Fish Habitat) would be completed by NMFS Habitat Conservation Division in separate communication, if applicable.

ESA Consultation must be reinitiated if: 1) take occurs; 2) new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not previously considered; 3) the identified action is subsequently modified in a manner causing effects to listed species or designated critical habitat not previously considered; or 4) a new species is listed or critical habitat designated that may be affected by the identified action.

If you have further questions please contact Randy McIntosh on my staff at (808) 725-5154 or randy.mcintosh@noaa.gov. Thank you for working with NMFS to protect our nation's living marine resources.

Sincerely,

Ann M. Garrett
Assistant Regional Administrator

cc: Thomas Parker, FHWA

NMFS File No. (PCTS): PIR-2016-9930
PIRO Reference No.: I-PI-16-1412-AG

Literature Cited

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook. Procedures for Conducting Consultation and Conference Activities under Section 7 of the Endangered Species Act. http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf

Federal Highway Administration, Central Federal Lands Highway Administration. 2016. Biological Assessment for the Proposed Kapa'a Bridge and Mailihuna Intersection Project, Kuhio Highway, Route 56, Kapa'a, Kaua'i Island, Hawai'i. Project No. HFPM-16.

Parris, A., P. Bromirski, V. Burkett, D. Cayan, M. Culver, J. Hall, R. Horton, K. Knuuti, R. Moss, J. Obeysekera, A. Sallenger, and J. Weiss. 2012. Global Sea Level Rise Scenarios for the US National Climate Assessment. NOAA Tech Memo OAR CPO-1. 37 pp.

Thalheimer, E., J. Poling, R. Greene and P. Brinckerhoff. Development and Implementation of an Underwater Construction Noise Program. Noise-Con 2014. Fort Lauderdale, Fl. Sept. 2014. 7 pp.

Proposed Best Management Practices

This project will be required to comply with permit conditions of the Clean Water act, including Section 401 water quality certification, Section 404, and the Section 402 NPDES SWPPP. This project is required to isolation and confine the upland and in water work area(s) and that good housekeeping measures be in place to ensure hazardous materials stockpiled on the site are not allowed to enter flowing water. We have included the following Best Management Practices within the contract requirements to protect water quality during construction of this project:

- Erosion and sediment control measures will be in place before earth-moving activities begin. Functionality will be maintained throughout the construction period.

- Turbidity and siltation from project-related work will be minimized and contained through the appropriate use of erosion-control practices, effective silt containment devices, and the curtailment of work during adverse weather and tidal/flow conditions.

- Appropriate materials to contain and clean potential spills will be stored at the work site and be readily available.

- All project-related materials and equipment placed in the water will be free of pollutants (including waste material, heavy metals, organic materials, debris, and any water pollutants at toxic or potentially hazardous concentrations to aquatic life).

- The contractor will completely isolate and confine all in-water work areas throughout the entire water column (surface to bottom) so that all potential water pollutants will not leave or enter the work area. The entire volume of water in the in-water work area needs to be isolated and confined.

- Water pollutants (airborne particulate, dust, concrete slurry, concrete chips, concrete surface preparation washing effluent, construction debris, etc.) will be collected from localized work areas and will not be allowed to enter or re-enter state waters, including the in-water work area.

- Concrete surfaces will be cured for seven (7) days prior to contact with any flowing or open water.

- The project manager and heavy equipment operators will perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations will be postponed or halted should a leak be detected, and they will not proceed until the leak is repaired and the equipment is cleaned.

- Fueling of land-based vehicles and equipment will take place at least 50 feet (15.24 m) away from the water, preferably over an impervious surface. Fueling of vessels will be done at approved fueling facilities. Fueling areas or fuel storage areas will be contained properly to ensure that spilled fluids or stored materials do not enter any stream or wetland. A plan will be developed to prevent debris and other wastes from entering or remaining in the marine environment during the project.

- No project-related materials (fill, revetment rock, pipe, etc.) will be stockpiled in the water (intertidal zones, reef flats, stream channels, wetlands, etc.) or on beach habitats.

- No contamination (trash or debris disposal, invasive species introductions, attraction of non-native pests, etc.) of adjacent habitats (reef flats, channels, open ocean, stream channels, wetlands, beaches, forests, etc.) will result from project-related activities.

- Any soil exposed near water as part of the project will be protected from erosion (with plastic sheeting, filter fabric, etc.) after exposure and stabilized as soon as practicable (with native or non-invasive vegetation matting, hydroseeding, etc.).

- All debris removed from the marine/aquatic environment will be disposed of at an approved upland or ocean dumping site.

- Project construction activity will halt if water quality monitoring or daily inspection or observation results indicate that work is not in compliance with Hawai'i Administrative Rules (HAR) 11-54-4(a) or 1-54-4(b). Construction activity will not resume until adequate measures are implemented, appropriate corrective actions are taken, and water quality monitoring demonstrates that the non-compliance has ceased. Note: These actions will not preclude the Hawai'i Department of Health Clean Water Branch from taking enforcement action authorized by law.

- Temporary soil stabilization will be applied on areas that remain unfinished for more than 14 calendar days. Vegetated areas temporarily impacted will be revegetated by planting and seeding with non-invasive trees, shrubs, and/or herbaceous perennials and annuals.

- Certified weed-free permanent and temporary erosion-control measures will be put in place to minimize erosion and sedimentation during and after construction, according to the contract erosion-control plan, contract permits, and regulations.

- Revegetation success will be monitored to ensure sufficient vegetation cover has established, consistent with the National Pollutant Discharge Elimination System permit for the project. Relevant erosion- and sediment-control BMPs will not be removed until sufficient vegetative cover is re-established. If vegetation fails to establish, corrective actions will be taken where necessary.

- The contractor will be required to prepare a spill prevention, control, and countermeasure (SPCC) plan before beginning work. The SPCC will describe preventative measures, including the location of refueling and storage facilities and the handling of hazardous material. The SPCC will describe actions to be taken in case of a spill.

- Absorbent materials manufactured for containment and cleanup of hazardous materials will be stored at the work site and be readily available.

- Clearing and grubbing will be held to the minimum necessary for grading, access, and equipment operation.

- Soil stockpiles will be located at least 50 feet away from concentrated runoff and water features, covered with plastic or other waterproof material when practicable, and surrounded by silt fences or other erosion-control BMPs.

- Concrete wash-outs will be located 50 feet from storm drain inlets, open drainage areas, and waterbodies, and will be maintained as needed.

- Solid waste and construction and demolition debris will be properly managed.

- Hazardous materials will be properly stored and managed.

- Spill kits will be available on-site at locations where hazardous materials are used. Spill kits will be inspected regularly and supplies replaced as needed. Staff will be trained on spill prevention and cleanup.

- Construction will be sequenced to minimize the exposure time of the cleared surface area

- Control measures (i.e., silt fences, sand bag barriers, sediment traps, geotextile mats, and other measures intended for soil/sediment trapping) will be inspected and repaired as needed within 24 hours after a rainfall event of 0.25 inch or greater over a 24-hour period. During periods of prolonged rainfall, a daily inspection will occur, unless extended heavy rainfall makes access impossible or hazardous.

- Inspection will be documented, and records for all inspections and repairs will be maintained on-site. When a device proves inadequate, it will be immediately redesigned or replaced until it is effective.

- Permanent soil stabilization measures (i.e., graveling or re-planting of vegetation) will be applied as soon as practical after final grading.

- Portable toilets for sanitary waste management will be serviced regularly.

- All in-water work areas will be isolated and confined from open water habitats through the use of approved isolation techniques such as filter fabrics, turbidity curtains, K-rails, cofferdams, sheet piles, gravel/rock berms, gravel/sandbag berms, and stream diversions (pumped, pipe/flume, or excavated). Frequent inspections of these BMPs will be conducted to determine if devices are operating effectively. When a device proves inadequate, work will cease and the device will be immediately redesigned or replaced until it is effective.

- Flow around the isolated and confined in-water work area will be unimpeded to allow for aquatic animal migration and/or to prevent downstream flooding situations. The unimpeded flow will be equivalent to a 2-year, 24-hour storm event and/or the existing flow capacity of the stream, ditch, or gulch.

- When it is not possible to schedule work to avoid times of the year when high rainfall is expected, the capacity of existing controls will be enhanced, additional control measures will be added, or contingency measures will be installed.

- In addition to diversion and isolation of the project area, work zones will be dewatered. Dewatering will follow the procedures outlined in SM-17 of the Construction Best Management Practices Field Manual (HDOT 2008) and Section 208 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects FP-14 (FHWA 2014).

- Treatment of dewatering effluent will conform to federal, state, and local regulations.

- The effectiveness of sediment-control devices will depend on an adequate inspection, maintenance, and cleaning program. Frequent inspections, especially during and after storm events, will be conducted to determine if devices are operating effectively. When a device proves inadequate, it will be immediately redesigned or replaced until it is effective.

Proposed BMPS Specific to Monk Seals and Sea Turtles

- To ensure underwater noise does not extend to the marine environment, work within the wetted channel will only be conducted when the Kealia Beach sand bar is in place and parallel to the coastline such that it will absorb the sound waves.
- If the Kealia Beach sand bar is breached such that the sound waves will reach the marine environment, all work conducted within the wetted channel to remove the existing mid-channel pier will be isolated by a dewatering structure such as a cofferdam. All work conducted below the ordinary high water mark and above the mean higher high water will occur in the dry, further reducing the potential for underwater noise as a result of project construction to enter marine waters. Cofferdams will be removed following in-water or in-channel work.

- Construction activities will not take place if a Hawaiian monk seal or a sea turtle is in the construction area or within 150 feet (46 meters) of the construction area. Construction can only begin again after the animal voluntarily leaves the area. If a monk seal/pup pair is present, a minimum 300-foot (91 meter) buffer will be observed.
- Any construction related debris that may pose an entanglement threat to Hawaiian monk seals and sea turtles will be removed from the construction area at the end of each day and at the conclusion of the construction project.
- Workers will no attempt to feed, touch, ride, or otherwise intentionally interact with any listed species.
- Shielded lighting will be considered to reduce direct and ambient light to potential nearby beach habitat.

United States Department of the Interior

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

In Reply Refer To:
01EPIF00-2016-I-0433

NOV 15 2016

Mr. Michael Will
U.S. Department of Transportation
Federal Highway Administration
Central Federal Lands Highway Division
12300 West Dakota Avenue, Suite 380
Lakewood, CO 80228

Subject: Informal ESA Section 7 Consultation and FWCA Recommendations for Kapaa Bridge Replacement and Mailihuna Intersection Improvements Project, Kauai

Dear Mr. Will:

The U.S. Fish and Wildlife Service (Service) received your letter, dated July 8, 2016, requesting our concurrence that the proposed project may affect, but is not likely to adversely affect (NLAA) the following federally listed species: the endangered Hawaiian stilt (*Himantopus mexicanus knudseni)*, Hawaiian moorhen (*Gallinula chloropus sandvicensis*), Hawaiian coot (*Fulica alai*), Hawaiian duck (*Anas wyvilliana*) (collectively referred to as Hawaiian waterbirds); Hawaiian goose (*Branta sandvicensis*); Hawaiian hoary bat (*Lasiurus cinereus semotus)*; the Hawaiian petrel (*Pterodroma sandwichensis*), the threatened Newell's shearwater (*Puffinus auricularis newelli*); and the endangered band-rumped storm-petrel (*Oceanodroma castro*) (hereafter collectively referred to as seabirds); and the threatened green sea turtle (*Chelonia mydas*) and endangered Hawksbill sea turtle (*Eretmochelys imbricata*) (hereafter collectively referred to as sea turtles). The National Marine Fisheries Service (NMFS) is the Federal agency that consults on potential impacts to the endangered Hawaiian monk seal (*Monachus schauinslandi*), both in their on-shore and ocean habitats. Therefore, we did not review the proposed project for potential project impacts to monk seals. We acknowledge that your letter, dated July 8, 2016, contacts NMFS regarding the presence of monk seals in the area and potential impacts to the species from the project.

The Fish and Wildlife Coordination Act of 1934 (FWCA), as amended (16 U.S.C. 661 *et seq.*; 48 Stat. 401), provides a procedural framework for the consideration of fish and wildlife conservation measures to assist planning and implementation of Federal water resource development projects. The Service met with the Federal Highways Administration (FHWA), Central Federal Lands Highway Division (CFLHD), CH2M HILL (consultant for FHWA), SWCA (consultant for FHWA), the National Oceanic and Atmospheric Administration Fisheries, the State of Hawaii Division of Aquatic Resources (HDAR), the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers (USACE) on December 8 and December 15, 2015 to discuss project descriptions and biological resource assessments for the Hawaii Bridges

Program. In our December meetings, the Service expressed concerns regarding mobilization of bedded sediments due to construction activities. In a letter, dated April 26, 2016, we summarized these concerns and provided recommendations to incorporate into project planning. FHWA provided us a summary of measures, in a letter dated June 21, 2016, which will be implemented during construction to protect water quality and aquatic resources. In addition to those measures, FHWA staff provided the Service a list of best management practices on September 8, 2016 that will be implemented to protect water quality during construction, including but not limited to, unimpeded flow around the isolated and confined in-water work area to allow aquatic fish passage through the duration of the proposed project. Additional project information pertaining to project design of signalized intersection and avoidance and minimization measures for seabirds was provided to the Service by FHWA staff in an email on October 13, 2016.

The findings and recommendations in this consultation are based on the following: (1) your consultation request; (2) FHWA's Biological Assessment; and (3) other information available to us. Copies of pertinent materials and documentation are maintained in an administrative record in the Service's Pacific Islands Fish and Wildlife Office in Honolulu, Hawaii. This response is in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C 1531 *et seq.*) , FWCA, and the Clean Water Act (CWA), as amended (33 U.S.C. 1251 *et seq.*; 62 Stat. 1155).

Project Description

The FHWA proposes to replace Kapaa Stream Bridge located at milepost 9.8 along Kuhio Highway (Route 56) and reconfigure the Mailihuna Road intersection, in the Kawaihau District on the island of Kauai. The project will improve the Kapaa Stream crossing and Mailihuna Road intersection to maintain safety and reliability. The proposed bridge replacement project includes the construction of a two-way temporary bypass bridge on the east side of the existing bridge. The new single span bridge will be approximately 190 feet (57.9 m) long with a deck width of approximately 44 feet (13.4 m) wide, including girders, a walkway, and railings. The bridge will be designed as a clear span with no instream pier. The top portions of existing abutments will be removed and the remainder will be left in place to continue serving as a channel wall. New abutments will be designed for estimated total scour depths. The existing center pier will be abandoned in place to reduce obstruction to streamflow and improve hydraulics. Mailihuna Road intersection will be reconfigured by either of the following improvements: (a) adding full traffic and pedestrian signals, and two shielded streetlights, a 180-foot left-turn pocket added to the northbound side of the highway before Mailihuna Road, and a 150-foot right-turn pocket to the southbound side of the highway, or (b) constructing a single-lane roundabout. Utilities may be relocated to the west side of the highway, including relocation of a utility pole and associated overhead electrical lines, telephone lines, and fiber optic lines.

An equipment staging area approximately 25 feet (7.6 m) wide and 450 feet (137.2 m) long will be located in a grassy area along the northern approach to the bridge, west of the highway. In general, construction equipment will include bulldozers, pile drivers, augers for drilled shaft construction, excavators, cranes, dump trucks, hydraulic rams, and dewatering pumps and hoses. Best Management Practices (BMPs) will be implemented to protect water quality, as recommended by NMFS and the Service.

ESA Conservation Measures

To avoid and minimize impacts to federally listed species, the following conservation measures are part of the project description:

- In areas where vegetated stream bands would be disturbed, waterbird nest searches will be conducted by a qualified biologist before any work is conducted and after any subsequent delay in work of 3 or more days (during which birds may attempt to nesting). The results of the pre-construction survey will be submitted to the Service. If a waterbird nest with eggs or chicks/ducklings is discovered in the construction limits, work will not begin until the chicks/ducklings have fledged. Waterbird nests, chicks, or broods found in the project area before or during construction will be reported to the Service within 48 hours. A biological monitor will be present on the project site during all construction activities to ensure that Hawaiian waterbirds and nests are not adversely impacted. If an endangered Hawaiian waterbird is present or flies into the area during ongoing activities, all activities within 100 feet (30 m) of the bird will cease, and the bird will not be approached. Work may continue only after the bird leaves the area of its own accord.

- All regular on-site staff will be trained to identify Hawaiian goose, and they will know the appropriate steps to take if Hawaiian goose (geese) is present. If a Hawaiian goose (geese) is found in the area during ongoing activities, all activities within 100 feet (30 m) of the bird will cease, and the bird will not be approached. If a nest is discovered, the Service will be contacted. If a nest is not discovered, work may continue after the bird leaves the area of its own accord.

- To avoid and minimize impacts to seabirds, construction activity will be restricted to daylight hours during the seabird peak fallout period (September 15-December 15). Dark sky procedures will be used outside the peak fallout period if night work is required. All outdoor lights will be shielded to prevent upward radiation.

- To avoid impacts to the Hawaiian hoary bat, any fences that are erected as part of the project will have barbless top-strand wire. No fences in the survey area were observed with barbed wire during the survey; however if fences are present, the top strand of barbed wire will be removed or replaced with barbless wire. No trees taller than 15 feet (4.6 m) will be trimmed or removed as a result of this project between June 1 and September 15 to avoid impacts to Hawaiian hoary bats.

- To ensure underwater noise does not extend to the marine environment, work within the wetted channel will only be conducted when the Kealia Beach sand bar is in place and parallel to the coastline such that it will absorb the sound waves. If the Kealia Beach sand bar is breached such that the sound waves will reach the marine environment, all work conducted within the wetted channel to remove the existing mid-channel pier will be isolated by a dewatering structure such as a cofferdam. All work conducted below the ordinary high water mark and above the mean high water will occur in the dry, further reducing the potential for underwater noise as a result of project construction to enter marine waters. Cofferdams will be removed following in-water or in-channel work.

- Construction activities will not occur if a sea turtle(s) is in the construction area or within 150 feet (46 m) of the construction area. Construction will only begin after the animal voluntarily leaves the area. Shielded lighting will be used to reduce direct and ambient light to potential nearby beach habitat. Any construction-related debris that may pose an entanglement threat to sea turtles will be removed from the construction area at the end of each day and at the conclusion of the construction project.

Fish and Wildlife Coordination Act Comments
Important fish and wildlife resources occur throughout the proposed project area, including freshwater and brackish environments of Kapaa Stream and the nearshore marine areas of Kealia Bay. The resources include endangered and threatened species, coral reefs, fisheries, non-coral invertebrates, and rare, native species. Federally listed species that occur or transit through the project area include Hawaiian waterbirds, Hawaiian goose, Hawaiian hoary bat, and seabirds. The endangered Hawksbill sea turtle and threatened green sea turtle are known to occur in nearshore waters around Kealia Bay.

We appreciate your coordination with us to incorporate fish and wildlife conservation measures into your project description, including measures to avoid and minimize impacts to listed species. Our primary concern regarding the proposed project is the potential for project-related impacts to sensitive marine biological resources that may occur in the vicinity of the project site. Construction activities to remove piers and construct foundations could result in the release of contaminants potentially occurring in river sediments. We are concerned that vertebrate and invertebrate larvae within estuarine and nearshore marine environments may be at risk of exposure to contaminants during construction activities as a consequence of mobilized sediments. We are concerned that larvae exposure to contaminants could result in a loss of coral colonies and affect, indirectly, other marine animals and plants that rely upon coral habitat for shelter, forage, and reproduction.

The Service acknowledges that primary isolation and confinement BMPs are incorporated into the project description to avoid or minimize project-related degradation of water quality conditions that may impact fish and wildlife resources. We acknowledge that FHWA will install secondary BMPs (i.e., turbidity curtains) prior to the installation and removal of the primary isolation and confinement BMPs to capture sediment that could be suspended during project activities. The Service also acknowledges that turbidity and pH monitors will be installed upstream and downstream of the project area to provide live time data for these variables. We acknowledge that if during construction a visible plume is observed or monitoring data indicates that primary and secondary BMPs are not performing adequately, FHWA will cease work and the BMP will be updated or replaced to ensure proper function. Based on stop work triggers provided to our office on August 2, 2016, FHWA-CFLHD will ensure that the permitted activity will not result in non-compliance or violations to the applicable State water quality standards specified in Hawaii Administrative Rules (HAR), Section 11-54-4.

We recommend that construction of foundations be scheduled to avoid the spawning period for most corals, which in Hawaii is April through August. Additionally, we recommend the following best management practices for the effective use of silt curtains where silt curtains are appropriate for use:

1) Full depth silt curtains should be used in all practical situations for this project.

2) The placement of silt curtains should remain as close as possible to the project boundary to minimize the secondary effects from increased sedimentation.
3) The curtains should be left in place (not moved or shifted) until the water turbidity has returned to ambient conditions.
4) Silt curtains should be secured properly to minimize them from breaking free and causing additional impact.

At the project location, visual monitoring of sediment control devices should be conducted prior to daily construction and hourly while construction activities are in progress. During construction periods, we recommend having a dedicated turbidity monitoring person that will take periodic turbidity measurements immediately surrounding the turbidity containment devices and along the nearby shoreline (considering the path in which water may flow). If the turbidity exceeds 1 NTU of the backgrounds levels (as determined daily prior to work as well as areas significantly outside the influence of the construction), then work should be suspended until the turbidity returns to baseline.

Endangered Species Act Comments
Your letter indicates that FHWA has determined that the proposed project may affect, but is not likely to adversely affect the Hawaiian coot, the Hawaiian duck, the Hawaiian moorhen, the Hawaiian stilt, the Hawaiian goose, the Hawaiian hoary bat, the Newell's shearwater, the Hawaiian petrel, the band-rumped storm petrel, the green sea turtle, and the Hawksbill sea turtle. The Service acknowledges that the above conservation measures to avoid and minimize impacts to federally listed species are considered part of the project description. The conservation measures will be implemented at the project site. Any changes to, modifications of, or failure to implement these conservation measures may result in the need to reinitiate this consultation.

Summary
The Service encourages FHWA to incorporate our FWCA recommendations into project planning and design. Based on the above information and that measures will be implemented to avoid and minimize impacts to listed species, we concur with your determination that the proposed project may affect, but is not likely to adversely affect the Hawaiian coot, the Hawaiian duck, the Hawaiian moorhen, the Hawaiian stilt, the Hawaiian goose, the Hawaiian hoary bat, the Newell's shearwater, the Hawaiian petrel, the band-rumped storm petrel, the green sea turtle, and the Hawksbill sea turtle. Unless the project description changes or new information reveals that the action may affect listed species in a manner or to an extent not considered, no further action pursuant to section 7 of the ESA is necessary.

We appreciate your efforts to conserve protected species. If you have questions regarding this letter, please contact Adam Griesemer, Endangered Species Biologist (phone: 808-285-8261).

Sincerely,

Aaron Nadig
Island Team Manager
Oahu, Kauai, Northwestern Hawaiian Islands, and American Samoa

cc: Paul Luersen, CH2M HILL
Michael Tosatto, NMFS
David Smith, State of Hawaii Division of Forestry and Wildlife
Bruce Anderson, State of Hawaii Division of Aquatic Resources

Appendix D
Final Archaeological Inventory Survey Report for the Kapaa Stream Bridge Replacement Project, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai, November 2016

DAVID Y. IGE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
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SUZANNE D. CASE
CHAIRPERSON
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KEKOA KALUHIWA
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DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

November 6, 2016

IN REPLY REFER TO:
Log No. 2016.01695
Doc. No. 1610KM11
Architecture, Archaeology

Thomas Parker, Environmental Protection Specialist
Federal Highway Administration
Central Federal Lands Highway Division
12300 W. Dakota Ave., Suite 280
Lakewood, CO 80228

Dear Mr. Parker:

SUBJECT: **Chapter 6E-8 and National Historic Preservation Act Section 106 Review – Archaeological Inventory Survey Report for the Kapaʻa Stream Bridge Replacement Federal Highway Admin/Central Federal Lands Highway Division Contract No. DTFH68-13-R-00027 Kapaʻa and Keālia Ahupuaʻa, Puna District, Island of Kauaʻi TMK: (4) 4-6-014: 024, 033, 090, 092; (4) 4-7-003:001 por.; and (4) 4-7-008:042 por.**

Thank you for the opportunity to review the draft report entitled *Archaeological Inventory Survey Report for the Kapaʻa Stream Bridge Replacement Project, Kapaʻa and Keālia Ahupuaʻas, Kawaihau District, Kauaʻi, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) Contract DTFH68-13-R-00027 TMKs: [4] 4-6-014: 024 por., 033 por., 090 por., 092 por., Kūhiō Highway and Mailihuna Road Rights of Way, 4-7-003:001 por., and 4-7-008:042* (Belluomini et al., November 2016). The State Historic Preservation Division (SHPD) received the original submittal on May 18, 2016 and requested revisions on August 23, 2016 (Log No. 2016.01212, Doc. No. 1607MN18). Our office received a revised draft revised draft via email on October 25, 2016 (via email). On November 4, 2016, SHPD staff (Susan Lebo, Kimi Matsushima, and Jessica Puff) and Cultural Surveys Hawaii (CSH) staff (Scott Belluomini and David Shideler) met to discuss the site significance assessments, register eligibility determinations, project effect recommendations, and mitigation recommendations. We received a final revised draft via email on November 6, 2016.

This archaeological inventory survey (AIS) report was prepared on behalf of the Hawaii Department of Transportation (HDOT) and the Federal Highways Administration (FHWA) Central Federal Lands Highway Division (CFLHD). The area of potential effect (APE) totals 4.9 acres. The proposed project is subject to Hawaii Revised Statutes (HRS) 6E historic preservation review. It expected to receiving funding from FHWA (Contract DTFH68-13-R-00027) and, therefore has been determined to be a federal undertaking as defined in 36 CFR 800.16(y) and is subject to the National Historic Preservation Act (NHPA) Section 106 process.

This AIS was completed in support of the Kapaʻa Stream Bridge replacement project. The proposed project involves the complete replacement of the existing bridge, construction of a temporary bypass bridge, installation of a new bridge structure, and reconfiguration of the Kūhiō Highway and Mailihuna Road intersection. The new bridge structure is anticipated to accommodate two 12-ft lanes with 8-ft shoulders. Ground disturbance will include excavations for the removal of the existing bridge, reconfiguration of the intersection, traffic improvements, drainage improvements, and the new bridge structure.

The AIS fieldwork involved a pedestrian survey and subsurface testing. Newly documented were Kapaʻa Stream Bridge (Site 50-30-08-2278) and an earthen ditch and concrete culvert (Site 50-30-08-2279), and relocated and further documented were remnant abutments of the former Kauaʻi Belt Road (Site 50-30-08-2079) and a remnant of the former Keālia Stream Bridge Crossing (Site 50-30-08-789A Subfeature 1).

Subsequent to the initial draft reviewed by SHPD (August 23, 2016; Log No. 2016.01212, Doc. No. 1607MN18), revisions have been made regarding site significance assessments and determinations of eligibility, project effect recommendations, and mitigation recommendations. Each of the sites was assessed as significant only under Hawaii Administrative Rules (HAR) §13-275-6 Criterion "d" (information content), and none were evaluated as eligible for listing in the National Register of Historic Places (NRHP), pursuant to 36 CFR 60.4, or in the Hawai'i Register of Historic Places (HRHP), pursuant to HAR §13-198-8. Further, the SHPD architecture branch determined that the bridge had been adequately documented, and finally that no architectural recordation was needed.

In accordance with 36 CFR 800.5, the AIS identifies the project effect recommendation as "no historic properties affected." No NRHP-eligible historic properties occur in the project APE. In accordance with HAR §13-275-7, the AIS identifies the project effect recommendation as "no historic properties affected." Each of the significant historic properties (Sites 2278, 2279, 2079, and 789A Subfeature A1) has been adequately documented. The AIS report recommends no further archaeological work or architectural recordation. However, it further states, that per FHWA/CFLHD, precautionary archaeological monitoring will be implemented as a good faith effort best management practice, based on community consultation. Archaeological monitoring will occur under a mitigation plan developed for the Kapaa Stream Bridge Replacement Project and the other two related FHWA/CFLHD bridge projects on Kaua'i (the Hanapēpē Bridge Replacement Project and the Bridge 7E Replacement Project). No architectural mitigation is needed.

The revisions adequately address the issues and concerns identified in our earlier correspondence and during the SHPD-CSH consultation meeting held on November 4, 2016. The SHPD has reviewed the submittal and the State Historic Preservation Officer (SHPO) **concurs** with the significance assessments, eligibility recommendations, project effect determination recommendations, and the recommendation of no further work. The report meets the requirements of HAR §13-276-5 and the *Secretary of Interior's Standards for Archaeological Documentation*. **It is accepted**. Please send one hardcopy of the document, clearly marked FINAL, along with a copy of this review letter and a text-searchable PDF version, to the Kapolei Office, attention SHPD Library.

SHPD looks forward to receiving a mitigation plan that includes interim protection measures and that meets the requirements of HAR §13-279-4 for review and acceptance prior to initiation of the project.

Please contact Jessica Puff, Architectural Historian, at (808) 692-8023 or at Jessica.L.Puff@hawaii.gov for questions regarding architectural resources. Please contact Susan A. Lebo, Archaeology Branch Chief, at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov for questions regarding archaeological resources or this letter, or if there is a change in the scope of work of this project.

Aloha,

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: David Shideler, Cultural Surveys Hawaii (dshideler@culturalsurveys.com)
Michael Will, FHWA (Michael.Will@dot.gov)

Final

Archaeological Inventory Survey Report for the Kapaʻa Stream Bridge Replacement Project, Kapaʻa and Keālia Ahupuaʻa, Kawaihau District, Kauaʻi, Federal Highway Administration/ Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027

TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway Right-of-Way

Prepared for
CH2M HILL
and on behalf of the
Federal Highway Administration (FHWA)
Central Federal Lands Highway Division (CFLHD)

Prepared by
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Management Summary

Reference	Archaeological Inventory Survey Report for the Kapa‘a Stream Bridge Replacement Project, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027, TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway Right-of-Way (Belluomini et al. 2016)
Date	November 2016
Project Number(s)	• FHWA/CFLHD contract code: DTFH68-13-R-00027 • CH2MHILL Project Task ID: 499068.11.SU.CS • Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KAPAA 14
Investigation Permit Number	CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological permit number 15-03, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	FHWA/CFLHD, SHPD
Land Jurisdiction	State of Hawai‘i; State Department of Transportation (HDOT); State Department of Education (DOE); County of Kaua‘i; and Roman Catholic Church
Project Funding	FHWA/CFLHD
Project Location	The project area is located near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The project area is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle.
Project Description	The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapa‘a Bridge to maintain the Kapa‘a Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users. The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes

	crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection. The existing Kapa‘a Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (National Register). During construction, Kapa‘a Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed *makai* of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapa‘a Stream. The adjacent pedestrian bridge would not be impacted. The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapa‘a Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.
Project Acreage	The project area includes approximately 4.9 acres (2.0 hectares)
Area of Potential Effect (APE)	The APE for the current project is defined as the entire 4.9-acre (2.0-hectare) project area.
Historic Preservation Regulatory Context	This AIS investigation was designed to comply with both Federal and Hawai‘i State environmental and historic preservation review legislation. Due to federal funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and due to funding from the U.S. Department of Transportation, Section 4(f) of the Department of Transportation Act. The proposed project is also subject to Hawai‘i State environmental and historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §343, and HRS §6E-8 and HAR §13-275, respectively). In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-13-276 and the *Secretary of the Interior’s Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and make National Register of Historic Places (National Register) and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for all historic properties present in the project APE. This report is also intended to support any project-related historic preservation consultation with stakeholders such as

	State and County agencies and interested Native Hawaiian Organizations (NHOs) and community groups, as applicable. Portions of the current project APE have been subject to previous archaeological studies. The northern portion of the project APE was included within a large archaeological reconnaissance survey of Keālia Ahupua‘a (Hammatt and Chiogioji 1998). No historic properties were reported within or near the current project APE. The western (*mauka*; toward the mountains) portion of the project APE along Kūhiō Highway was subject to archaeological monitoring during the installation of the Kaua‘i Rural Fiber-optic Duct Lines (Dega and Powell 2003). No historic properties were reported within the current project APE.
Fieldwork Effort	The fieldwork component of this AIS consists of a 100% pedestrian survey and subsurface testing. Fieldwork was conducted on 13 June 2015 by CSH archaeologists Missy Kamai, B.A., Tom Martel, B.A., and Richard Stark, Ph.D. under the general supervision of principal investigator Hallett H. Hammatt, Ph.D. This work required approximately 4 person-days to complete.
Consultation	The Kapa‘a Stream Bridge Replacement project is a HDOT and FHWA/CFLHD partnership project, which includes numerous proposed bridge improvement and replacement projects in the State of Hawai‘i. Presently, National Historic Preservation Act Section 106 consultation with community, agency, and Native Hawaiian Organizations has been initiated and is ongoing. Cultural consultation is also being conducted by CSH for a cultural impact assessment (CIA) for Kapa‘a Stream Bridge (Liborio and Hammatt 2016).
Historic Properties Identified	The AIS newly identified two historic properties and further documented two previously identified historic properties. In consultation with the SHPD architecture branch, it was determined that the Kapa‘a Stream Bridge (SIHP # 50-30-08-2278) is not eligible for listing on the National Register or the Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8. The bridge is significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). The SHPD architecture branch, determined that the bridge had been adequately documented. Thus, no architectural recordation was conducted. SIHP # -2279, a possibly historic water control complex, was assessed as significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history), and is evaluated as not eligible for listing in both the Hawai‘i and the National Registers under Criterion D. This historic property possesses integrity of location, design, and materials.

	SIHP # -0789A, Sub-Feature 1 consists of the remnant portions of the original Keālia Stream Bridge Crossing initially documented by Perzinski et al. (2000) and further documented by Bushnell et al. (2003). Perzinski et al. (2000) and Bushnell et al. (2003) assessed the bridge crossing remnants (SIHP # -789A, Feature 1) as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. The bridge crossing remnants lack integrity of design, workmanship, setting, feeling and association. Thus, the bridge crossing remnants (SIHP # -789A, Feature 1) are evaluated as not eligible for inclusion in the National Register or in the Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively. SIHP # -2075 consists of the remnant abutments of the former Kaua‘i Belt Road, Keālia Bridge initially documented by Bushnell et al. (2003). Bushnell et al. (2003) assessed SIHP # -2075 as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. The bridge remnants lack integrity of design, materials, workmanship, feeling and association. Thus, the old belt highway bridge remnants (SIHP # -2075) are evaluated as not eligible for inclusion in the National Register or the Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.
Effect Recommendation	In accordance with Federal regulations (36 CFR 800.5), the project-effect recommendation is “No historic properties affected.” No National Register-eligible historic properties occur in the project APE. In accordance with Hawai‘i State regulation (HAR §13-275-7), the project effect recommendation is “no historic properties affected.” Each of the significant historic properties have been adequately documented.
Mitigation Recommendations	No further archaeological work is recommended. Each of the significant historic properties have been adequately documented. At the request of the project proponent, precautionary archaeological monitoring is planned as a good faith effort, based on community consultation.

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Section 1 Introduction

1.1 Project Background

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) completed this archaeological inventory survey report for the Kapa‘a Stream Bridge Replacement project, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, FHWA/CFLHD contract DTFH68-13-R-00027 TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway Right-of-Way. The approximately 4.9 acres (2.0 hectares) project area is located near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The area of potential effect (APE) for the current project is defined as the entire 4.9-acre (2.0-hectare) project area. The APE is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle (Figure 1), tax map plats (Figure 2 through Figure 4), and an aerial photograph (Figure 5).

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapa‘a Bridge to maintain the Kapa‘a Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

The existing Kapa‘a Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (National Register).

During construction, Kapa‘a Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed *makai* of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapa‘a Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapa‘a Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

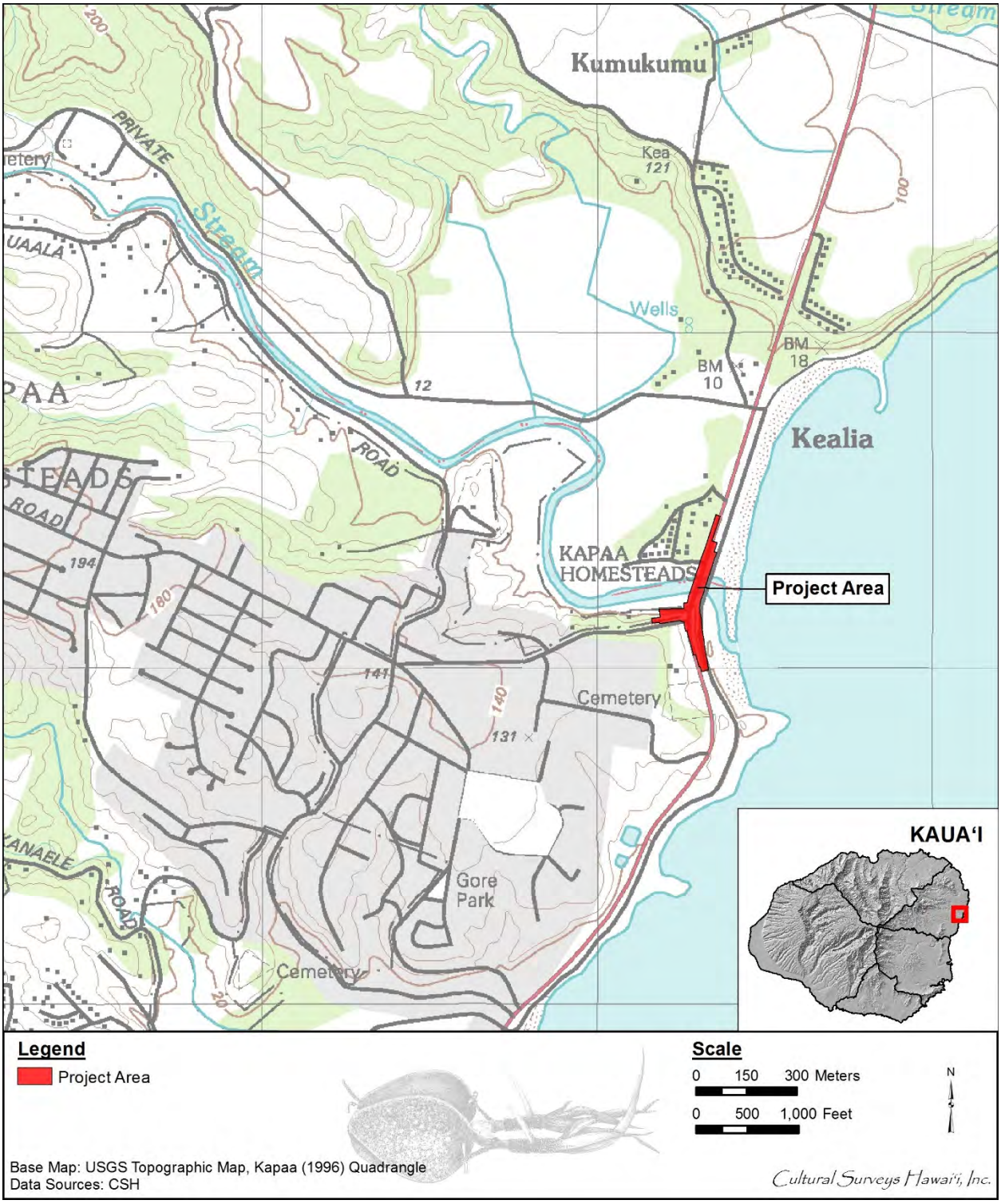


Figure 1. Portion of the 1996 Kapaa USGS 7.5-minute topographic quadrangle showing the location of the project APE

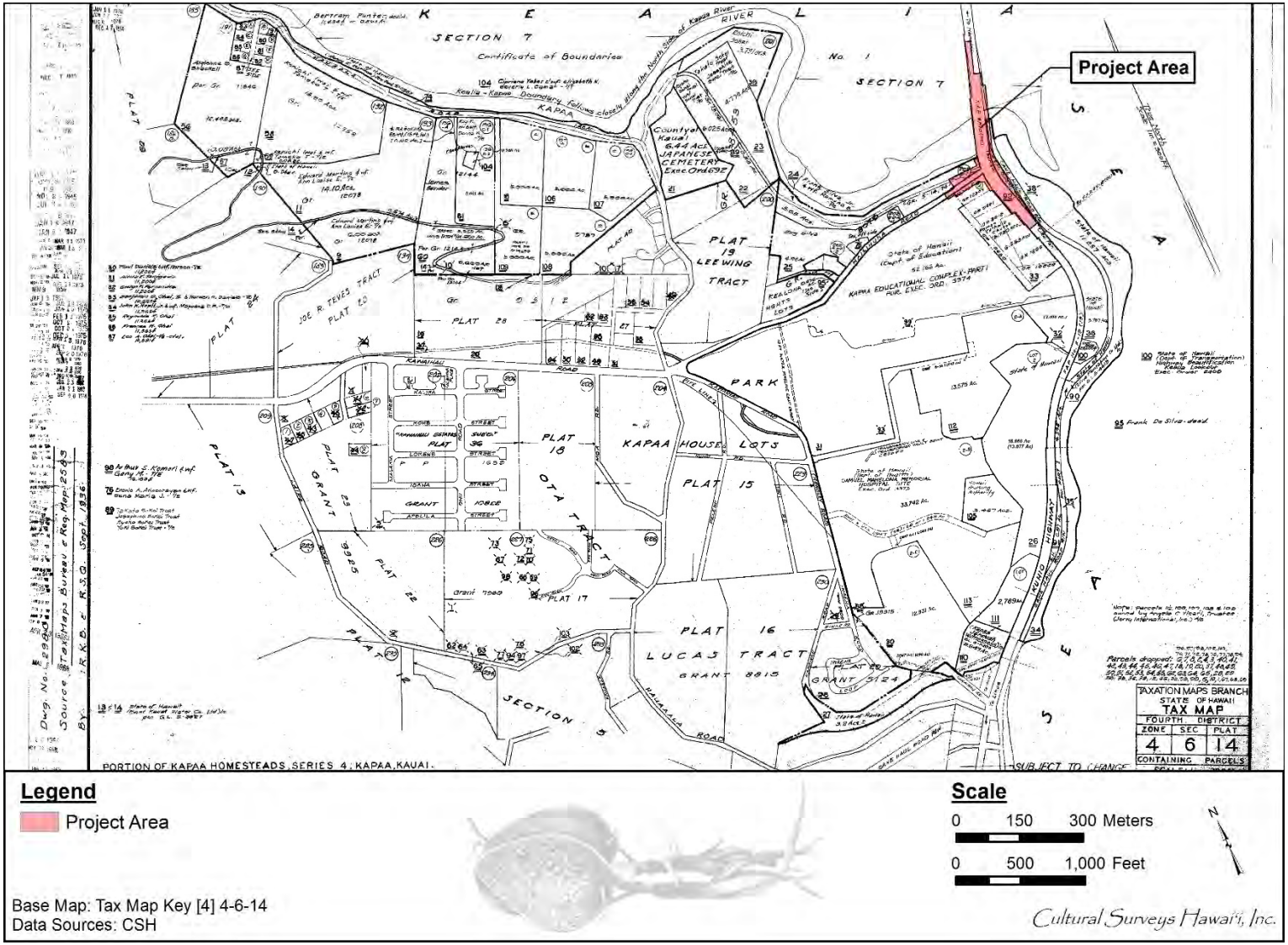


Figure 2. Tax Map Key (TMK) [4] 4-6-14, showing the location of the project APE (Hawai‘i TMK Service 2014)

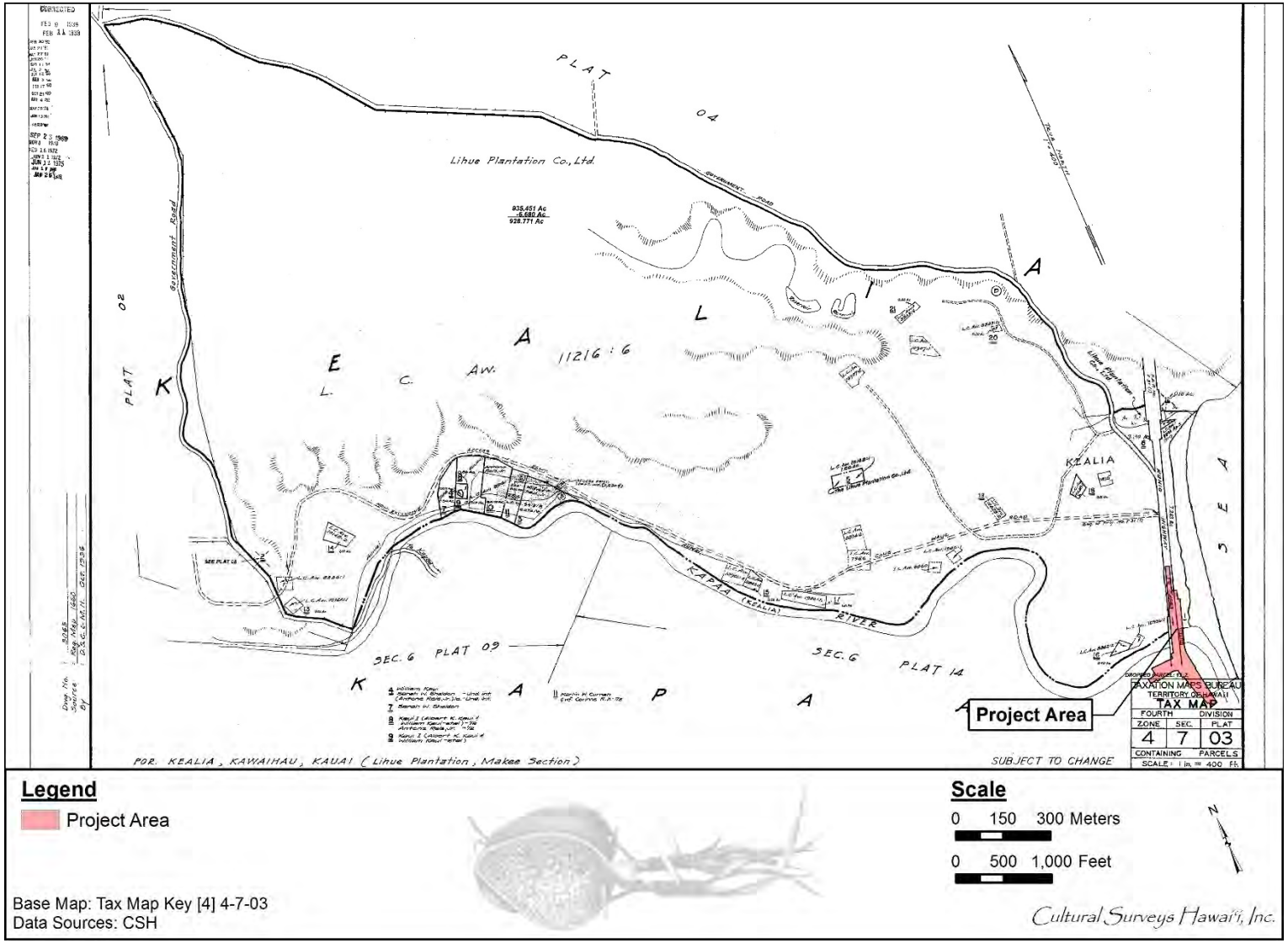


Figure 3. TMK: [4] 4-7-03, showing the location of the project APE (Hawai‘i TMK Service)

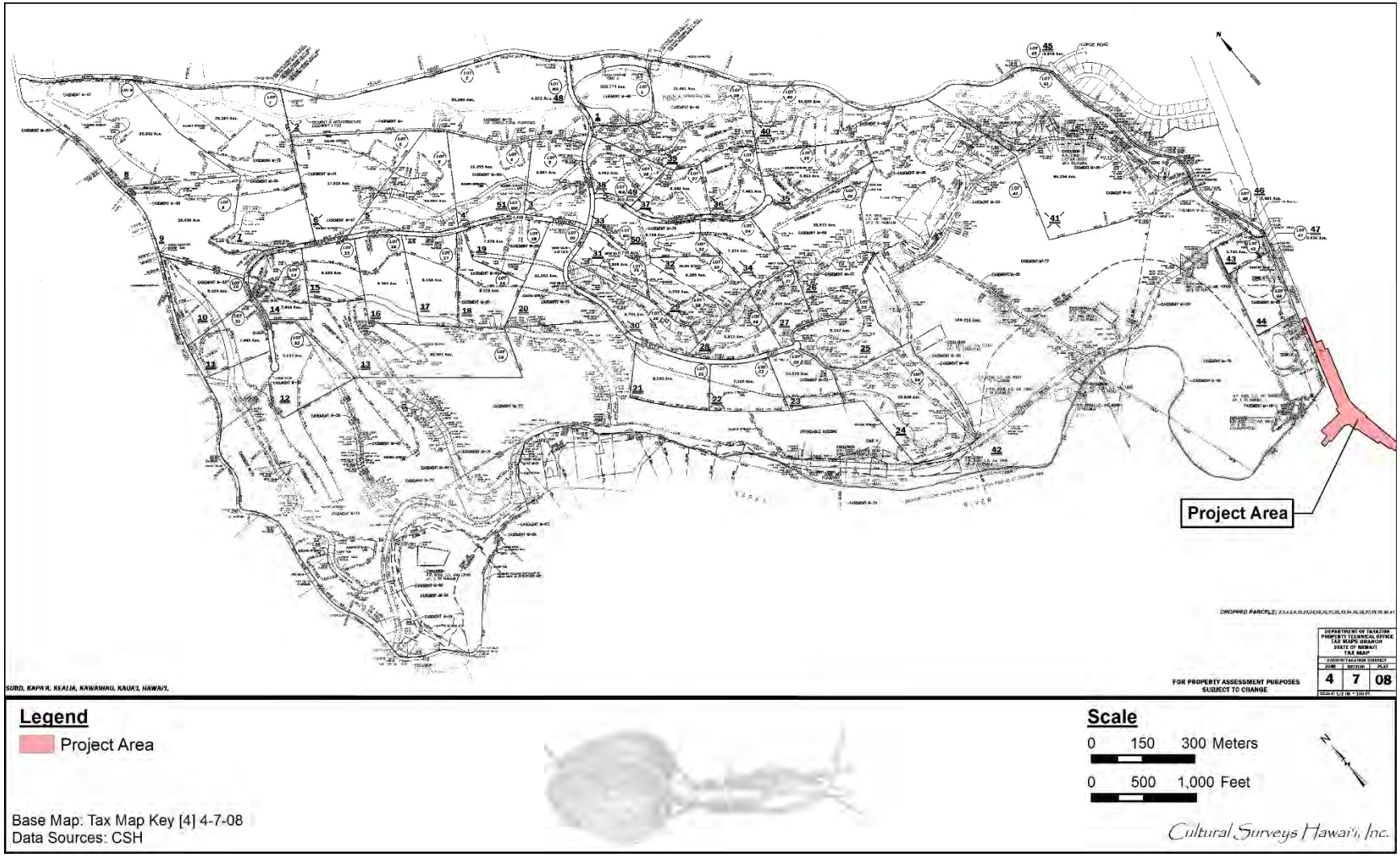


Figure 4. TMK: [4] 4-7-08, showing the location of the project APE (Hawai‘i TMK Service)

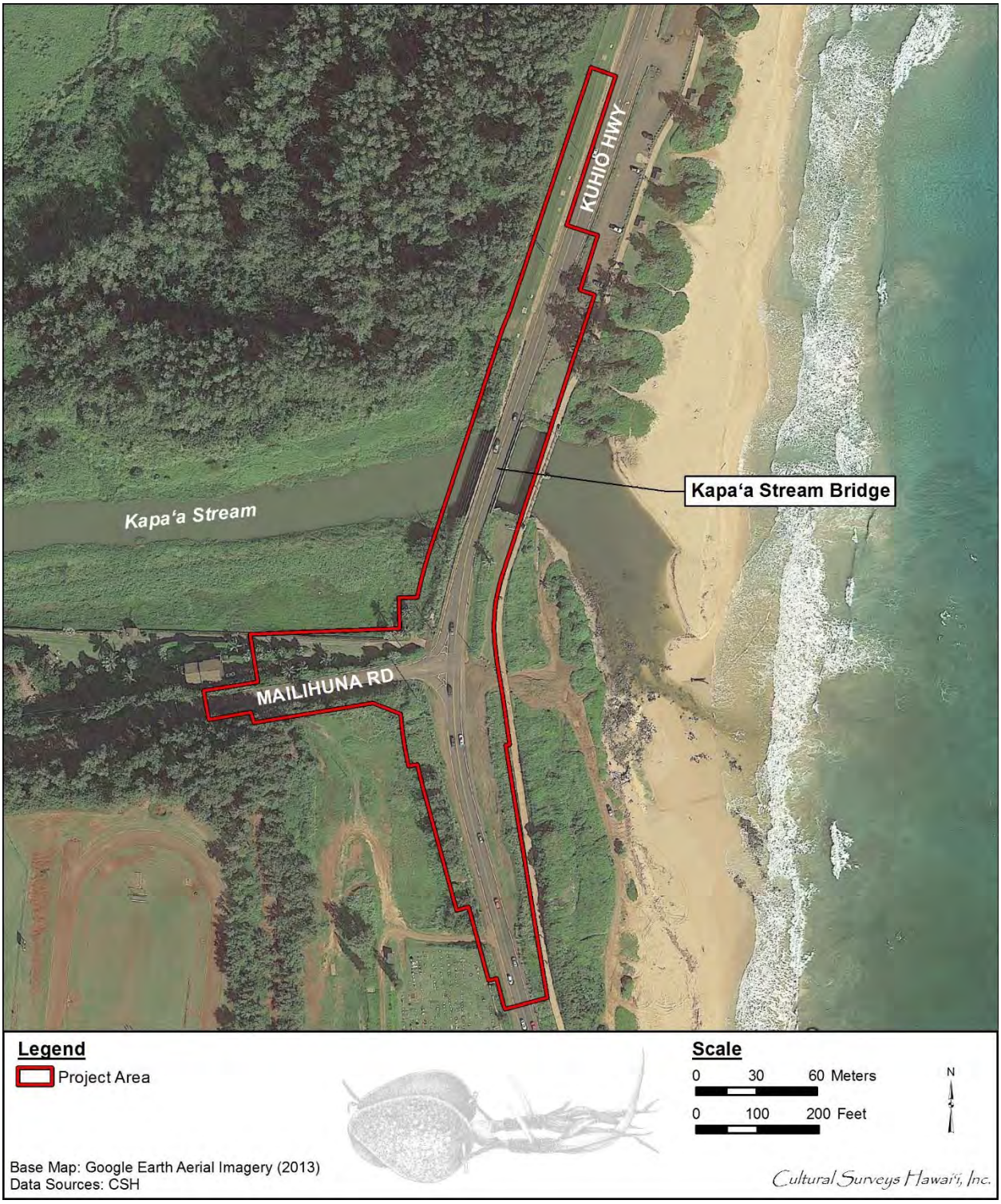


Figure 5. 2013 aerial photograph showing the location of the project APE (Google Earth 2013)

1.2 Historic Preservation Regulatory Context

This AIS investigation was designed to be compliant with both Federal and Hawai‘i State environmental and historic preservation review legislation. Due to federal funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and due to funding from the U.S. Department of Transportation, Section 4(f) of the Department of Transportation Act. The proposed project is also subject to Hawai‘i State environmental and historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §343, and HRS §6E-8 and Hawai‘i Administrative Rules [HAR] §13-275, respectively).

In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-13-276 and the *Secretary of the Interior's Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and make National Register of Historic Places (National Register) and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations for all historic properties within the project APE. This report is also intended to support any project-related historic preservation consultation with stakeholders such as State and County agencies and interested Native Hawaiian Organizations (NHOs) and community groups, as applicable.

Portions of the current project APE have been subject to previous archaeological studies. The northern portion of the project APE was included within a large archaeological reconnaissance survey of Keālia Ahupua'a (Hammatt and Chiogioji 1998). No historic properties were reported within or near the current project APE. The western (*mauka*; toward the mountains) portion of the project APE along Kūhiō Highway was subject to archaeological monitoring during the installation of the Kaua‘i Rural Fiber-optic Duct Lines (Dega and Powell 2003). No historic properties were reported within the current project APE.

1.3 Environmental Setting

1.3.1 Natural Environment

The project APE, within Kapa‘a and Keālia Ahupua‘a, is located on the windward side of Kaua‘i and is exposed to the prevailing tradewinds and their associated weather patterns. Rainfall on the coastal plains and plateaus of Kapa‘a and Keālia averages approximately 40 inches per (Juvik and Juvik, 1998:56). Kapa‘a can be characterized as fairly flat, with irregularly shaped gulches and small valleys in the uplands, through which small tributary streams run including Kapahi, Makaleha, and Moalepe. While some of these streams combine with other tributaries in neighboring Keālia to form Kapa‘a Stream (often referred to as Keālia River), which empties into the ocean at the northern border of the *ahupua‘a* (land division), others flow directly into the lowlands of Kapa‘a creating a large (approximately 170-acre) swamp area that has been mostly filled in modern times (Handy and Handy 1972:394, 423). Two canals have been constructed to drain the marshy areas behind Kapa‘a Town, Waika‘ea Canal (known to most local people as Waiakea Canal) and Moikeha Canal. Kapa‘a Town is built upon a sand berm which forms the *makai* buffer to the inland swamp. To the north of Kapa‘a, Keālia Ahupua‘a shows more characteristics of a typical stream valley with a good sized alluvial plain dissected by a major stream, the Kapa‘a Stream (Keālia River) in addition to a plateau land dissected by a few small drainages including Kumukumu and Hōmaikawa‘a Streams.

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), soils within the project APE include Mokuleia fine sandy loam (Mr), Mokuleia clay loam (Mta), and Lihue silty clay (LhE2) (Figure 6).

Soils of the Mokuleia Series are described as follows:

> This series consists of well-drained soils along the coastal plains on the islands of Oahu and Kauai. These soils formed in recent alluvium deposited over coral sand. They are shallow and nearly level. Elevations range from nearly sea level to 100 feet. The annual rainfall amounts to 15 to 40 inches on Oahu and 50 to 100 inches on Kauai. The mean annual soil temperature is 74° F. Mokuleia soils are geographically associated with Hanalei, Jaucas, and Keaau soils.
>
> The soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of kiawe, klu, koa haole, and bermudagrass in the drier areas and napiergrass, guava, and joee in the wetter areas. [Foote et al. 1972:95]

Soils of the Lihue Series are described as follows:

> This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amount to 40 to 60 inches. The mean annual soil temperature is 73° F. Lihue soils are geographically associated with Ioleau and Puhi soils.
>
> These soils are used for irrigated sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, woodland, and homesites. The natural vegetation consists of lantana, guava, koa haole, joee, kikuyugrass, molassesgrass, guineagrass, bermudagrass, and Java plum. [Foote et al. 1972:82]

1.3.2 Built Environment

The project APE’s built environment includes a portion of Route 56 (Kūhiō Highway) including the intersection of Mailihuna Road and Kapa‘a Stream Bridge. Portions of the Kapa‘a to Keālia bike path and the entry to St. Catherine’s Cemetery are also located within the project APE. The land surrounding the project APE is not significantly developed. The largest establishment near the bridge site is Kapa‘a High School soccer field, track, and baseball diamond, which are located approximately 300 m (984.3 ft) to the southwest. To the north and northwest of the project APE the land is primarily utilized for agricultural and residential purposes.

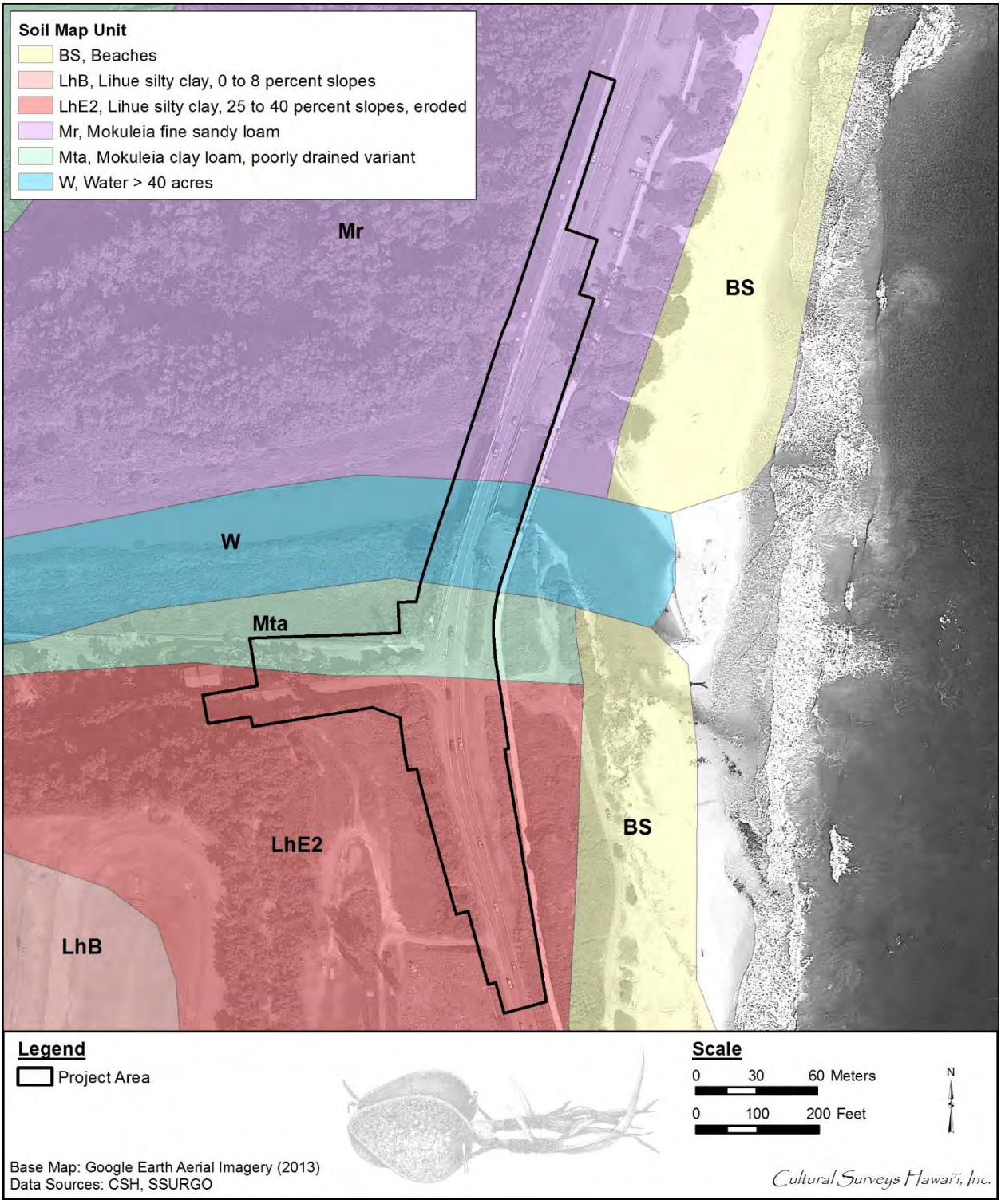


Figure 6. Aerial photograph (Google Earth 2013), showing project APE along Kūhiō Highway crossing Kapa‘a Stream, with overlay of soil series (soil boundaries from Foote et al. 1972)

Section 2 Methods

2.1 Field Methods

CSH completed the fieldwork component of this AIS under archaeological permit number 15-03 (for 2015), issued by the SHPD pursuant to HAR §13-13-282. Fieldwork was conducted on 13 June 2015 by CSH archaeologists Missy Kamai, B.A., Tom Martel, B.A., and Richard Stark, Ph.D. under the general supervision of principal investigator Hallett H. Hammatt, Ph.D. This work required approximately 4 person-days to complete.

In general, fieldwork included 100% pedestrian inspection of the project APE, GPS data collection and subsurface testing.

2.1.1 Pedestrian Survey

A 100%-coverage pedestrian inspection of the project APE was undertaken for the purpose of historic property identification and documentation. The pedestrian survey was accomplished through systematic sweeps spaced 5 m apart.

2.1.1 GPS Data Collection

Historic properties were located using a Trimble Pro XH mapping grade GPS unit with a real-time differential correction. This unit provided sub-meter horizontal accuracy in the field. GPS field data was post-processed, yielding horizontal accuracy between 0.5 and 0.3 m. GPS location information was converted into GIS shape files using Trimble’s Pathfinder Office software, version 2.80, and graphically displayed using ESRI’s ArcGIS 9.1.

2.1.2 Subsurface Testing

The subsurface testing program was backhoe assisted and involved two test excavations. In general, linear trenches measuring approximately 9 to 7 m (29.5 to 23 ft) long and 0.6 m (2 ft) wide were excavated within the project APE. The test excavations were distributed on the east side of the bridge along the shoulder of the highway. The sampling strategy was detailed in a map and text to the SHPD in advance of the fieldwork (Yucha to Naone email of 4 June 2015).

A stratigraphic profile of each test excavation was drawn and photographed. The observed sediments were described using standard USDA soil description observations/terminology. Sediment descriptions included Munsell color; texture; consistence; structure; plasticity; cementation; origin of sediments; descriptions of any inclusions such as cultural material and/or roots; lower boundary distinctiveness and topography; and other general observations. Where stratigraphic anomalies or potential cultural deposits were exposed, these were carefully represented on test excavation profile maps.

2.2 Laboratory Methods

Materials collected during AIS fieldwork were identified and catalogued at CSH’s laboratory facilities on O‘ahu. Analysis of collected materials was undertaken using standard archaeological laboratory techniques. Materials were washed, sorted, measured, weighed, described, and/or photographed.

2.2.1 Artifact Analysis

In general, artifact analysis focused on establishing, to the greatest extent possible, material type, function, cultural affiliation, and age of manufacture. As applicable, artifacts were washed, sorted, measured, weighed, described, photographed, and catalogued. Diagnostic (dateable or identifiable) attributes of artifacts were researched.

Traditional Hawaiian artifactual material was identified, and forms and functions determined, using standard reference materials (e.g., Barrera and Kirch 1973; Brigham 1974; Buck 2003; Emory et al. 1968; and Graves and McElroy 2004). Historic artifacts were identified using standard reference materials (e.g., Elliott and Gould 1988; Fike 1987; Godden 1964; Kovel and Kovel 1986; Lehner 1988; Lindsey 2014; Millar 1988; Munsey 1970; Toulouse 1971; Whitten 2009; and Zumwalt 1980) , as well as resources available on the internet. Analyzed materials were tabulated and are presented in Section 5: Results of Laboratory Analysis.

2.2.2 Disposition of Materials

Materials collected during the current archaeological inventory survey will remain temporarily curated at the CSH storage facility in O‘ahu, Hawai‘i. CSH will make arrangements with the landowner regarding the disposition of this material. Should the landowner request archiving of material, an archive location will be determined in consultation with SHPD. All data generated during the course of the AIS are stored at the CSH offices.

2.3 Research Methods

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Bishop Museum Archives; study of historic photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina database (Waihona ‘Aina 2000).

This research provided the environmental, cultural, historic, and archaeological background for the project APE. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project APE.

2.4 Consultation Methods

The Kapa‘a Stream Bridge Replacement project is part of an HDOT and FHWA/CFLHD partnership project, which includes numerous proposed bridge improvement and replacement projects in the State of Hawai‘i. Presently, National Historic Preservation Act Section 106 consultation with community, agency, and Native Hawaiian Organizations has been initiated and is ongoing. Cultural consultation is also being conducted by CSH for a cultural impact assessment (CIA) for Kapa‘a Stream Bridge (Liborio and Hammatt 2016).

Section 3 Background Research

3.1 Traditional and Historical Background

The project APE extends across the traditional *ahupua‘a* of Kapa‘a and Kēalia in the ancient district of Puna, one of five ancient districts on Kaua‘i (King 1935:228). For taxation, educational and judicial reasons, new districts were created in the 1840s. The Puna District became the Lihue District (same boundaries), named for an important town in that district. In 1878, by act of King Kalākaua securing a future and name for the new Hui Kawaihau, the new district of Kawaihau was created. This new district encompassed the *ahupua‘a* ranging from Olohena on the south to Kīlauea on the north. Subsequent alterations to district boundaries in the 1920s left Kawaihau District with Olohena as its southernmost boundary and Moloa‘a as its northernmost boundary (King 1935:222).

3.1.1 Traditional and Legendary Accounts of Kapa‘a

3.1.1.1 Palila and Ka‘ea

High in the *mauka* (toward the mountains) region of Kapa‘a in the Makaleha mountains at a place called Ka‘ea, is reported to be the supernatural banana grove of the Kaua‘i *kupua* or demigod Palila, grandson of Hina (Handy and Handy 1972:424). Joseph Akina, writing for *Kuokoa* newspaper in 1913, describes Palila’s banana grove:

> The stalk could hardly be surrounded by two men, and was about 35 feet high from the soil to the lowest petiole. The length of the cluster from stem to lowest end of the bunch of bananas was about 1 3/4 fathoms long (one anana and one muku). There were only two bananas on each about 4 inches around the middle. There were just two bananas, one on the east side and one on the west, each about a foot or more in length. The one on the east side was tartish, like a waiawi (Spanish guava) in taste and the one on the west was practically tasteless. The diameter of the end of the fruit stem of this banana seemed to be about 1 feet. This kind of banana plant and its fruit seemed almost supenatural. [Akina 1913]

3.1.1.2 Ka Lulu O Mō‘īkeha

Kapa‘a was the home of the legendary *ali‘i* (chief), Mō‘īkeha. Born at Waipi‘o on the island of Hawai‘i, Mō‘īkeha sailed to Kahiki (Tahiti), the home of his grandfather Maweke, after a disastrous flood. On his return to Hawai‘i, he settled at Kapa‘a, Kaua‘i. Kila, Mō‘īkeha’s favorite of three sons by the Kaua‘i chiefess Ho‘oipoikamalani, was born at Kapa‘a and was said to be the most handsome man on the island. It was Kila who was sent by his father back to Kahiki to slay his old enemies and retrieve a foster son, the high chief La‘amaikahiki (Beckwith 1970:352-358; Fornander 1916:160; Handy and Handy 1972:424; Kalākaua 1888:130-135). Mō‘īkeha’s love for Kapa‘a is recalled in the *‘ōlelo no‘eau* (proverb): “Ka lulu o Moikeha i ka laulā o Kapa‘a. *The calm of Moikeha in the breadth of Kapa‘a*” (Pukui 1983:157).

“Lulu-o-Moikeha” is described as being situated “near the landing and the school of Waimahanalua” (Akina 1913:5). The landing in Kapa‘a was known as the Makee Landing and was probably constructed in the late 1870s, along with the Makee Sugar Mill. Today, in place of the old Makee Landing is part of a breakwater located on the north side of Moikeha Canal near the present day Coral Reef Hotel.

Akina (1913) tells the story of how Mō‘īkeha’s son Kila stocks the islands with the *akule*, *kawakawa* (mackerel tuna), and *‘ōpelu* (mackerel scad) fish. When Kila travels to Kahiki, he seeks out his grandfather Maweke and explains that he is the child of Mō‘īkeha. When Maweke asks Kila if Mō‘īkeha is enjoying himself, Kila answers with the following chant of Puna:

My father enjoys the billowing clouds	I walea no ku‘u makuakāne i ke ao
over Pōhaku-pili,	ho‘okanunu, iluna o Pōhakupili
The sticky and delicious poi,	I ka poi uouo ono ae no a,
With the fish brought from Puna,	Me ka i‘a i na mai o ka Puna,
The broad-backed shrimp of Kapalua,	Ka opae hoainahanaha o Kapalua;
The dark-backed shrimp of Pōhakuhapai,	Na opae kua hauli o Pohakuhapai,
The potent awa root of Maiaki‘i,	Na puawa ona mai no o Maiakii,
The breadfruit laid in the embers at Makialo	Me ka ulu moelehu mai no o Makialo,
The large heavy taros of Keah’āpana	Me na kalo pehi hua o Keahapana,
The crooked surf of Makāiwa too	A i kekee nalu ae no hoi o Makaiwa,
The bending hither and thither of the reed	A i ke kahuli aku kahuli mai o ka pua
and rush blossoms,	uku me ka pua neki,
The swaying of the kalukalu grasses	A i ka nu‘a ae no o ke kalukalu
of Puna	o Puna,
The large, plump, private parts of	A i na mea nui nepunepu no a ku‘u
my mothers,	mau makuahine.
Of Ho‘oipoikamalanai and Hinau-u,	O Hoioipo ikamalanai me Hinau-u,
The sun that rises and sets,	A i ka la hiki ae no a napoo aku,
He enjoys himself on Kaua‘i,	Walea ai no ka nohona ia Kaua‘i
All of Kaua‘i is Mō‘īkeha’s	Ua puna a puni Kaua‘i ia Mō‘īkeha
[Akina 1913:6]	

Maweke was delighted and when the boy is questioned as to his purpose, Kila tells his grandfather he is seeking fish for his family. Maweke tells Kiwa to lead the fish back to his homeland. This is how Kila led the *akule*, *kawakawa*, and *‘ōpelu* to Hawai‘i.

3.1.1.3 Pāka‘a and the Wind Gourd of La‘amaomao (Keahiahi)

Kapa‘a also figures prominently in the famous story of Pāka‘a and the wind gourd of La‘amaomao. Pāka‘a was the son of Kūanu‘uanu, a high-ranking retainer of the Big Island ruling chief Keawenuia‘umi (the son and heir to the legendary chief ‘Umi), and La‘amaomao, the most beautiful girl of Kapa‘a and member of a family of high status *kahuna* (priests). Kūanu‘uanu left the island of Hawai‘i, traveled throughout the other islands and finally settled on Kaua‘i at Kapa‘a.

It was there that he met and married La‘amaomao, although he never revealed his background or high rank to her until the day a messenger arrived, calling Kūanu‘uanu back to the court of Keawenuia‘umi. By that time, La‘amaomao was with child but Kūanu‘uanu could not take her with him. He instructed her to name the child Pāka‘a if it turned out to be a boy. Pāka‘a was raised on the beach at Kapa‘a by La‘amaomao and her brother Ma‘ilou, a bird snarer. He grew to be an intelligent young man and it is said he was the first to adapt the use of a sail to small fishing canoes. Although Pāka‘a was told by his mother from a very young age that his father was Ma‘ilou, he suspected otherwise and after constant questioning, La‘amaomao told her son the truth about Kūanu‘uanu.

Intent on seeking out his real father and making himself known to him, Pāka‘a prepared for the journey to the Big Island. His mother presented to him a tightly covered gourd containing the bones of her grandmother, also named La‘amaomao, the goddess of the winds. With the gourd and chants taught to him by his mother, Pāka‘a could command the forces of all the winds in Hawai‘i. While this story continues on at length about Pāka‘a and his exploits on the Big Island and later on Moloka‘i, it will not be dwelt upon further here. It is important to note that several versions of this story do include the chants which give the traditional names of all of the winds at all the districts on all the islands, preserving them for this and future generations (Beckwith 1970:86–87; Fornander 1918-1919:5:78–128; Nakuina 1990; Rice 1923:69–89; Thrum 1923:53–67).

Frederick Wichman (1998:84) writes that Pāka‘a grew up on a headland named Keahiahi, which the bike path traverses. Here, Pāka‘a learned to catch *mālolo*, his favorite fish. After studying the ocean and devising his plan to fabricate a sail, Pāka‘a wove a sail in the shape of a crab claw and tried it out on his uncle's canoe. One day, after going out to catch *mālolo*, he challenged the other fishermen to race to shore. He convinced them to fill his canoe with fish, suggesting it was the only way he could truly claim the prize if he won:

> The fishermen began paddling toward shore. They watched as Pāka‘a paddled farther out to sea and began to fumble with a pole that had a mat tied to it. It looked so funny that they began to laugh, and soon they lost the rhythm of their own paddling. Suddenly Pāka‘a's mast was up and the sail filled with wind. Pāka‘a turned toward shore and shot past the astonished fishermen, landing on the beach far ahead of them. That night, Pāka‘a, his mother, and his uncle had all the *mālolo* they could eat. [Wichman 1998:85]

3.1.1.4 Kaweloleimākua

Kapa‘a is also mentioned in traditions concerning Kawelo (Kaweloleimākua), Ka‘ililauokekoa (Mō‘īkeha's daughter, or granddaughter, dependent on differing versions of the tale), the *mo‘o* Kalamainu‘u and the origins of the *hīna‘i hīnālea* or the fish trap used to catch the *hīnālea* fish, and the story of Lonoikamakahiki (Fornander 1917:4(2):318, 4(3):704–705; Kamakau 1976:80; Rice 1923:106–108; Thrum 1923:123–135).

3.1.1.5 Kalukalu grass of Kapa‘a

"*Kūmoena kalukalu Kapa‘a,*" or "Kapa‘a is like the *kalukalu* mats," is a line from a chant recited by Lonoikamakahiki. *Kalukalu* is a sedge grass, apparently used for weaving mats (Fornander 1917:4(2):318–319). Pukui (1983:187) associates the *kalukalu* with lovers in "Ke kalukalu moe ipo o Kapa‘a: *The* kalukalu *of Kapa‘a that sleeps with the lover*." According to Wichman (1998:84), "a *kalukalu* mat was laid on the ground under a tree, covered with a thick pile of grass, and a second mat was thrown over that for a comfortable bed," thus the association with lovers. Kaua‘i was famous for this particular grass, and it probably grew around the marshlands of Kapa‘a. It is thought to be extinct now, but an old-time resident of the area recalled that it had edible roots, "somewhat like peanuts." Perhaps it was a famine food source (Kapa‘a Elementary School 1933:vi).

3.1.2 Traditional and Legendary Accounts of Keālia

3.1.2.1 Hi‘iaka and Wahine‘ōma‘o in Keālia

The area also features in the epic poem that recounts the adventures of Pele's sister, Hi‘iakaikapoliopele. On their way to Hā‘ena, Hi‘iaka and her companion Wahine‘ōma‘o stopped

near Keālia to help a man cook his *luau* (taro leaves) to eat with his *poi.* Noticing an ailing woman in the man's house, Hi‘iaka said a prayer that brought the woman back to health. All the *kahuna* (priest, healer) in the region had been unable to help the woman previously (Rice 1974:14).

3.1.2.2 Kaweloleimākua and Kauahoa in Waipahe‘e

In the *mauka* areas of Keālia is a place called Waipahe‘e, a slippery slide used for recreation up until recent times. This *wahi pana* (storied place) is associated with Kaweloleimākua and Kauahoa, who one day traveled to this place with their companion ‘Aikanaka (Wichman 1998:86). Here the two boys engaged in a contest of who could make the best *lei* for their chief. Kauahoa won this contest by making his *lei* of *liko lehua* while Kaweloleimākua made his of fern. The boys then held a contest *na‘ina‘i mimi* to see who could urinate the longest, but because Kauahoa was much bigger than Kawelo, he also won this contest. Later, when the two were men engaged in war, Kawelo reminded Kauahoa of this boyhood excursion in an attempt to avoid bloodshed between them, however, he was unsuccessful.

3.1.3 *Heiau* of Kapa‘a and Keālia

During their expeditions around Hawai‘i in the 1880s collecting stories from *ka po‘e kahiko* (elders), Lahainaluna students stopped in Kapa‘a and Keālia and gathered information regarding *heiau* (temples, non-Christian places of worship) of the region (Hawaiian Ethnological Notes 1885). Fourteen *heiau* were named, suggesting the two *ahupua‘a* were probably more politically significant in ancient times. Table 1 lists the names of the *heiau,* their location if known, their type, associated chief and priest, any comments, and the reference. The exact locations of these *heiau* are unknown. The general locations of two of the *heiau* correlate with *wahi pana* of Kuahiahi and Kaluluomoikeha. Kuahiahi (also spelled Kaahiahi and Keahiahi) is the rocky headland at the north end of Kapa‘a where the first Kapa‘a School was once located. Kaluluomoikeha is thought to be the general area near the Moikeha Canal and the present day Coral Reef Hotel.

3.1.4 The Māhele and the Kuleana Act

In the mid-1800s (1845 and 1846), through the Organic Act, Kamehameha III decreed a division of lands called the Māhele that introduced private property into Hawaiian society (Chinen 1958). In 1848, lands were divided into three portions: crown lands, government lands, and lands set aside for the chiefs. Individual plots, called *kuleana* (Native Hawaiian land rights) awards, were granted within these divided lands to native inhabitants who lived on and farmed these plots and came forward to claim them. Researching the claims and testimonies that were given in the mid-1800s can sometimes assist in forming a settlement pattern for the region at that time and possibly earlier. Thus, it is through records for Land Commission Awards (LCAs) generated during the Māhele that specific documentation of traditional life in Kapa‘a and Keālia Ahupua‘a comes to light.

During the Māhele, Kapa‘a was designated as Crown Lands (Commissioner of Public Lands 1929). The *‘ili* of Paikahawai and Ulakiu in Kapa‘a Ahupua‘a were retained as Government Lands. The land claims during this period show that only five individuals were awarded land parcels in the relatively large *ahupua‘a* of Kapa‘a. None of these land claims are located within the vicinity of the project APE. Interestingly, the residential "village" of Kapa‘a did not exist as a single entity, but was a series of probably small settlements or compounds, perhaps even individual house lots which stretched along the shoreline of the *ahupua‘a* and included (south to north) Kupanihi (Makahaikupanihi), Kalolo (Kaulolo), Puhi, and Ulukiu.

Table 1. List of *Heiau* in Kapa‘a and Keālia (source: Bushnell et al. 2003)

Name	**Location**	**Type**	**Associated Chief/Priest**
Mailehuna	Kapa‘a (Mailehuna is the area of the present day Kapa‘a School)	Unknown	Kiha, Kaumuali‘i/ Lukahakona
Pueo	Kapa‘a	Unknown	Kiha, Kaumuali‘i/ Lukahakona
Pahua	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Kumalae	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Waiehumalama	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Napuupaakai	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Noemakalii	Kapa‘a/Keālia	“Heiau for birth of Kauai Chiefs, like Holoholokū”	Unknown
Puukoa	Kapa‘a/Keālia	“Unu” (*heiau* for fishermen or an agricultural *heiau*)	Unknown
Piouka	Kapa‘a/Keālia	“Unu-type heiau”	Unknown
Una	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Mano	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Kuahiahi	Kapa‘a (where government school stands now)	Unknown	Kiha/ Lukahakona
Makanalimu	Upland of Kawaihau	Unknown	Kaumuali‘i
Kaluluomoikeha	Kapa‘a	Unknown	Mō‘īkeha

Keālia was granted to the *ali‘i* Miriam Ke‘ahikuni Kekau‘onohi (LCA 11216; Royal Patent 6071). Kekau‘onohi was a granddaughter of Kamehameha, one of Liholiho’s wives and served as Kaua‘i governor from 1842 to 1844. Seventeen land claims were made in Keālia and 15 were awarded. A total of six claims were awarded within the vicinity of the project APE (Figure 7 and Table 2).

Sixty-seven cultivated *lo‘i* (terraced fields) are claimed in the *kuleana,* with reference to numerous uncultivated *lo‘i* and boundaries of other cultivated *lo‘i* that were not claimed. In the Māhele documents, there are ten instances in which the individual *lo‘i* are referred to with their personal names. Two ditches or *‘auwai* are recorded, Kaauwaelalo (LCA # 01980) and Kahaukua (LCA # 10148). Keālia River and Keahapuna (Keahapana) River were also named as boundaries, although they may refer to the same river. This information suggests taro farming continued to be central to Keālia. In addition, four *kō‘ele* (land cultivated by tenant for local chief) are named in the Keālia Māhele documents. This suggests the *konohiki* of Keālia maintained a fair amount of power and played an active role in land and water distribution even as population was declining and foreign powers were beginning to trickle in.

Another noteworthy resource in Keālia were ponds or *loko.* Four ponds were mentioned, though no reference to location is given for two. Akiana Pond (LCA # 8060) is thought to be located in the *‘ili* of Akiana and Loko Waipunaula (LCA # 8833) is thought to be in Waipunaula ‘Ili. In addition to the fishponds providing fresh fish, the Keālia records indicate freshwater fish were also caught in the rivers and streams.

3.1.5 Early Historic Accounts of Kapa‘a and Keālia

The earliest written documentation of life in the *ahupua‘a* appears in the 1830s when missionary censuses recorded a total population of 283, comprising 265 adults and 18 children within Keālia (Schmitt 1973:25). Other Protestant missionary records focused more specifically on areas where mission stations were established. An 1847 census of 23 land divisions in the Hanalei and Kawaihau Districts gives population figures for Keālia (Schmitt 1969). Most notable is the decline in population in Keālia, from 283 in the 1830s to 143, a reduction of almost half (Schmitt 1969:229). Accounting for the high death toll caused by the introduction of foreign disease, this still seems like an extremely high death rate. Kapa‘a’s population during this time period is unknown. A population distribution map by Coulter (1931) (Figure 8) indicates the population of Kaua‘i ca. 1853 “was concentrated chiefly on the lower flood plains and delta plains of rivers where wet land taro was raised on the rich alluvial soil” (Coulter 1971:14).

Although most of the historic documents for Kaua‘i in this period revolve around missionary activities and the missions themselves, there was indication that the Kapa‘a area was being considered for new sugar cane experiments, similar to those occurring in Kōloa. In a historic move, Ladd and Company received a 50-year lease on land in Kōloa from Kamehameha III and Kaua‘i Governor Kaikio‘ewa of Kaua‘i. The terms of the lease allowed the new sugar company “the right of someone other than a chief to control land” and had profound effects on “traditional notions of land tenure dominated by the chiefly hierarchy” (Donohugh 2001:88). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawai‘i State Archives, Interior Dept., Letters, August 1837). The lease was granted by Kauikeaouli (Kamehameha III) for the lands of Kapa‘a, Keālia, and Waipouli for 20 years for the following purpose:

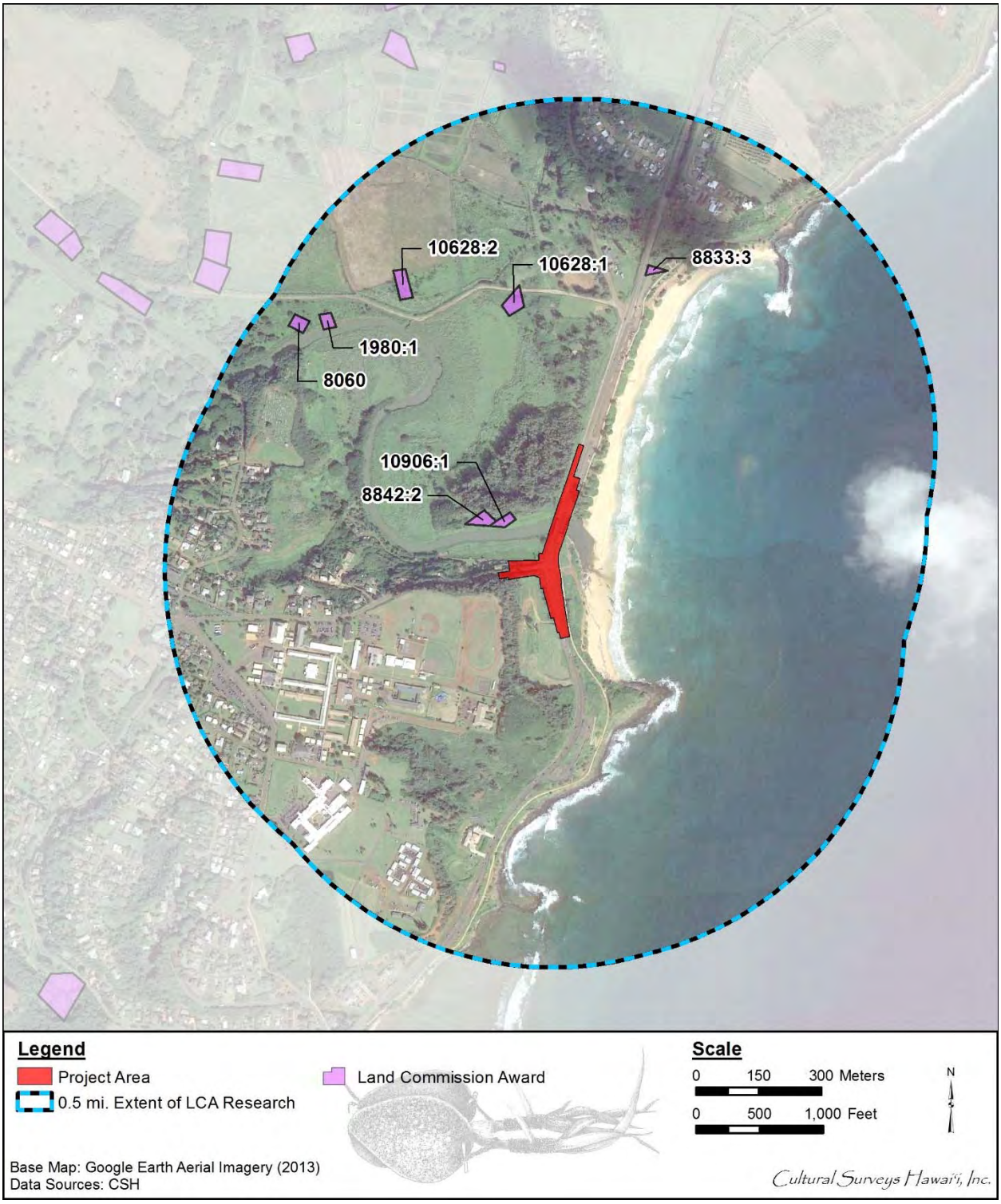


Figure 7. Aerial photograph showing Land Commission Awards in the Keālia Ahupua‘a within the vicinity of the project APE (Google Earth 2013)

Table 2. Land Commission Awards within the Vicinity of the Project Area

LCA #	**Claimant**	***‘Ili***	**Claim/Land Use**	**Award**
10906	Umiumi	Kaukuolono	Two *lo‘i*, *kula*, and house lot	Two parcels
08833	Kiapia	Waipunaula, Kiohale	Five *lo‘i*, *kula*, and house lot	Two parcels
10628	Puhi	Kaunakakai, Kuaiula	House lot, one *lo‘i*	Two parcels
08842	Kaawapupuole	Kauaha, Makapono	House lot, four *lo‘i*, *kula*	Two parcels
08060	Hulialo	Haulei, Kalohipa	House lot, two *lo‘i, kula*	One parcel
01980	Puali	Haulei, Kaeleele	House lot, four *lo‘i, kula*	One parcel

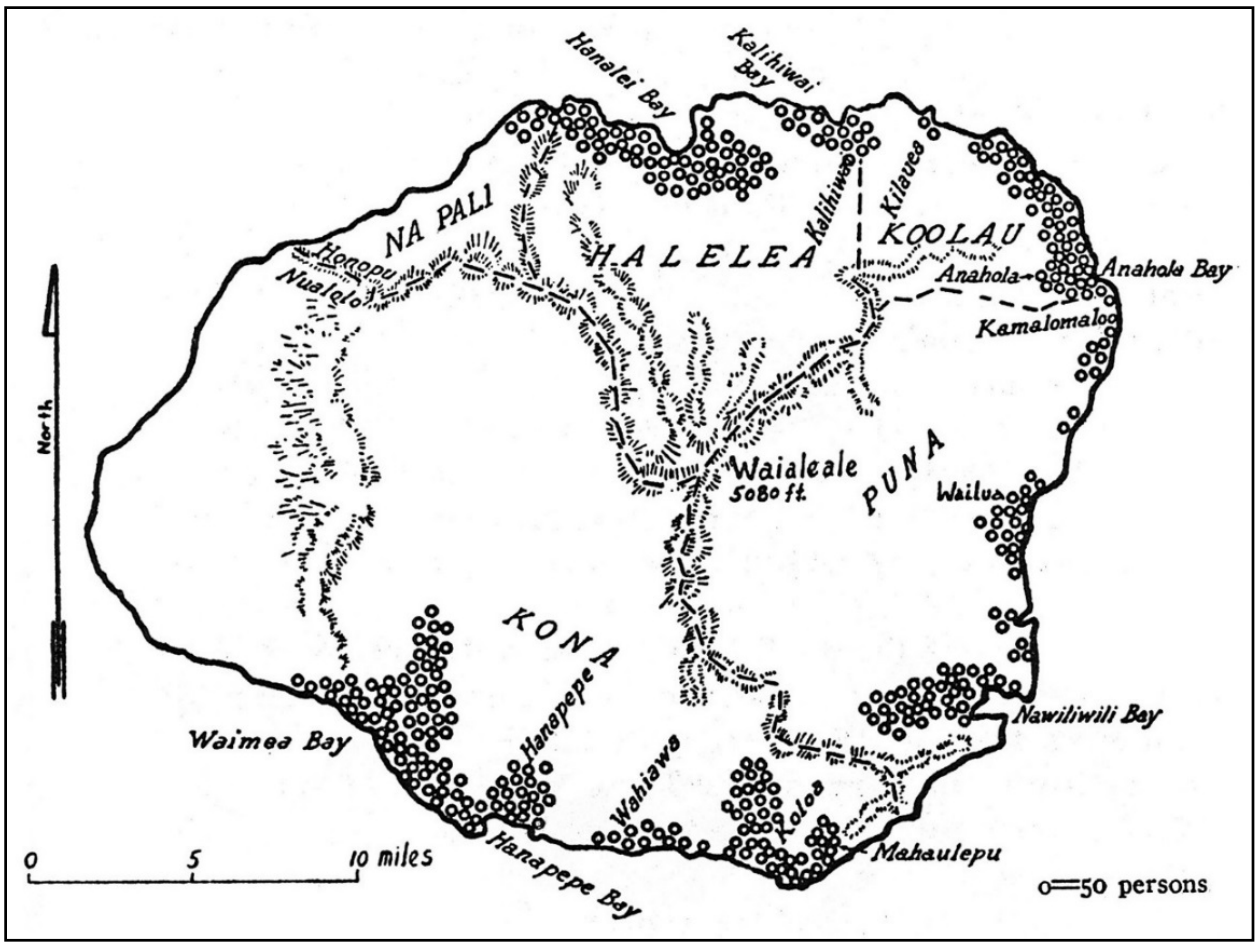


Figure 8. Map showing population estimate for Kaua‘i in 1853 (Coulter 1931:16)

> [F]or the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him. [Hawai‘i State Archives, Interior Dept., Letters, August 1837]

Unlike Ladd & Company, which eventually became the Koloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapa‘a, Keālia, and Waipouli. In a brief search for information on Honolulu merchant Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well-known Honolulu merchant who is documented as having experimented with grinding sugar cane in Waimea, Kaua‘i at about the same time the 1837 lease for lands in Kapa‘a, Keālia, and Waipouli was signed (Joesting 1984:152).

In 1849, William P. Alexander, son of a Wai‘oli missionary, recorded a trip he took around Kaua‘i. Although, he focuses on the larger mission settlements like Kōloa and Hanalei, he does mention Kapa‘a and Keālia.

> A few miles from Wailua, near Kapaa we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over the reef, and up on the beach, where it now lies. A few miles further we arrived at Keālia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water. [Alexander 1991:123]

In later years, the notorious Kapa‘a reef was to become the location of many shipwrecks once a landing was built there in the 1880s.

One of the first people to succeed in business in the Keālia area was a German by the name of Ernest Krull. In 1854, a government survey was prepared for Kumukumu, Kaua‘i (Hawai‘i State Survey, RM 141). In handwritten notes of the map, it is indicated that Mr. Krull desired to buy government interest to the land for $200.00. Apparently Mr. Krull was successful in obtaining Kumukumu because by the early 1860s, he was running a thriving business supplying whaling ships with beef and dairy products (Joesting 1984:171). Mr. Krull's ranch and dairy were located in the Waipahe‘e area of Kumukumu in a place called Kalualihilihi (Kapa‘a School 1983:4). His residence also served as a rest stop for travelers during the 1860s (Lydgate 1991:142). Mr. Krull continued to lease a portion of the tablelands above Keālia until 1876 when he sold his ranch to Colonel Z.S. Spalding and Captain James Makee (Hawai‘i State Archives, Interior Dept., Letters, 1879; Kapa‘a School 1983:4).

The first large-scale agricultural enterprise in the Kapa‘a/Keālia area was begun in 1877 in Kapa‘a by the Makee Sugar Plantation and the Hui Kawaihau (Dole 1916:8). The Hui Kawaihau was originally a choral society begun in Honolulu whose membership consisted of many prominent names, both Hawaiian and *haole* (Caucasian). It was Kalākaua's thought that the Hui members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kaua‘i. Captain Makee was given land in Kapa‘a to build a mill and he agreed to grind cane grown by Hui members. Kalākaua

declared the land between Wailua and Moloa‘a a fifth district called Kawaihau and for four years the Hui attempted to grow sugar cane at Kapahi, on the plateau lands above Kapa‘a. After a fire destroyed almost one half of the Hui’s second crop of cane and the untimely death of Captain James Makee, one of their principal advocates, the Hui began to disperse and property and leasehold rights passed on to Makee’s son-in-law and the new Makee Plantation owner, Colonel Z.S. Spalding (Dole 1916:14).

As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapa‘a (Figure 9). Following Captain Makee’s death, Colonel Spalding took control of the plantation and in 1885 moved the mill to Keālia (Cook 1999:51). The deteriorating stone smokestack and landing were still there well into the 1900s (Damon, 1931:359; see Figure 9). Condé and Best (1973:180) suggest railroad construction for the Makee Plantation started just prior to the mid-1890s. There is one reference to a railroad line leading from the Kapa‘a landing to Keālia in 1891. During Queen Lili‘uokalani’s visit to Kaua‘i in the summer of 1891, the royal party was treated to music by a band, probably shipped in from O‘ahu. “The band came by ship to Kapa‘a and then by train to Keālia” (Joesting 1984:252). This line is depicted on a 1910 USGS map that shows it heading south from Keālia Mill and splitting near the present Coral Reef Hotel, one finger going to the old Kapaa Landing (Makee Landing) and another line heading *mauka*, crossing the present Moikeha Canal, traveling southwest up Lehua Street and through what is now goat pasture, along a plateau and into the *mauka* area behind Kapa‘a swamp lands (Figure 10). This railroad line was part of a 20-mile network of plantation railroad with some portable track and included a portion of Keālia Valley and the *mauka* regions of the plateau lands north of Keālia (Condé and Best 1973:180).

By the late 1800s, Makee Plantation was a thriving business employing more than 1,000 workers (Cook 1999:51). Hundreds of Portuguese and Japanese immigrants found work on Makee Plantation and the new influx of immigrants required more infrastructure. In 1883, a lease for a school lot was signed between Makee Sugar Company and the Board of Education (Kapa‘a School 1983:9). Stipulations found in the Portuguese immigrant contracts with Makee Sugar Company stated that “children shall be properly instructed in the public schools” (Garden Island 1983). The original Kapa‘a School was constructed in 1883 on a rocky point adjacent to the Makee Sugar Company railroad (Figure 11). Traditionally, this point was known as Kaahiahi (Kapa‘a School 1983:10). In 1908, Kapa‘a School was moved to its present site directly *mauka* on Mailihune Hill (Figure 12).

As in much of the rest of Hawai‘i, the Chinese rice farmers began cultivating the lowlands of Kapa‘a with increasing success in the latter half of the 1800s. Several Hawaiian *kuleana* owners leased or sold their parcels *mauka* of the swamp land to Chinese rice cultivators. Other Chinese rice cultivators appealed to the government for swamp lands, first leasing and later buying. As a result of the growing rice and sugar industries, the economic activity displaced the house lot *kuleana* on the *makai* side of the marsh for increasing commercial and residential development (Lai 1985:148–161).

Narrow wagon roads gave way to macadamized roads in the early part of the twentieth century. This new road was called the Kaua‘i Belt Road and parts of it are thought to have followed the “Old Government Road” (Cook 1999). In Kapa‘a, the present day Kūhiō Highway probably follows the same route as the original Government Road and subsequent Kaua‘i Belt Road. The

Figure 9. “Kapaa Wharf Remains, Kapaa, Kauai, Hawaii” (ca. 1934) also known as the Old Makee Landing (top photo); today a breakwater is associated with the Moikeha Canal in the general location (bottom photo) (Bushnell et al. 2002)

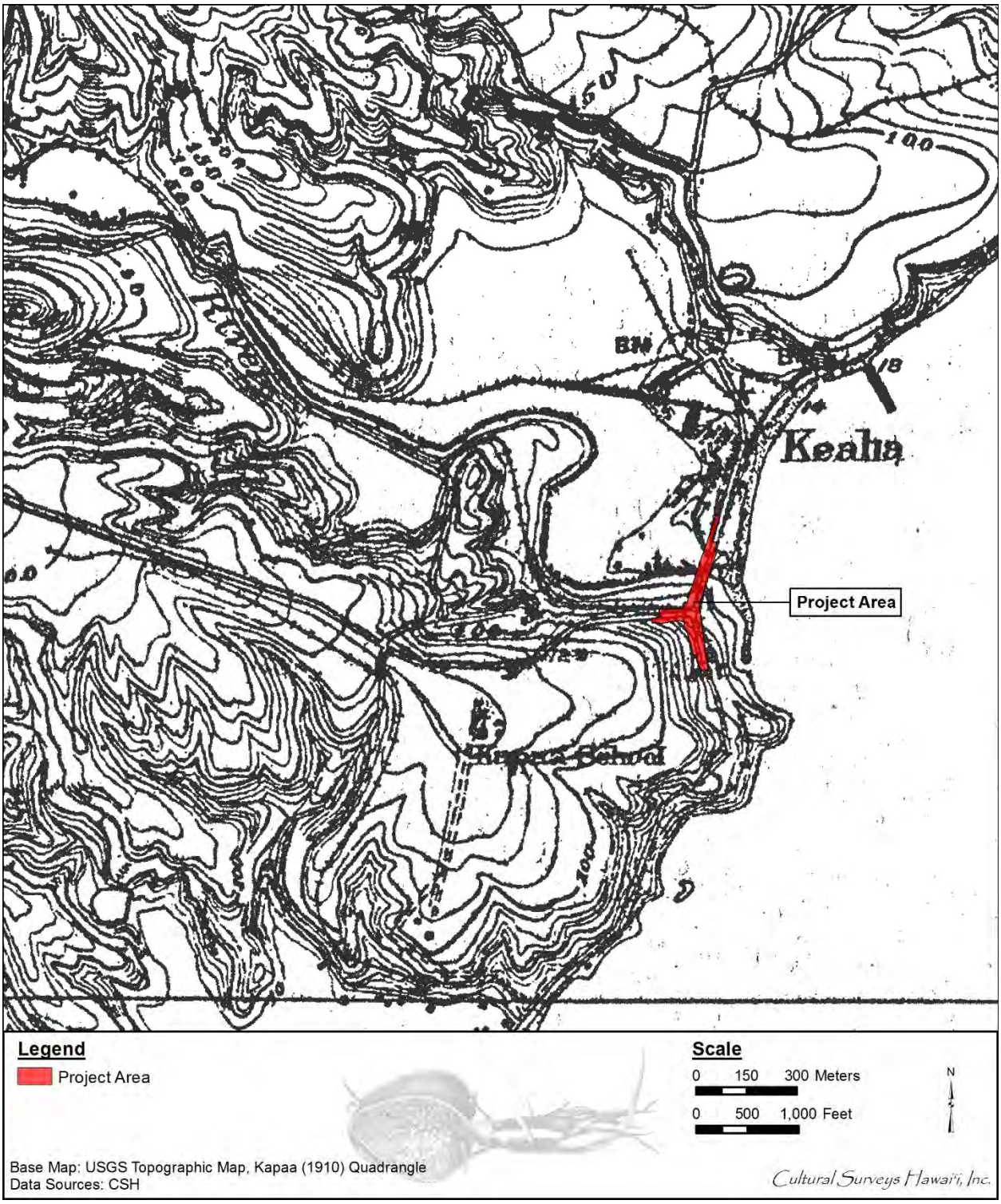


Figure 10. Portion of the 1910 Kapaa USGS topographic map depicting historic road and railroad alignment within and in the vicinity of the current project APE

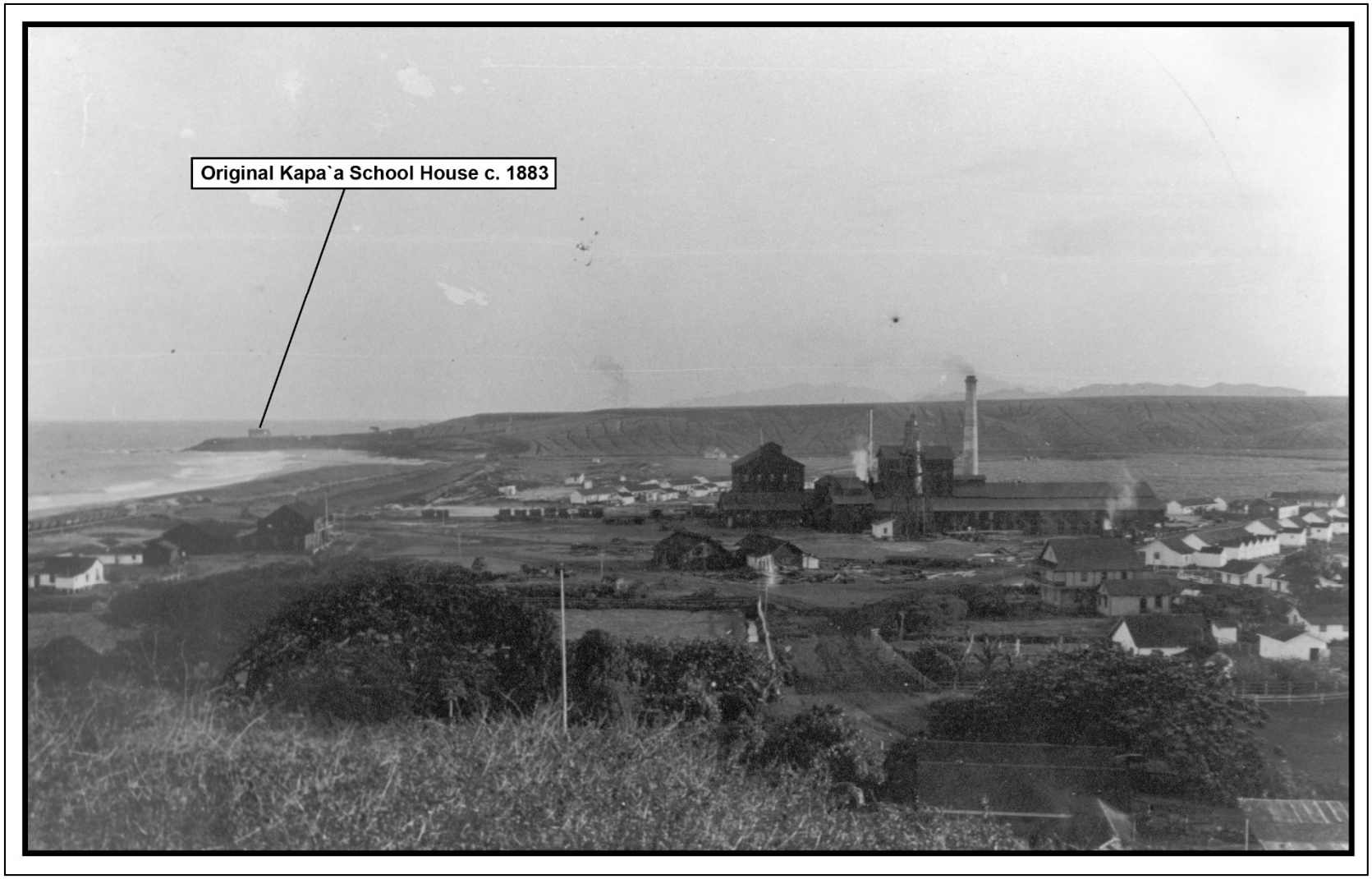


Figure 11. Historic photograph of Keālia Mill and town (courtesy of the Kaua‘i Historical Society)

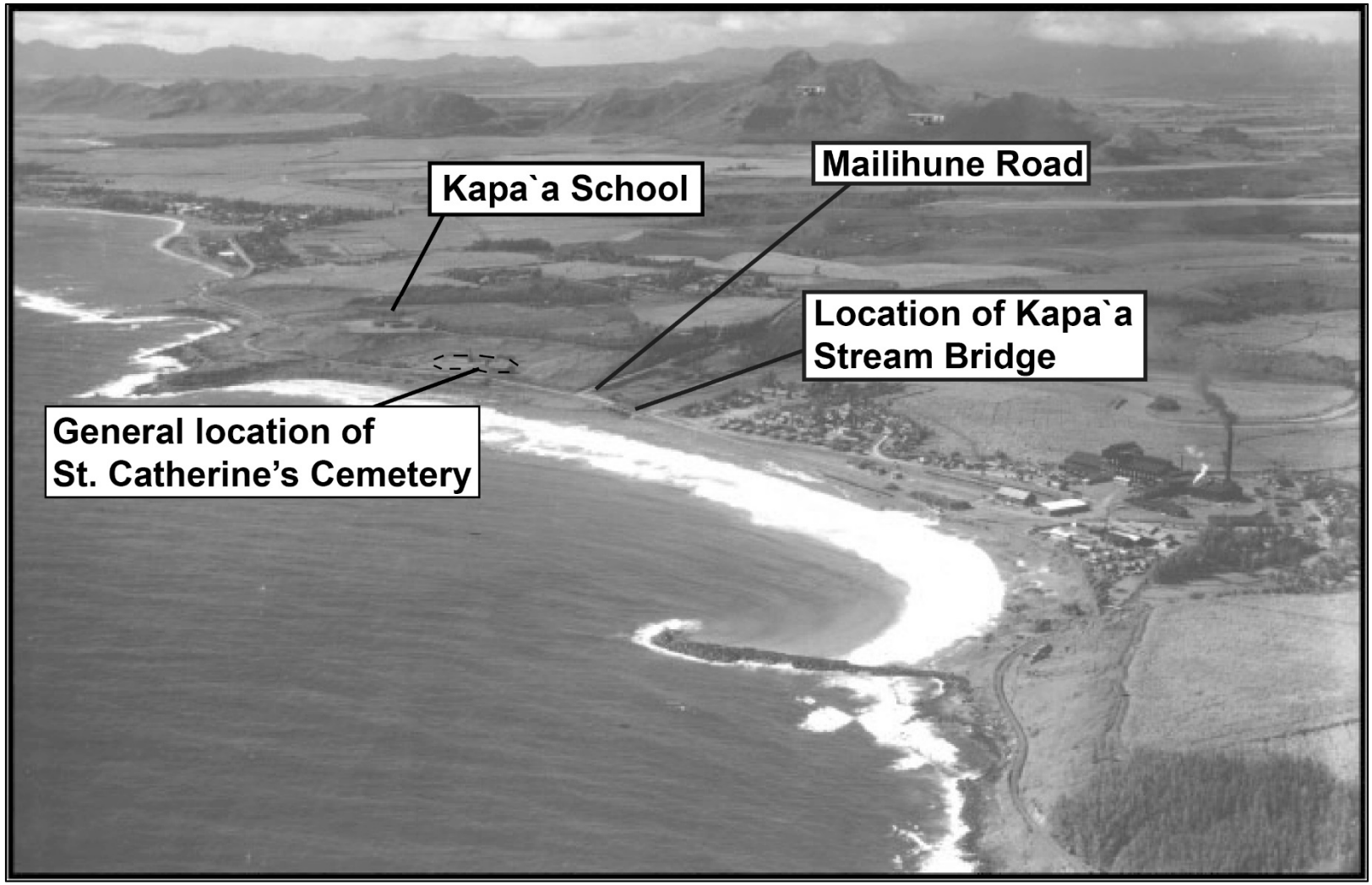


Figure 12. "Aerial View of Kealia, Kauai, Hawaii, Looking Landward" ca. 1933 (Bushnell et. al 2002); note Mailihuna Road is misspelled

location of the *kuleana* awards in Kapa‘a indicates the majority of the house lots were situated along the Government Road. LCA 3243 names a “road” as one of its boundaries.

In Keālia, however, there is evidence that numerous traditional trails led to Anahola with possibly two principal routes, a *makai* route and a *mauka* route. In 1881, Z.S. Spalding, proprietor of the Makee Sugar Plantation, appealed to the Department of the Interior with a formal petition to have the *makai* road (in Keālia) officially closed, stating that the natives were breaking through his fences to take shortcuts between Keālia and Anahola (Hawai‘i State Archives, Letter: Z.S. Spalding, 16 May 1881). The exact location of the *makai* road is unknown although it is thought to have been on the plateau lands, somewhat removed from the coastline, in areas fit for sugar cane production. The route of the Old Government Road, also known as the “Mauka road” is described as, “crossing the Kealia River above the Rice Plantation and passing over the hill near Mr. Spalding’s residence” (Hawai‘i State Archives, Letter: Z.S. Spalding, 21 April 1882). When the Kaua‘i Belt Road was constructed in the first two decades of the twentieth century, a portion of the old Government Road route was abandoned. The new route crossed the river at the *makai* end of Keālia Stream, paralleled the ocean and the railroad track, and then turned *mauka* passing through Keālia town and went up the hill to meet up with the “Old government Road.” The Keālia Bridge built for the Kaua‘i Belt Road is thought to date to ca. 1912. A traveler writing about their travels in 1913, mentions the bridge: “In the twinkling of an eye we passed on the steel bridge of Kealia. This new bridge is beautiful” (Akina 1913) (Figure 13).

3.1.6 Twentieth Century History of Kapa‘a and Keālia (1900–Present)

In the early 1900s, government lands were auctioned off as town lots in Kapa‘a to help with the burgeoning plantation population. An oral account mentioned that in the 1930s and 1940s, the area north of Moikeha Canal in Kapa‘a was mostly settled by Portuguese families (Bushnell et al. 2002). Another oral account mentioned that the Japanese were very prominent in the 1920s and 1930s, largely replacing the Chinese merchants of the tum of the century in the Kapa‘a business sector (Bushnell et al. 2002). Several territorial government structures were once situated adjacent to the coastal areas of Kapa‘a. The Board of Health, Territory of Hawaii ran a dispensary in Kapa‘a starting in 1926. This was located at the *makai* edge of Niu Street near the Kapa‘a Beach Park parking lot. A fire station was once located in the area now occupied by the Coral Reef Hotel and a courthouse and jail cell once stood at the location of the present Kapa‘a Neighborhood Center. It is not known when these structures were removed or abandoned.

3.1.6.1 Ahukini Terminal & Railway Company

The Ahukini Terminal & Railway Company (AT&R) was formed in 1920 to establish a railroad to connect Anahola, Keālia, and Kapa‘a to Ahukini Landing and “provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet” (Condé and Best 1973:185). The company was responsible for extending the railroad line from Makee Landing, which was no longer in use, to Ahukini Landing, and for constructing the original Waika‘ea Railroad Bridge and the Mō‘īkeha Makai Railroad Bridge (Figure 14 through Figure 17).

In 1934, the Lihue Plantation Company absorbed the AT&R and Makee Sugar Company (Condé and Best 1973:167). The railway and rolling stock formerly owned by Makee Sugar Company became the Makee Division of the Lihue Plantation. At this time, in addition to hauling sugar cane, the railroad was also used to haul plantation freight, including “fertilizer, etc. . . . canned pineapple from Hawaiian Canneries to Ahukini and Nawiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd.” (Hawaiian Territorial Planning

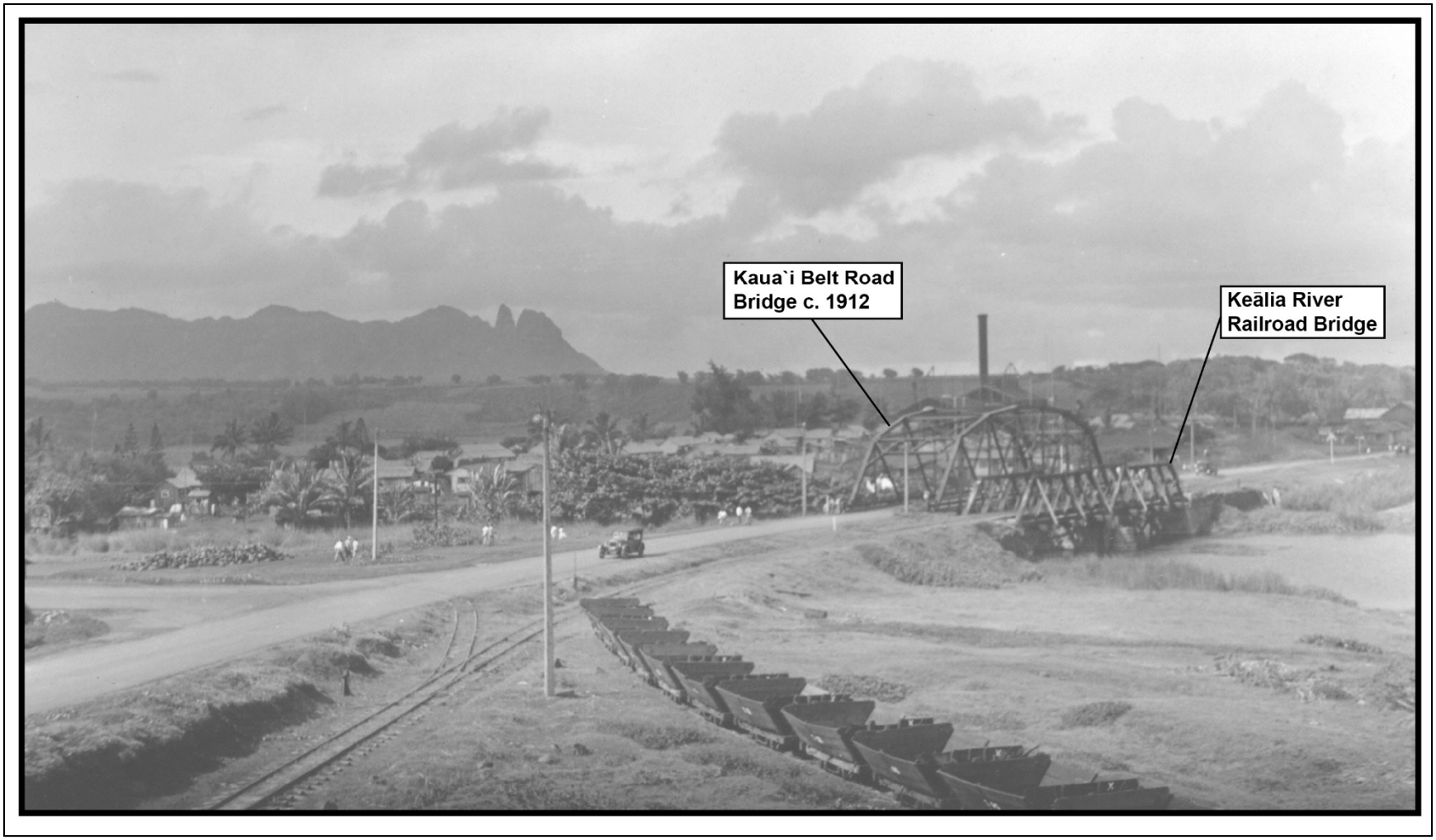


Figure 13. “Kealia in Background, Kealia, Kauai, Hawaii” ca. 1934, photograph by Funk (Bushnell et al. 2002)

Figure 14. Waika‘ea Bridge, pedestrian bridge built over railroad bridge, view to southwest (2002 CSH photo)

Figure 15. Close up of Waika‘ea Bridge, pedestrian bridge built over railroad bridge, view to northeast (2002 CSH photo)

Figure 16. Mō‘īkeha Makai Railroad Bridge, view to northeast (2002 CSH photo)

Figure 17. Railroad remnant built by the Ahukini Terminal & Railway Company located in Kapa‘a just north of the Kapa‘a Public Library, view to northeast (Railway Modelling 2014)

Board 1940:11). Former plantation workers and *kama‘āina* growing up in Kapa‘a remember when the cannery sent their waste to the pineapple dump, a concrete pier just north of Kumukumu Stream by railroad. The structure is built over the water where the rail cars would dump the pineapple waste. The current carried the waste to Kapa‘a, where the waste attracted fish and sharks (Bushnell et al. 2002).

Lihue Plantation was the last plantation in Hawai‘i to convert from railroad transport to trucking. “By 1957 the company was salvaging a part of their plantation railroad, which was being supplanted by roads laid out for the most part on or close to the old rail bed” (Condé and Best 1973:167). By 1959, the plantation had completely converted to trucking.

3.1.6.2 Hawaiian Canneries Company, Ltd.

In 1913, Hawaiian Canneries Company, Ltd. opened in Kapa‘a at the site now occupied by Pono Kai Resort, just north of Waika‘ea Canal (Cook 1999:56). A resident of Kapa‘a described how the town “came alive” after the cannery opened (Fernandez 2009:48). Following the completion of their plantation contracts, the Japanese plantation workers moved into town and “opened mom and pop grocery stores” (Fernandez 2009:48):

> Portuguese opened dairy farms in the hinterland or repair shops in Kapa‘a. Former plantation laborers became farmers, raising pineapple and other crops for sale. Service businesses started: the slop-gatherer who came to homes to take the garbage as feed for his pigs, the fish monger selling fish on their street, the cattle rancher who slaughtered cows and provided fresh meat to the market, the traveling wagon man hawking fresh fruits and vegetables. [Fernandez 2009:48]

Kapa‘a became “an integrated multi-racial town, containing an extraordinary mix of people living and working together in harmony” all due to the new cannery (Fernandez 2009:48). In 1923, Hawaiian Canneries Company, Ltd. purchased the approximately 8.75 acres of land they were leasing through the Hawaiian Organic Act (Hawai‘i Bureau of Conveyances, Grant 8248). At that time the cannery only contained four structures but by 1956, 1.5 million cases of pineapple were being packed. By 1960, 3,400 acres were in pineapple and the cannery employed 250 full-time and 1,000 seasonal workers (*Honolulu Advertiser*, 20 March 1960) (Figure 18 and Figure 19). In 1962, Hawaiian Canneries went out of business due to competition from canneries in other countries.

Severe floods in Kapa‘a in 1940 led to the dredging and construction of the Waika‘ea and Mō‘īkeha Canals sometime in the 1940s (Hawaiian Territorial Planning Board 1940:7). The construction of Waika‘ea Canal, approximately 275 m (902.2 ft) south of the project APE, had been proposed as early as 1923 (Bureau of Land Conveyances, Grant 8248). A 1940 Master Plan for Kapa‘a requested that the Territorial Legislature set aside funds for the completion of a drainage canal and for filling *makai* and *mauka* of the canal (Hawaiian Territorial Planning Board 1940:7). In 1955, a report was published on proposed coral dredging for the reef fronting Kapa‘a Beach Park (*Garden Island Newspaper*, 21 September 1955). The coral was to be used for building plantation roads. This dredging was later blamed for accelerated erosion along Kapa‘a Beach (*Garden Island*, 30 October 1963). Today, there are several sea walls to check erosion along the Kapa‘a Beach Park. Old time residents claim the sandy beach in Kapa‘a was once much more extensive than it is now (Bushnell et al. 2002).

Residents of Keālia Town slowly dispersed after the incorporation of Makee Sugar Company into Lihue Plantation in the 1930s. Many of the plantation workers bought property of their own

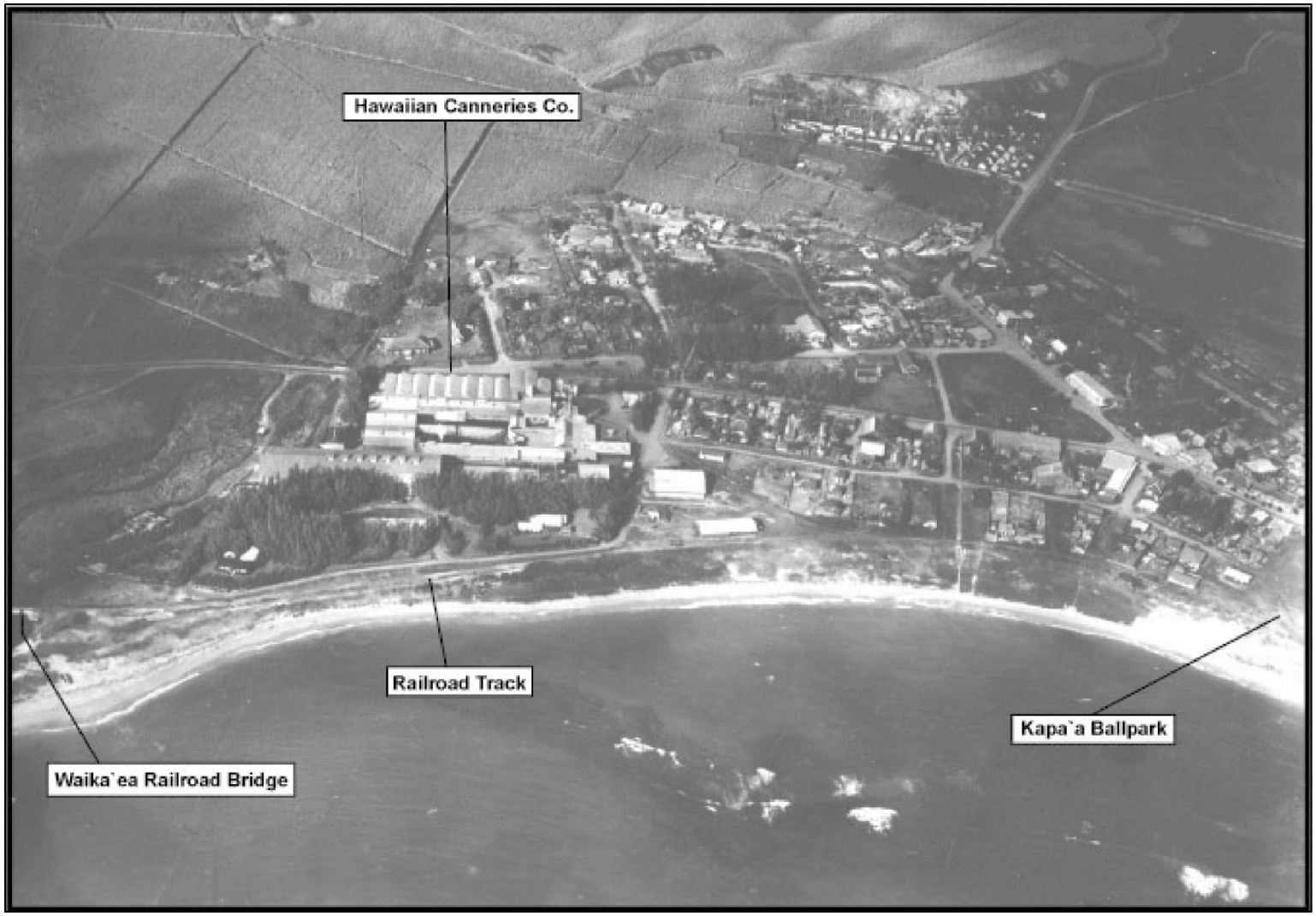


Figure 18. “Aerial View of Kapaa, Kauai, Hawaii, Looking Landward” ca. 1933 (figure from Bushnell et al. 2002)

Figure 19. Kaua‘i women working in the pineapple fields of Kapa‘a (date known) (*Garden Island* 1 December 2010)

and moved out of plantation camps. The plantation camps that bordered Kūhiō Highway were finally disbanded in the 1980s. The Lihue Plantation began to phase out in the last part of the twentieth century. Kapa‘a Town suffered after the closing of the Kapa‘a Cannery, however, the growing tourist industry helped to ease the economic effects of the cannery’s closing.

3.1.7 Contemporary Land Use

The project APE includes a portion of Route 56 (Kūhiō Highway) including the intersection of Mailihuna Road and Kapa‘a Stream Bridge. Portions of the Kapa‘a to Keālia bike path and the entry to St. Catherine’s Cemetery are also located within the project APE. The land surrounding the project APE is not significantly developed. The largest establishment near the bridge site is Kapa‘a High School soccer field, track, and baseball diamond, located approximately 300 m (984.3 ft) to the southeast. To the north and northwest of the project APE the land is primarily utilized for agricultural and residential purposes. Contemporary land use within the project APE is depicted in historic aerial photographs of the Kapa‘a Coast (Figure 20 and Figure 21).

3.2 Previous Archaeological Research

The locations of previous archaeological studies conducted within a 0.8-km (0.5-mile) radius of the project APE are shown in Figure 22 and listed in Table 3. Previously documented historic properties within a 0.8-km (0.5 -mile) radius of the project APE are shown in Figure 23 and listed in Table 4. These studies and findings are discussed in the following paragraphs.

The first systematic archaeological survey of Kaua‘i was conducted by Bennett (1931), in which he discussed the terracing and irrigation ditches located along the Kapa‘a Stream. It should be noted that Bennett’s work was conducted after commercial sugar cane cultivation and other historic activities had destroyed or damaged many historic properties. Also, most of the historic properties documented by Bennett were relatively easy to access, conspicuous and obvious. Bennett discussed the irrigation ditches near Kapa‘a Stream as fairly large-sized banked structures with earthen walls. One ditch near Keālia homesteads was observed as being a deep cut (approximately 10 ft deep) into a low ridge to transport water across the ridge. Bennett also discusses the taro terraces within the small valleys in the foothills of Kapa‘a (Bennett 1931).

In 1972, Handy and Handy conducted a study of native planters within the entire Hawaiian archipelago. The study states that Keālia is dry with small streams and limited areas suitable for *lo‘i*. Terracing was observed at the intersection of Kapa‘a and Keālia streams and many terraced areas were observed *makai* of the confluence.

In 1991, CSH conducted a field inspection, surface collection, and assessment at the Keālia Sand Quarry site. Human remains were exposed due to the quarrying activities and designated SIHP # 50-30-08-1851. All human remains observed were fragmented and disarticulated. During background research into the area where bones were observed, it was noted that two LCAs were located in the vicinity. It was concluded that the bones were most likely associated with the LCAs (Folk and Hammatt 1991). It was also documented that traditional Hawaiian midden and historic artifacts were observed in the vicinity of the burials.

In 1992, Kikuchi and Remoaldo (1992) completed Volume I of a survey of the cemeteries of Kaua‘i. A total of two cemeteries are located within the vicinity of the project APE. An historic

Figure 20. 1950 Kapaa Coast aerial photograph (UH SOEST) depicting the project APE surrounded by residential and agricultural land

Figure 21. 1975 Kapaa Coast aerial photograph (UH SOEST) depicting the project APE surrounded by residential and agricultural land

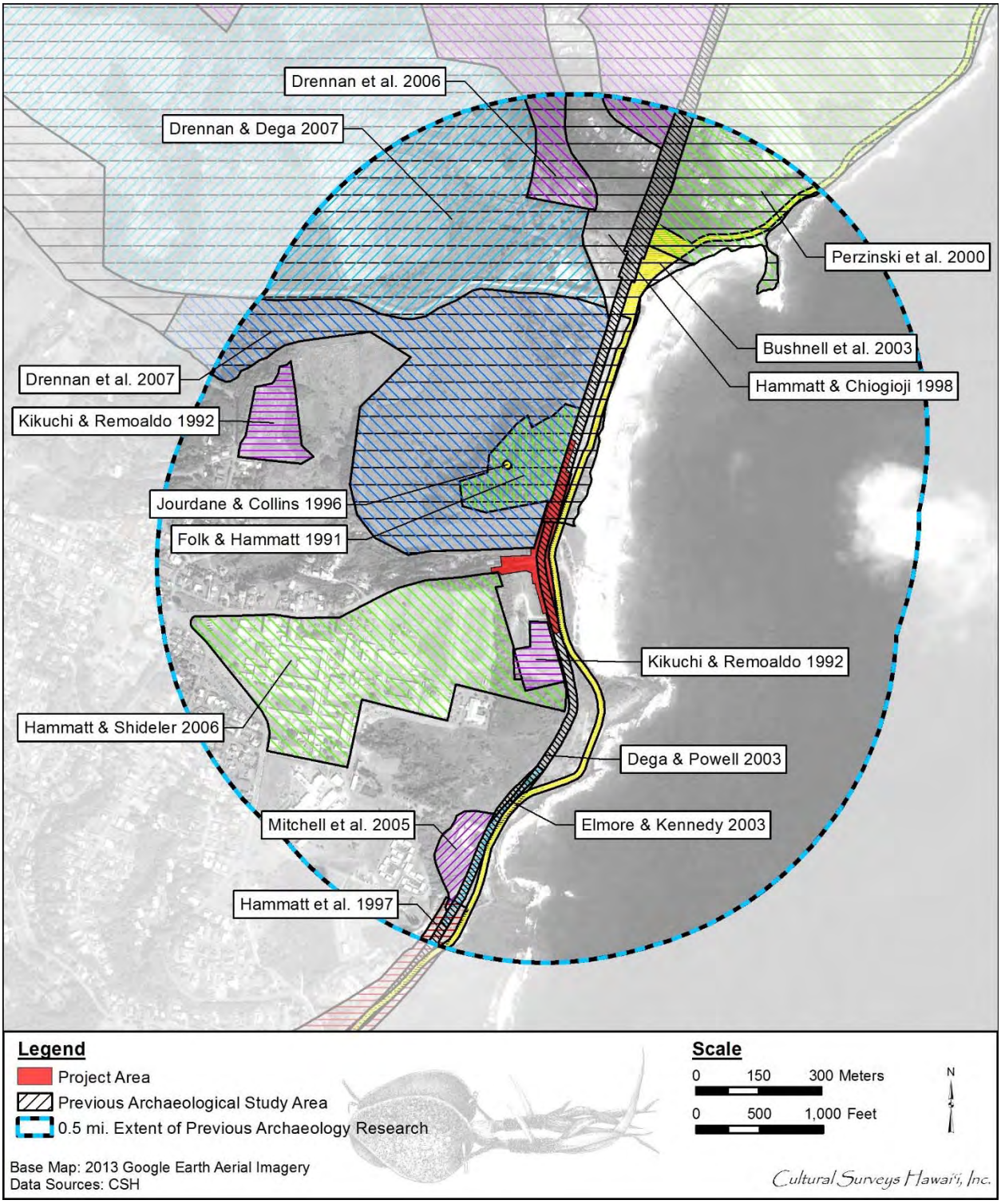


Figure 22. Aerial photograph showing previous archaeological studies within a 0.8-km (0.5-mile) radius of the project APE (Google Earth 2013)

Table 3. Previous Archaeological Studies within a 0.8-km (0.5-mile) Radius of the Project Area

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Bennett 1931	Archaeology of Kaua‘i	Island-wide	Discusses terracing and irrigation ditches located along Kapa‘a Stream
Handy and Handy 1972	Native planters study	Archipelago-wide	Emphasizes agricultural production was rather clumped along Keālia side of Kapa‘a Stream seaward of its confluence with Keālia Stream
Folk and Hammatt 1991	Archaeological assessment	Bend of Kapa‘a River, just inland of Kūhiō Hwy	Burial finds (SIHP # -1851); noted presence of historic artifacts and traditional Hawaiian midden in vicinity; also noted extensive disturbance from sand mining
Kikuchi and Remoaldo 1992	Historic cemetery survey	Island-wide	Identified historic cemetery (-B001) and St. Catherine’s Cemetery (-B002) within vicinity of project APE
Jourdane and Collins 1996	Burial report	Bend of Kapa‘a River	Identified additional disarticulated human remains associated with SIHP # -1851
Hammatt et al. 1997	Archaeological inventory survey	Kūhiō Hwy in Wailua, South Olohena, North Olohena, Waipouli, and Kapa‘a Ahupua‘a	Further documented St. Catherine’s Cemetery (SIHP # -B002)
Hammatt and Chiogioji 1998	Archeological reconnaissance survey and assessment	6,690.9 acres within Keālia Ahupua‘a	No historic properties identified within vicinity of project APE
Perzinski et al. 2000	Archaeological inventory survey	300-acre *makai* parcel at Keālia, TMK: [4] 4-7-004:006	Identified SIHP # -0789 within vicinity of project APE including Cane Haul Rd (SIHP # -0789: Feature A), Keālia Landing (SIHP # -0789: Feature B), and a dynamite storage bunker (SIHP # -0789: Feature C)

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Bushnell et al. 2003	Archaeological inventory survey	Proposed Kapa‘a–Keālia bike path, Kapa‘a and Keālia Ahupua‘a	Identified three new historic properties within vicinity of project APE including a buried cultural layer with an associated human burial (SIHP # -2074), Old Kaua‘i Belt Hwy bridge foundation (SIHP # -2075), and a possibly modern petroglyph (SIHP # -2076); identified a new sub-feature of SIHP # -0789: Feature A, Kapa‘a Stream Cane Haul Rd Bridge (SIHP # -0789: Feature A, Sub-Feature 1)
Dega and Powell 2003	Archaeological monitoring	Kūhiō Hwy from Moloa‘a through Hanamā‘ulu	No historic properties identified within vicinity of project APE
Elmore and Kennedy 2003	Archaeological monitoring	Kapa‘a and Anaholoa	No historic properties identified within vicinity of project APE
O’Hare et al. 2003	Burial treatment plan	Keālia Ahupua‘a, TMK: [4] 4-7-004:001	Burial treatment plan for SIHP # -2074 (not included on Fig. 22)
Mitchell et al. 2005	Literature review, field inspection, and cultural evaluation	3.1-acre parcel in Kapa‘a Ahupua‘a, TMK: [4] 4-6-014:026	No historic properties identified within vicinity of survey area
Drennan et al. 2006	Archaeological inventory survey, Phase I	Portion of 2,008-acre property in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	No historic properties identified within vicinity of project APE
Hammatt and Shideler 2006	Field inspection	Kapa‘a High School	No historic properties identified within vicinity of project APE

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Drennan and Dega 2007	Archaeological inventory survey, Phase II	Portion of 2,008-acre property in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	Six new plantation-era historic properties identified within vicinity of project APE including railroad rails and foundations (SIHP # -7015), sugar cane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations (SIHP # -7017), irrigation ditches, sluice gates, and a bridge (SIHP # -7018), a bridge, foundations, and irrigation pipes (SIHP # -7019), concrete foundations and a culvert (SIHP # -7020), and bridge/ transportation infrastructure, a culvert and drainage pipes (SIHP # -7021)
Drennan et al. 2007	Archaeological inventory survey, Phase III	386 acres in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	Six historic properties identified within vicinity of project APE including plantation era concrete staircase (SIHP # 7034), plantation era staircase (SIHP # -7035), plantation era concrete foundation, and brick and mortar structure (SIHP # -7037), human burials, burial pit outline and fire pit (SIHP # -7040), plantation era red brick and concrete wall/foundation (SIHP # -7041), and Keālia Historic Town Complex (SIHP # -7042)

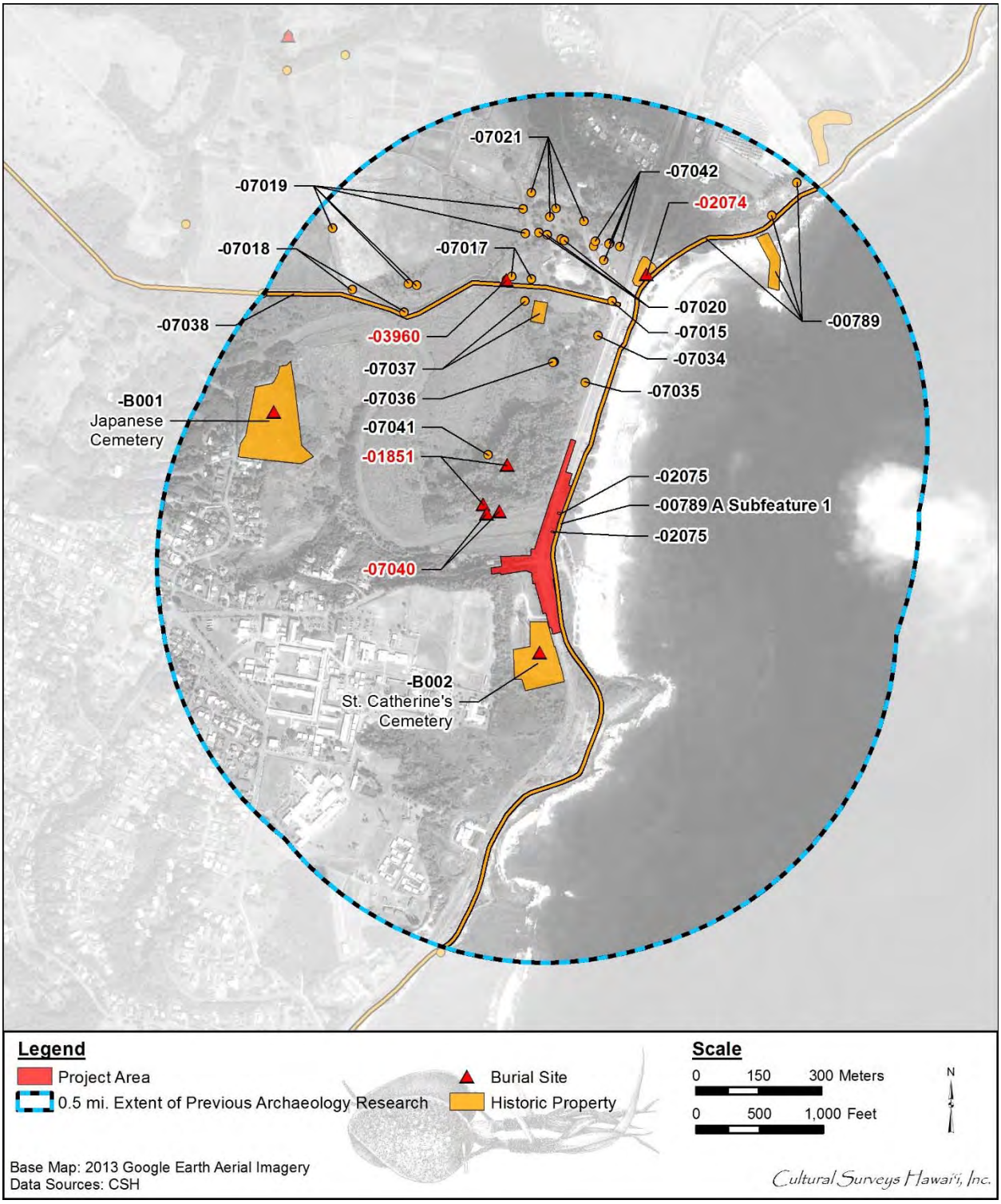


Figure 23. Aerial photograph showing previously identified archaeological sites within a 0.8-km (0.5-mile) radius of the project APE (Google Earth 2013)

Table 4. Previously Identified Archaeological Sites within a 0.8-km (0.5-mile) Radius of the Project Area

SIHP # 50-30-08****	Site Type/Name	Reference
-B001	Historic cemetery	Kikuchi and Remoaldo 1992
-B002	St. Catherine’s Cemetery	Kikuchi and Remoaldo 1992
-0789a	Cane Haul Rd	Perzinski et al. 2000
-0789b	Keālia Landing	Perzinski et al. 2000
-0884	Pre-Contact human remains	SHPD communication
-1851	Dune site with human burials, historic artifacts and pre-Contact midden deposit	Jourdane and Collins 1996; Folk and Hammatt 1991
-2074	Buried cultural layer and associated human burial	Bushnell et al. 2003
-2075	Old Kaua‘i Belt Hwy bridge foundation	Bushnell et al. 2003
-7015	Railroad rails and foundation	Drennan and Dega 2007
-7017	Sugar cane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations	Drennan and Dega 2007
-7018	Irrigation ditches and sluice gates, and a plantation era bridge	Drennan and Dega 2007
-7019	Plantation era bridge, foundations, and irrigation pipes	Drennan and Dega 2007
-7020	Concrete foundations and culvert	Drennan and Dega 2007
-7021	Bridge/transportation infrastructure, a culvert, and drainage pipes	Drennan and Dega 2007
-7034	Concrete staircase	Drennan et al. 2007
-7035	Staircase	Drennan et al. 2007
-7036	Plantation era concrete block and basalt, mortar and brick structure	Drennan et al. 2007
-7037	Concrete foundation, and brick and mortar structure	Drennan et al. 2007
-7040	Human burials, a burial pit outline, and a fire pit	Drennan et al. 2007
-7041	Red brick and concrete wall/foundation	Drennan et al. 2007
-7042	Keālia historic town complex	Drennan et al. 2007

cemetery (SIHP # -B001) is located west of the project APE. A portion of St. Catherine's Cemetery (SIHP # -B002) is located within the southwest portion of the project APE.

In 1996, SHPD staff conducted a field inspection of an inadvertent burial reported at Keālia. The remains were lying in recently disturbed sand deposits and associated with the previously identified SIHP # -1851 (Jourdane and Collins 1996).

In 1997, CSH completed an archaeological inventory survey for the Kūhiō Highway widening and bypass options project. This project consisted of areas in the Wailua, South Olohena, North Olohena, Waipouli, and Kapa‘a Ahupua‘a. Although outside the project APE, SIHP # -B002 was mentioned but not further documented in the report (Hammatt et al. 1997:103–104).

In 1998, CSH completed an archaeological reconnaissance survey and assessment for a 6,690.6-acre portion of Keālia Ahupua'a. The survey found that areas located within floodplains of Kapa‘a and Keālia streams were previously inhabited by traditional Hawaiians. Much of the area surveyed was former plantation land considered to be of little archaeological concern. The study also suggests the area known as Keālia Beach is likely void of archaeological sites associated with traditional Hawaiian activities due to sugar cane being planted up to the shoreline and the shoreline being modified for a cane haul road (Hammatt and Chiogioji 1998).

In 2000, CSH completed an archaeological inventory survey and subsurface testing of the approximately 300-acre Keālia *makai* parcel. A total of three historic properties were identified: SIHP # -0789, plantation era infrastructure and structures; SIHP # -0790, World War II structure and remnants; and SIHP # -1899, burials. Only SIHP # -0789 is located within the vicinity of the project APE. The two features of SIHP # -0789 located within the vicinity of the project APE consist of the Cane Haul Road (SIHP # -0789: Feature A), which extends along the coast near the project APE, and the Keālia Landing (SIHP # -0789: Feature B) (Perzinski et al. 2000).

In 2003, CSH conducted an archaeological inventory survey for the Kapa‘a–Keālia bike and pedestrian path. A portion of the study is located within the current project APE since parts of the bike and pedestrian path are in the project APE. A total of five newly identified sites (SIHP #s -2074 through -2078) and a new sub-feature of SIHP # -0789 (Feature A, Sub-Feature 1) were documented (Bushnell et al. 2003). Two historic properties identified in the 2003 project were identified within the current project APE. SIHP # -0789: Feature A, Sub-Feature 1 is identified as the *makai* Kapa‘a Stream Bridge for the Cane Haul Road. The second site consists of SIHP # -2075, the highway bridge foundation for the *mauka* Kapa‘a Stream Bridge. One additional historic property was identified within the vicinity of the project APE. This consists of a buried cultural layer and associated human burial (SIHP # -2074). Subsurface testing was conducted just north of the current project APE. CSH completed a burial treatment plan for SIHP # -2074. The remains were discovered during the subsurface testing along the coast where restroom facilities were to be built and a burial treatment plan was recommended for SIHP # -2074 (O'Hare et al. 2003).

In 2003, Scientific Consultant Services (SCS) completed archaeological monitoring during Phase I of the Kaua‘i Rural Fiber-optic Duct Lines project. A portion of the study is located within the current project APE (Segment 16) extending along the western shoulder of Kūhiō Highway (Figure 24). Segment 16's trenching ran parallel to the coast and across the flood plain. Within this segment, only a single location yielded historic subsurface cultural materials, which consisted of an old railroad gravel bed (Dega and Powell 2003:71-73). It is unclear exactly where the profile

Figure 24. Excavation of trench for fiber-optic cable running along west shoulder of Kūhiō Highway near the current project APE (Dega and Powell 2003:27)

showing the old railroad gravel bed was drawn. No significant historic properties were identified within the vicinity of the project APE.

In 2003, SCS conducted archaeological monitoring for the Kūhiō Highway drainage improvements for 250 m (820.2 ft) in Kapa‘a and at a single location in Anaholoa. No historic properties were identified within the vicinity of the project APE (Elmore and Kennedy 2003).

In 2005, CSH conducted a literature review, field inspection, and cultural evaluation in a 3.1-acre parcel in Kapa‘a Ahupua‘a. The study documented two filled lagoons and found the subsurface sediments were heavily disturbed by construction activities. No historic properties were identified within the vicinity of the project APE (Mitchell et al. 2005).

In 2006, CSH conducted a brief field inspection at Kapa‘a High School for the installation of new water lines. The study found there was low potential for historic properties within the Kapa‘a High School property due to the extensive grading. The study also observed a baseball field, large track, and undeveloped area serving as a large buffer between the St. Catherine’s Cemetery (SIHP # -B002) and the high school’s structures (Hammatt and Shideler 2006).

In 2007, SCS conducted four phases of an archaeological inventory survey in the Keālia Ahupua‘a. Phase II (Dennan and Dega 2007) and Phase III (Dennan et al. 2007) extend within the vicinity of the project APE. During Phase II, six new plantation era historic properties were identified near the project APE. These consist of railroad rails and foundations (SIHP # -7015), sugar cane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations (SIHP # -7017), irrigation ditches, sluice gates, and a bridge (SIHP # -7018), a bridge, foundations, and irrigation pipes (SIHP # -7019), concrete foundations and a culvert (SIHP # -7020), and bridge infrastructure, a culvert, and drainage pipes (SIHP # -7021) (Dennan and Dega 2007). During Phase III, six historic properties identified within the vicinity of the project APE included a plantation era concrete staircase (SIHP # -7034), a plantation era staircase (SIHP # -7035), a plantation era concrete block and basalt, mortar and brick structure (SIHP # -7036), a plantation era foundation, and brick and mortar structure (SIHP # -7037), human burials, a burial pit outline and a fire pit (SIHP # -7040), a plantation era red brick and concrete wall/foundation (SIHP # -7041), and the Keālia Historic Town Complex (SIHP # -7042) (Dennan et al. 2007).

3.3 Background Summary and Predictive Model

The Kapa‘a Stream Bridge project stretches through the *ahupua‘a* of Kapa‘a and Keālia, part of the ancient Puna District. Legends, traditional accounts and *wahi pana* point to an area rich in pre-Contact history, although it seems much of this history has been lost. Accounts name several *kupua* and known *akua* in reference to places in Kapa‘a and Keālia such as Palila, Hi‘iaka and Wahine‘ōma‘o. In addition, several persons of high status appear in references to *wahi pana,* and legends associated with Kapa‘a and Keālia. These include Mō‘īkeha, Kaweloleimakua, Kawelomahahai‘a, and Paka‘a. Although the extent of Ka Lulu O Mō‘īkeha is not known, recorded accounts state that it encompassed the area near the old Makee Landing, near the present day Coral Reef Hotel. Paka‘a, son of notable parents and guardian of the wind gourd, is thought to have grown up at Keahiahi, the rocky headland between Kapa‘a and Keālia.

Historic records list a number of *heiau* situated in Kapa‘a and Keālia suggesting the region was at one time much more significant than is portrayed by the *kuleana* records of the late 1840s and early 1850s. The specific locations of most of the *heiau* are unknown, however, there are a few

that carry the same names as *wahi pana* known to be located near the project APE. These *heiau* include Kuahiahi (Keahiahi, Kaahiahi) at the rocky headland at the north end of Kapa‘a and Kaluluomoikeha in Kapa‘a.

Historic accounts suggest a fairly sparse population in Kapa‘a with Hawaiians living in a series of small settlements, probably along the *alanui aupuni* (the Kūhiō Highway) that traversed a narrow sand berm. This sand berm created the *makai* boundary of an inland swamp. Most of the *lo‘i* claimed were situated on the *mauka* side of the Kapa‘a swamp in shallow gulches or valleys. The more ample river valley of Keālia hosted a larger population with *kuleana* claims mostly dispersed along the Keālia River (the current Kapa‘a Stream). There is one Land Commission Award on the northern end of Keālia Beach, approximately 100 m (328.1 ft) north of the project APE; subsurface testing in this locale has yielded evidence of human occupation ranging from pre-Contact times to the plantation era. According to historic documents, the plateau areas north of Keālia Valley were sparsely inhabited with areas bordering Kumukumu and Homaikawa‘a streams hosting the largest settlements.

The earliest successful economic enterprise by a westerner in these *ahupua‘a* was the Krull Ranch and Dairy, which operated in the Kumukumu area in the 1860s. The Krull Dairy was situated near Waipahe‘e, north of the project APE. In 1877, the Makee Sugar Plantation was established in conjunction with members of the Hui Kawaihau, several of whom were retainers in Kalākaua’s court. The Makee Plantation built a mill and landing at Kapa‘a as part of the plantation infrastructure. Makee Landing, also known as the Kapa‘a Wharf, once extended out from what is now a breakwater for the Moikeha Canal, near the present Coral Reef Motel. Following the move of the Kapa‘a mill to Keālia in 1885, a railroad was built from Makee Landing to Keālia with another railroad arm leading across the Moikeha drainage up Lehua Street and into the *mauka* regions of Kapa‘a. The *mauka* Moikeha Railroad Bridge (SIHP # -2078, Feature D) and the Old Kealia Railroad Bridge/Cane Haul Road (SIHP # -789A, Sub-Feature I) represent a part of the first railroad system constructed ca. 1891 to transport sugar cane.

The Makee Sugar Plantation, operating out of Keālia, attracted hundreds of immigrant workers, first the Portuguese and Japanese and later, Filipinos. Kapa‘a and Keālia towns sprung up around these immigrant groups. In addition, there were several plantation camps in Keālia as well as homesteads in the Kapa‘a. Many of the residential lots in the Kapa‘a area were auctioned off as Kapa‘a Town Lots in the first part of the twentieth century.

The pineapple industry made its debut in Kapa‘a in 1913, with the opening of Hawaiian Cannery Companies, Ltd. A cannery was constructed on land north of Waika‘ea Canal. This cannery was in business for almost 50 years and made use of the railroad track that fronted it to transport pineapple to Ahukini Landing for shipment and also to send pineapple waste to the “pineapple dump” north of Keālia. In 1920, Ahukini Terminal & Railway Company extended the railroad from the Moikeha Canal area in Kapa‘a to the Ahukini Landing in Hanamā‘ulu which became the new central terminal for shipping of agricultural goods. Lihue Plantation took over the Ahukini Terminal & Railway Company and the Makee Plantation in 1934.

By the late 1950s, the railroad gave way to truck roads. The local newspaper reports dredging coral from the Kapa‘a reef to be used for building plantation roads. A good portion of the railroad alignment in Kapa‘a was abandoned, however, a cane haul road was constructed near the intersection of Haua‘ala Road and Kūhiō Highway. The Lihue Plantation finally went out of

business at the end of the twentieth century and the cane haul road was abandoned. As an economic force, tourism has taken the place of agriculture in the last several decades. The old railroad alignment in the Kapa‘a Town area was converted into a bike path in the 1980s, extending from the Waika‘ea Canal to the Smokey Louie Swimming Pool.

Based on the background information, it is anticipated that pre-Contact and historic cultural layers associated with occupation, habitation, and agriculture will most likely be encountered during any subsurface activities in the project APE. Pre-Contact human remains (SIHP # -0884) were documented just outside the project APE to the west of the south corner of the current project APE. A sand dune deposit with disarticulated human remains (SIHP # -1851) is located in the vicinity of the project APE. An historic cemetery, St. Catherine's Cemetery (SIHP # -B002), is located adjacent to the project APE/project APE. SIHP # -B002, identified by Kikuchi and Remoaldo (1992). Its boundary is defined by a stone wall along the edge of a slope. The APE does not include or extend beyond the stone wall. Due to the proximity of human remains and the historic cemetery, human burials and associated cultural layers will likely be encountered during subsurface activities for the project. The plantation era infrastructure still extant within the vicinity of the project APE suggests a possibility of encountering significant plantation era historic properties.

Section 4 Results of Fieldwork

Fieldwork conducted for the AIS included a 100% pedestrian inspection and subsurface testing. The pedestrian inspection included the identification and documentation of historic properties within the project APE and a description of the overall project APE including ground visibility, modern use or disturbance, and vegetation. Subsurface testing consisted of two backhoe-assisted test trenches (T-1 and T-2). Fieldwork was conducted on 13 June 2015 by CSH archaeologists Missy Kamai, B.A., Tom Martel, B.A., and Richard Stark, Ph.D. under the general supervision of principal investigator, Hallett H. Hammatt, Ph.D. This work required approximately 4 person-days to complete.

4.1 Pedestrian Inspection Results

The historic properties identified within the project APE included two newly identified historic properties (SIHP # -2278, and SIHP # -2279), as well as two previously documented historic properties (SIHP #s -0789A Sub-Feature 1, and -2075). The two newly identified historic properties consist of the Kapa‘a Stream Bridge, built in 1953, which spans Kapa‘a Stream (SIHP # -2278) and a plantation era water control complex (SIHP # -2279). The water control complex consists of an earthen ditch remnant and a concrete culvert remnant. Complete descriptions of these historic properties are provided in Section 6.

During pedestrian inspection St. Catherine’s Cemetery (SIHP # -B002) was observed as being outside the project APE. The boundary was defined by Kikuchi and Remoaldo (1992) as being along a stone wall along the edge of a slope. The project APE includes a dirt road that is now used in part as an access road to the cemetery, however historically the dirt road was an access road to residences in the area and not associated with the cemetery. The dirt road is not to be affected by the proposed project. A stone wall serves as a boundary for the cemetery and is located up slope of the project APE. The project APE does not include or extend beyond the stone wall.

Ground visibility during the pedestrian inspection was good. The project APE is generally developed and mowed with some areas of unmaintained vegetation growth. Vegetation in undeveloped areas within the project APE included tall invasive grasses (Megathyrus and Urochloa) and dense *naupaka* (Scaevola). The remaining areas of the project include mowed grass, wedelia, and ironwood (Casuarina).

4.2 Subsurface Testing Results

Two backhoe assisted test excavations (T-1 and T-2) were excavated along the shoulder of Kūhiō Highway (Figure 25). T-1 measured 9.5 m in length, 0.6 m in width, and extended 3.0 m below surface. T-2 measured 7.8 m in length, 0.6 m in width, and extended 2.0 m below surface. Stratigraphy observed consists of a modern A horizon (Stratum Ia) overlying multiple fill layers (Strata Ib–Id). Natural sediments were not observed. Two traditional Hawaiian artifacts and one historic artifact were observed in a mixed fill layer (Stratum Ib) of T-2 and designated Accession (Acc.) #s 1–3.

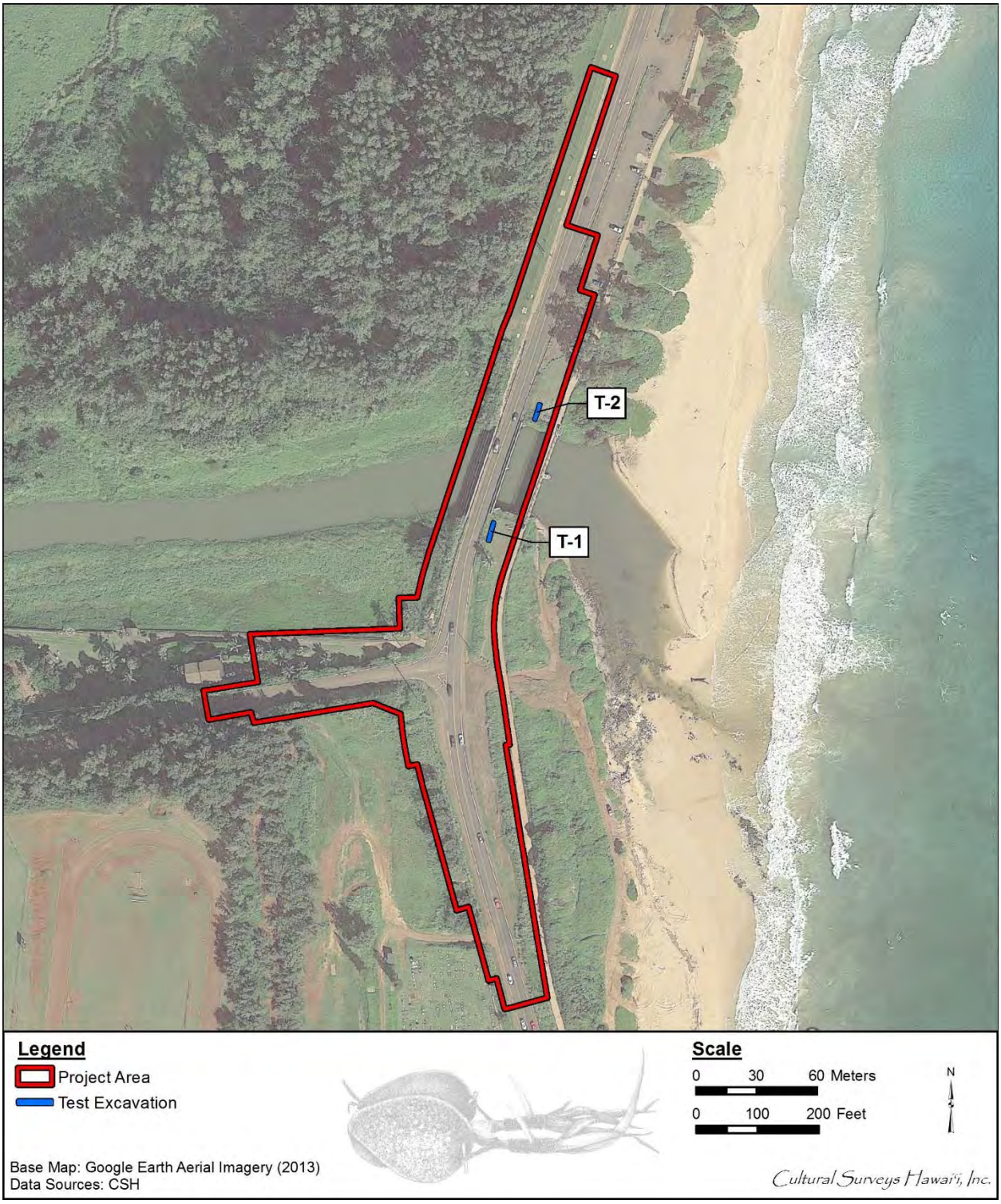


Figure 25. 2013 aerial photograph showing locations of T-1 and T-2 within the project APE (Google Earth)

4.2.1 Test Excavation 1 (T-1)

T-1 is located south of the bridge, east of the highway in the central portion of the project APE (see Figure 25). T-1 measured 9.5 m long by 0.6 m wide. The base of excavation was determined to be approximately 3.0 m. The water table was not observed. The stratigraphy of T-1 consists of a sandy clay loam A horizon (Stratum Ia), overlying various layers of fill consisting of a sandy clay loam fill (Stratum Ib), and clay fill (Stratum Ic and Id) (Figure 26, Figure 27, and Table 5). No traditional Hawaiian or historic cultural material was observed.

4.2.2 Test Excavation 2 (T-2)

T-2 is located north of the bridge on the east side of the highway in the central portion of the project APE (see Figure 25). T-2 measured 7.8 m long by 0.6 m wide. The base of excavation was determined to be approximately 200 cm. The water table was not observed. The stratigraphy of T-2 consists of a clay loam A horizon (Stratum Ia) overlying sand fill (Stratum Ib), overlying a clay loam fill (Stratum Ic), overlying a clay fill (Stratum Id) (Figure 28, Figure 29, and Table 6).

Traditional Hawaiian cultural material observed and collected consists of a polished basalt flake (Acc. # 1) and a coral *‘ulu maika* (Acc. # 2). Both of the traditional Hawaiian artifacts were found in a disturbed fill layer (Stratum Ib). Although these artifacts are associated with traditional Hawaiian activities, based on the artifacts’ context within a disturbed fill layer, the age of manufacture/use is unknown.

One historic artifact (Acc. # 3) was observed and collected within the same disturbed fill layer as Acc. #s 1 and 2. Acc. # 3 consists of a porcelain tableware base fragment with a Japanese dashed line transfer print. This artifact was likely manufactured between 1870 and 1920. For complete descriptions and analysis of Acc. #s 1–3, refer to Section 5: Results of Laboratory Analysis.

Figure 26. T-1, south wall, view to southeast

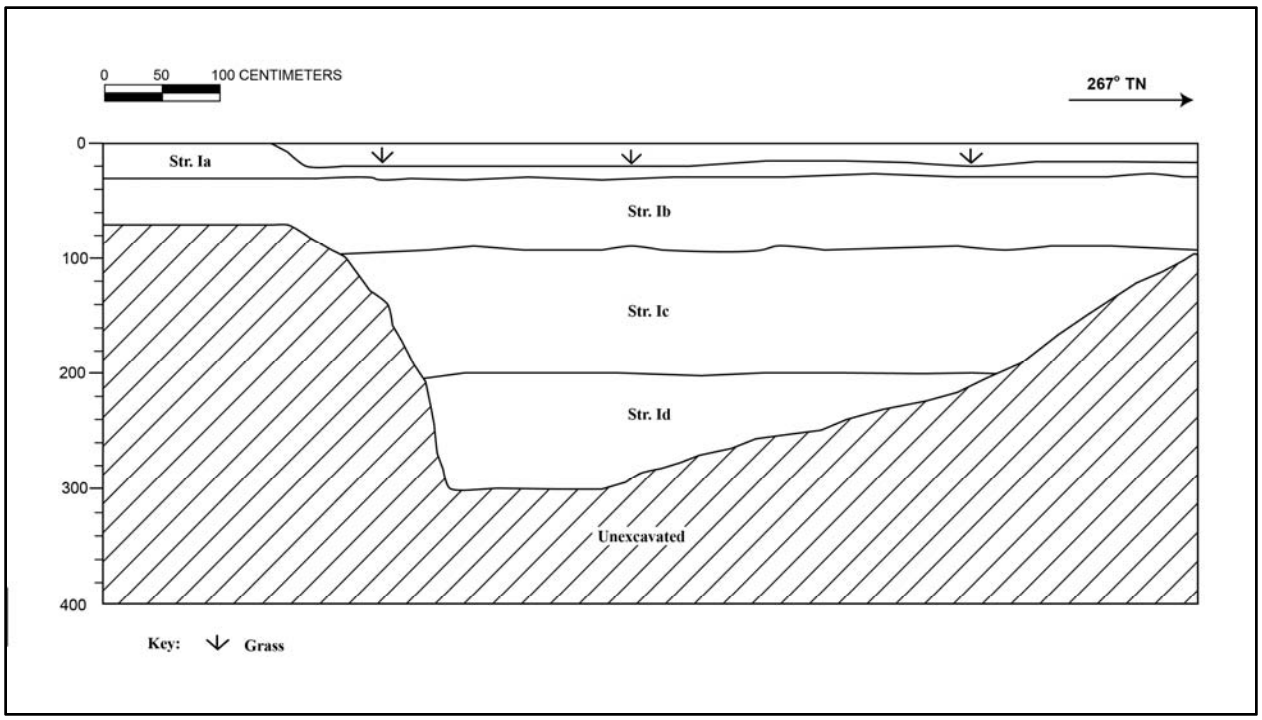


Figure 27. T-1, south wall profile

Table 5. Stratigraphic Description of T-1 South Wall

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–30	A horizon; 2.5 YR 3/4, dusky red; sandy clay loam; weak, medium, crumb structure; moist, very friable consistence; no cementation; slightly plastic; mixed origin; abrupt, smooth lower boundary; many fine to coarse roots observed; current land surface
Ib	30–95	Fill; 2.5 YR 4/6, red; sandy clay loam; moderate, coarse, blocky structure; moist, firm consistence; weak cementation; plastic; mixed origin; abrupt, smooth lower boundary; few medium roots observed; 15% small basalt cobbles and large angular basalt boulders
Ic	95–200	Fill; 10R 4/3, weak red; clay; moderate, fine, crumb structure; moist, firm consistence; weak cementation; very plastic; terrigenous origin; abrupt, smooth lower boundary; few fine roots observed; 15% basalt angular cobbles
Id	200–300 (BOE)	Fill; 10R 4/6, red; clay; moderate, fine, crumb structure; moist, firm consistence; weak cementation; very plastic; terrigenous origin; lower boundary not visible; no roots observed; 10% basalt angular cobbles

Figure 28. T-2, north wall, view to northeast

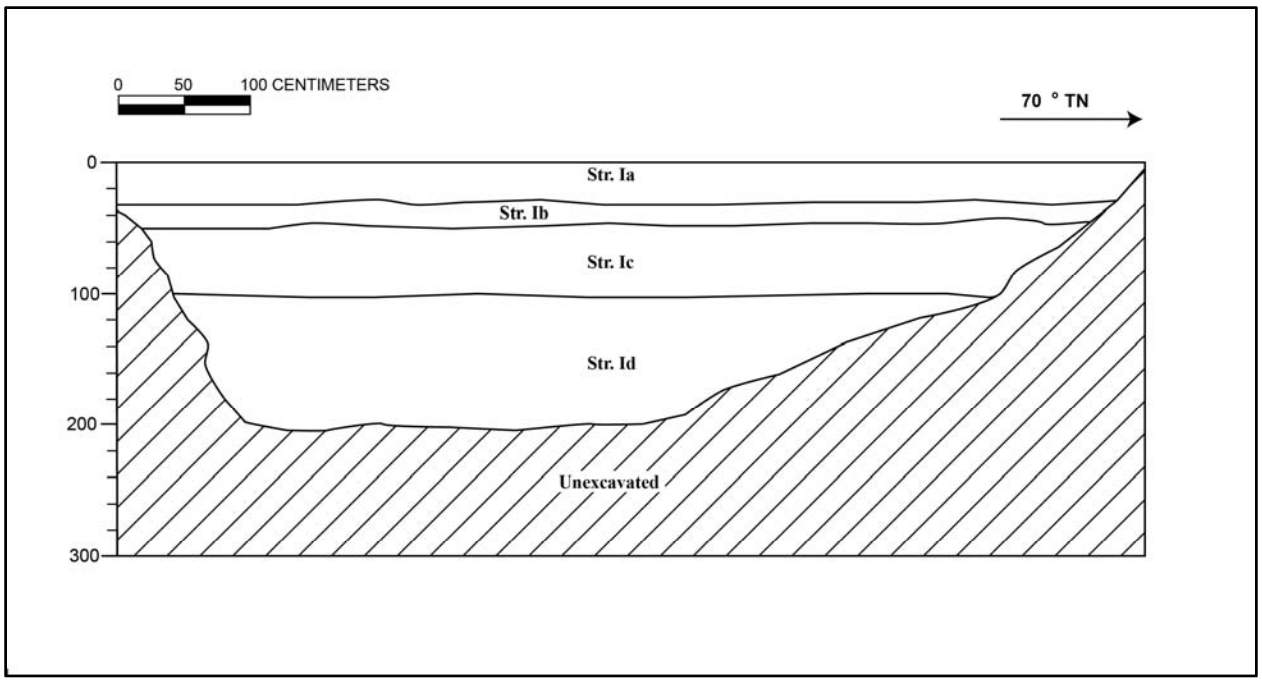


Figure 29. T-2, north wall profile

Table 6. Stratigraphic Description of T-2 North Wall

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–30	A horizon; 10 YR 4/6, dark yellowish brown; clay loam; weak, fine, blocky structure; dry, hard consistence; no cementation; plastic; mixed origin; clear, smooth lower boundary; many fine to coarse roots observed; compact layer; 30% angular basalt pebbles
Ib	30–45	Fill; 10YR 7/1, light gray; medium sand; structureless (single-grain); dry, hard consistence; no cementation; non-plastic; marine origin; very abrupt, smooth lower boundary; common, fine to medium roots observed; *‘ulu maika* and polished flake observed and collected; fine coral pebbles; construction layer fill of concrete and mortar (demolition material)
Ic	45–100	Fill; 2.5 YR 4/4, reddish brown; clay loam; moderate, fine, crumb structure; dry, weakly coherent consistence; no cementation; plastic; terrigenous origin; abrupt, smooth lower boundary; few fine to medium roots observed; 40% angular basalt pebbles and cobbles
Id	100–200 (BOE)	Fill; 10R 3/6, dark red; clay; strong, medium, blocky structure; dry, hard consistence; weak cementation; plastic; terrigenous origin; lower boundary not visible; no roots observed; 10% basalt angular

Section 5 Results of Laboratory Analysis

Three artifacts were recovered from T-2 (Table 7). Two traditional artifacts were recovered, one basalt adze rejuvenation flake (Figure 30) and one coral *‘ulu maika* (stone disk) (Figure 31). Acc # 1 is a flake removed from a polished adze, with a prepared platform (either faceted or complex but difficult to tell without magnification), and hinged termination. Based on the nature of removal and prepared platform, the flake was likely removed during tool curation, specifically adze rejuvenation. Acc. # 2 is a coral *‘ulu maika* stone. The circular disk has flat sides with a flattened, but slightly convex axis, and measures 6.4 cm in diameter with a thickness of 3.1 cm. *‘Ulu maika* is a gaming stone used in the traditional *maika* (ancient Hawaiian game suggesting bowling) game played during the *makahiki* (commencement of the year) festival period. The *maika* game involved throwing or rolling an *‘ulu maika* down a prepared *kahua* (course) toward two sticks stuck in the ground only a few inches apart. The goal of the game was to throw or roll the stone disk between the sticks without striking either; or sometimes to see who could roll it the farthest (Ellis 1984:198; Buck 1964:372).

Acc. # 3 is a porcelain tableware fragment. This type of Japanese ceramic of the Meiji Period (1868–1912) is usually called “Dashed Lines,” as dashed lines outline major design elements made with patterned dots (Costello and Maniery 1988:25 Figure 32). These transfer print patterns were made with paper stencils, a decoration-making method used until the end of the eighteenth century and then revived in the 1870s. This type of decoration technique went out of style in Japan by approximately 1920 (Ross 2012:5, 7).

Table 7. Artifacts Recovered from Project Area

Acc. #	Test Exc. #	Str.	Depth	Material	Type	Description	Count	Weight (g)	Age
0001	T-2	Ib	30-45	Stone	Flake	Polished basalt flake, adze rejuvenation flake	1	1.6	
0002	T-2	Ib	30-45	Coral	*‘Ulu maika*	Coral *‘ulu maika* stone, slightly convex axis	1	158.8	
0003	T-2	Ib	30-45	Ceramic	Tableware	Porcelain base fragment, Japanese dashed line transfer print on interior, unglazed interior footring on exterior	1	12.2	1870-1920

Figure 30. Acc. # 1, basalt adze rejuvenation flake

Figure 31. Acc. # 2, coral *‘ulu maika* stone

Figure 32. Acc. # 3, porcelain tableware fragment with Japanese dashed-line transfer print

Section 6 Historic Property Descriptions

Four historic properties were identified within the current project APE during this AIS. Two are newly identified and two were previously documented. They are summarized in Table 8 and their distributions are depicted on Figure 33 and Figure 34.

Table 8. Sites Identified within the Current Project Area

SIHP # 50-30-08	Formal Type	Function
-2278	Bridge (Kapa‘a Stream Bridge)	Transportation
-2279	Complex	Water Control
-0789A Sub-Feature 1	Bridge (Keālia Stream Bridge)	Transportation
-2075	Historic Bridge Foundation (Kaua‘i Belt Road, Keālia Bridge)	Transportation

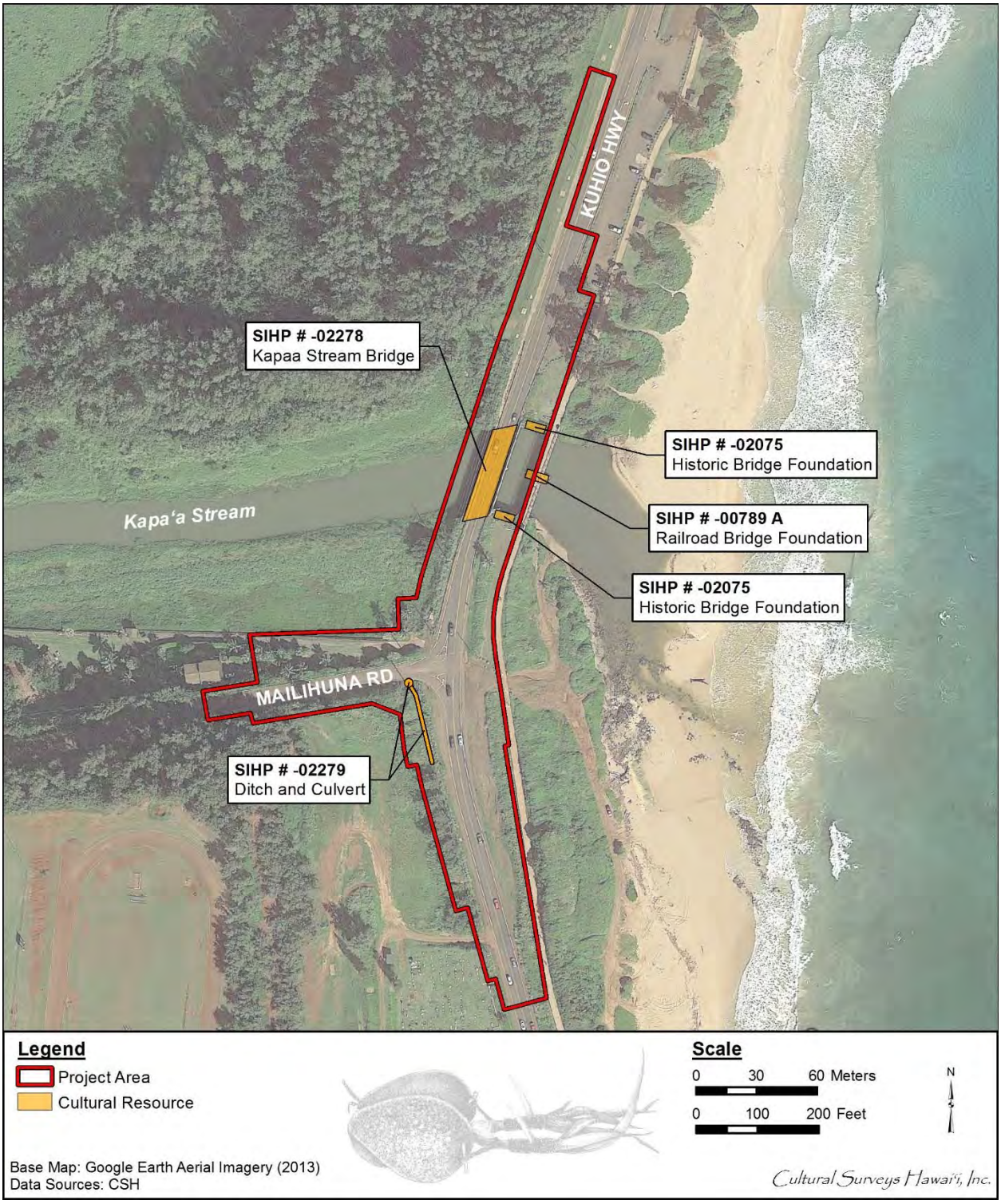


Figure 33. 2013 aerial photograph showing the locations of historic properties within the project APE (Google Earth 2013)

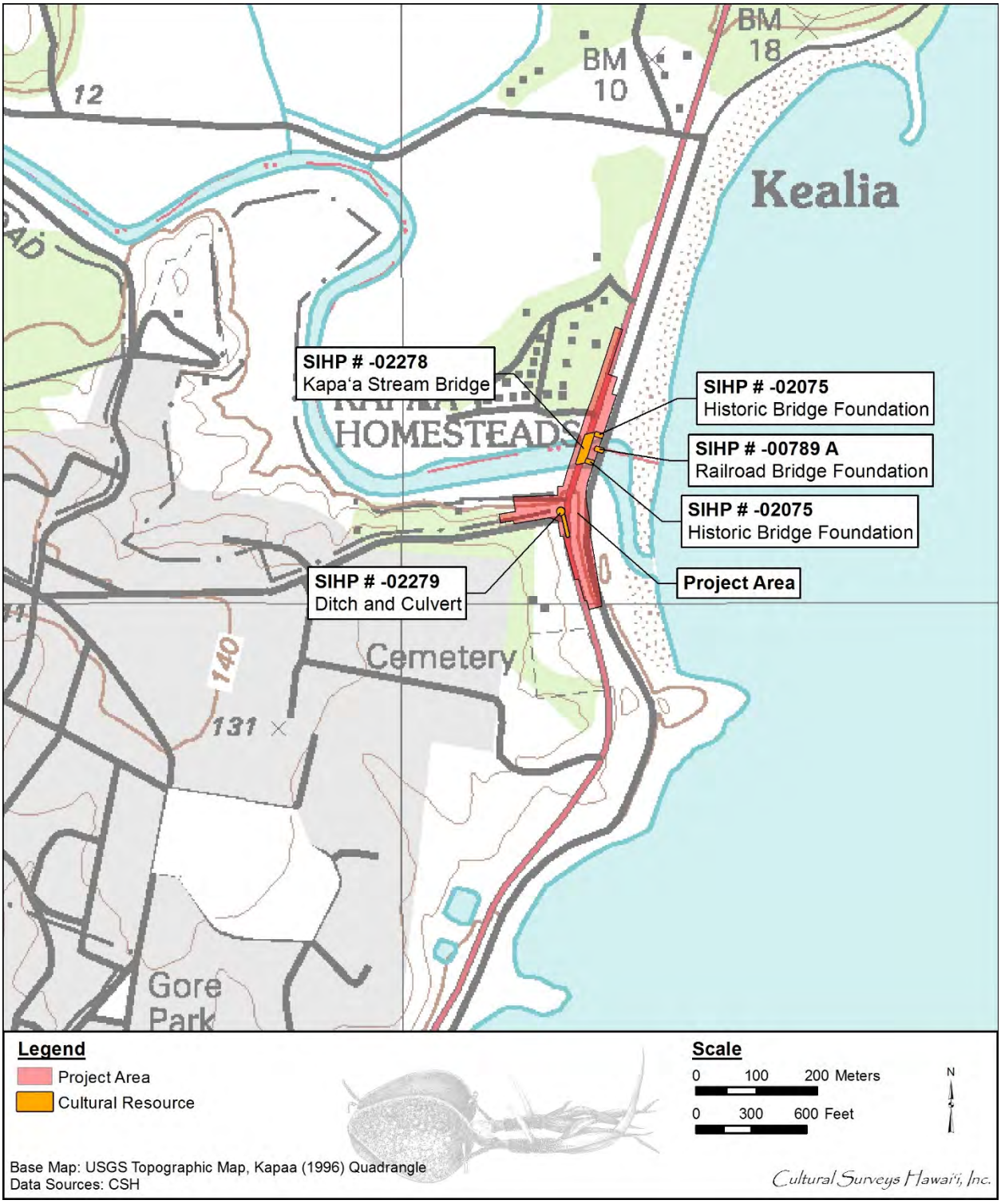


Figure 34. Portion of 1996 Kapaa USGS topographic quadrangle showing the locations of historic properties within the project APE

6.1 SIHP # 50-30-08-2278

FORMAL TYPE:	Bridge (Kapa‘a Stream Bridge)
FUNCTION:	Transportation
NUMBER OF FEATURES:	1
AGE:	Historic (1953)
TEST EXCAVATIONS:	None
TAX MAP KEY:	[4] 4-7-003 Kūhiō Highway Right-of-Way
LAND JURISDICTION:	HDOT
PREVIOUS DOCUMENTATION:	MKE Associates LLC/Fung Associates, Inc. 2013

SIHP # -2278 is Kapa‘a Stream Bridge, located near mile post 10 along Route 56 (Kūhiō Highway) (see Figure 33 and Figure 34) and entirely within the project APE (Figure 35 through Figure 38). The existing Kapa‘a Stream Bridge structure was built in 1953 and spans Kapa‘a Stream. Kapa‘a Stream Bridge is identified as a concrete T-beam bridge. The bridge is approximately 46 m (150 ft) long and 12.0 m (39 ft) from out to out.

The State Historic Bridge Inventory Evaluation (MKE Associates LLC/Fung Associates, Inc. 2013:3-6) describes Kapa‘a Stream Bridge as “a typical post-war bridge and falls under program comments.” The status of “program comments” refers to common post-war bridges built after 1945 covered by the Advisory Council program comments. Hawai‘i has not yet coordinated the inventory results with their Federal Preservation Office, so is currently not operating under the Program Comments exceptions.

In consultation with the SHPD architecture branch, it was determined that the Kapa‘a Stream Bridge (SIHP # -2278) is not eligible for listing in the National Register or in the Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively. The bridge is significant only under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). The SHPD architecture staff indicated that the bridge had been adequately documented. Thus, no architectural recordation was conducted.

Figure 35. SIHP # -2278, Kapa‘a Stream Bridge deck and railings, view to south

Figure 36. SIHP # -2278, Kapa‘a Stream Bridge deck and railings, view to north

Figure 37. Overview of SIHP # -2278, Kapa‘a Stream Bridge, view to northwest

Figure 38. Overview of SIHP # -2278, Kapa‘a Stream Bridge, view to southwest

6.2 SIHP # 50-30-08-2279

FORMAL TYPE:	Complex
FUNCTION:	Water control
NUMBER OF FEATURES:	2
AGE:	Historic
TEST EXCAVATIONS:	None
TAX MAP KEY:	[4] 4-7-003 Kūhiō Highway Right-of-Way
LAND JURISDICTION:	HDOT
PREVIOUS DOCUMENTATION:	None

SIHP # -2279 is a complex consisting of two features (Features A and B) located on the west side of Mailihuna Road and north side of Kūhiō Highway within the project APE (see Figure 33 and Figure 34).

Feature A is an earthen ditch remnant that extends north to south along the western shoulder of Kūhiō Highway to the edge of Mailihuna Road entirely within the project APE. The ditch measures approximately 45.0 m (147.6 ft) long and 2.25 m (7.4 ft) wide with an average depth of 0.4 m (1.3 ft) (Figure 39 and Figure 40). Immediately west of, and parallel to, the earthen ditch is an approximately 6-m high earthen berm. Feature A bends slightly to the northwest as it reaches Mailihuna Road and perpendicularly intersects Feature B at the Mailihuna Road and Kūhiō Highway juncture as a means to drain rainwater runoff underneath Kūhiō Highway (Figure 41).

Feature B is a culvert remnant located on the southern corner of Mailihuna Road and Kūhiō Highway and entirely within the project APE. The culvert is constructed of concrete. The exposed portion of the culvert measures approximately 0.7 m (2.3 ft) long by 0.5 m (1.6 ft) wide (Figure 42 through Figure 44). No similar culvert structure was identified on the opposite (north) side of the road during the field inspection.

The exact age of SIHP # -2279 is unclear, however, it was possibly built during the construction of Kūhiō Highway in 1953. It also could be a more modern feature, installed after the construction of Kūhiō Highway.

SIHP # -2279, a possibly historic water control complex, was assessed as significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). This historic property possesses integrity of location, design, and materials. However, its age of construction remains unknown. SIHP # -2279 is evaluated as not eligible for inclusion in the National Register or in the Hawai‘i Register.

Figure 39. SIHP # -2279 Feature A, an earthen ditch remnant, view to northwest

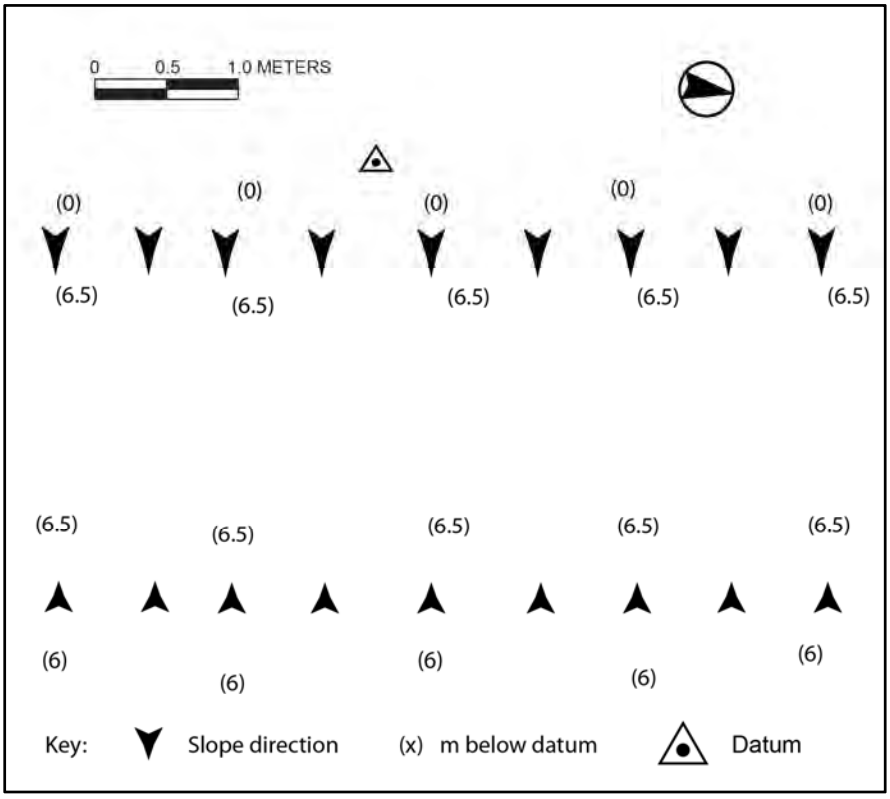


Figure 40. Plan view of a portion of the earthen ditch (SIHP # -2279, Feature A)

Figure 41. Junction of SIHP # -2279 Features A and B near intersection of Mailihuna Road and Kūhiō Highway, view to east

Figure 42. SIHP # -2279 Feature B, a concrete culvert, view to west

Figure 43. Close-up of concrete culvert (SIHP # -2279 Feature B), view to northwest

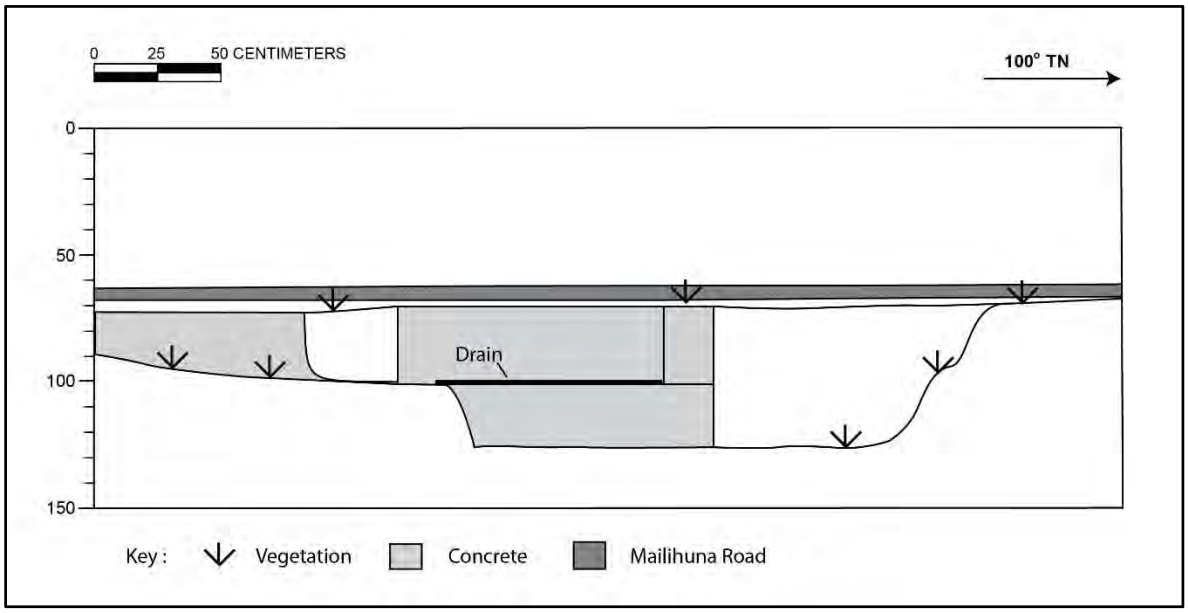


Figure 44. Profile of SIHP # -2279, Feature B, showing culvert box and drain

6.3 SIHP # 50-30-08-0789A Sub-Feature 1

FORMAL TYPE:	Bridge
FUNCTION:	Transportation
NUMBER OF FEATURES:	1
AGE:	Historic
TEST EXCAVATIONS:	None
TAX MAP KEY:	[4] 4-6-014:090
LAND JURISDICTION:	State of Hawai‘i, HDOT
PREVIOUS DOCUMENTATION:	Bushnell et al. 2003

SIHP # -0789A Sub-Feature 1 includes remnant portions of the original Keālia Stream Bridge Crossing (see Figure 33 and Figure 34), previously documented by Bushnell et al. (2003:80–83) as follows:

> Substantial portions of the original Kealia Stream Bridge Crossing were documented approximately 25-feet east of Kuhio Highway. The Kealia Stream Bridge Crossing measures approximately 42 m. in overall length, 6 m. in width, and 2.5 m. in height. Sixteen overhead bridge beams are present every 3.5 meters on either side of the bridge. These overhead bridge beams are approximately 1.80 cm in height and are in fairly poor condition. Between several of the overhead bridge beams, original cable cords strung horizontally, and are also in very poor condition. Supporting the bridge are two concrete foundations, which appear to have been constructed and re-constructed in several different phases. The original concrete foundation is partially collapsing, and a second brick foundation was constructed directly above the concrete foundation. Remnants of the original horizontal rails still exist, however in more recent years asphalt has been placed over the rails in order to accommodate the existing pedestrian right-of-way. The rails are rusty and in very poor condition. During low tide, the bridge remains at approximately 4.5 m. above stream level. [Bushnell et al. 2003:80–83]

As part of the work associated with the Kapa‘a-Keālia Bike and Pedestrian Path project in recent years, the steel superstructure of SIHP # -0789A Sub-Feature 1 was removed and replaced with new pre-cast pre-stressed concrete girders and slab spanning between the abutments and the existing center pier. The only remaining portion of the bridge observed within the project APE included the partially collapsed, mortared basalt and concrete pier located within Kapa‘a Stream beneath the modern bridge span (Figure 45 through Figure 48). The remnant bridge pier is approximately 6.0 m (19.7 ft) long by 3.0 m (9.8 ft) wide with a maximum exposed height of 4.5 m (14.8 ft).

SIHP # -0789A, Sub-Feature 1 consists of the remnant portions of the original Keālia Stream Bridge Crossing initially documented by Perzinski et al. (2000) and further documented by Bushnell et al. (2003). Perzinski et al. (2000) and Bushnell et al. (2003) assessed the bridge crossing remnants (SIHP # -789A, Feature 1) as significant under Criterion d (have yielded, or

Figure 45. SIHP # -789A Sub-Feature 1 beneath modern pedestrian bridge span, view to northwest

Figure 46. SIHP # -789A Sub-Feature 1, close-up of bridge pier, view to east

Figure 47. SIHP # -789A Sub-Feature 1, overview of the east side of the bridge pier, view to east

Figure 48. SIHP # -789A Sub-Feature 1, overview of the west side of the bridge pier, view to west

is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. The bridge crossing remnants lack integrity of design, workmanship, feeling and association. The bridge crossing remnants (SIHP # -789A, Feature 1) are evaluated as not eligible in the National Register or the Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.

6.4 SIHP # 50-30-08-2075

FORMAL TYPE:	Historic bridge foundation
FUNCTION:	Transportation
NUMBER OF FEATURES:	1
AGE:	Historic
TEST EXCAVATIONS:	None
TAX MAP KEY:	[4] 4-6-014:090 and 4-7-003 Kūhiō Highway Right-of-Way
LAND JURISDICTION:	State of Hawai‘i; HDOT
PREVIOUS DOCUMENTATION:	Bushnell et al. 2003

SIHP # -2075 consists of the remnant abutments of the former Kaua‘i Belt Road, Keālia Bridge located between SIHP # -2278 (Kapa‘a Stream Bridge) (see Figure 33 and Figure 34) and SIHP # -789A Sub-Feature 1 (Keālia Stream Bridge Crossing) (Figure 49 and Figure 50).

SIHP # -2075 was previously described by Bushnell et al. (2003:83) as follows:

> Supportive concrete foundations of the old Kauai Belt Road, Keālia Bridge, were documented at the south and north end of Keālia Stream. The foundation was observed between the new Kūhiō Highway Bridge and the old Keālia Stream railroad bridge (State Site 50-30-08-789 Feature A, Sub-feature 1).
>
> At the north end, the concrete foundation is approximately 10 m. in length, 5.24 m. in width, and 8.95 m. in overall height. Two railroad support beams measuring 89 cm in length, by 78 cm in width, and 95 cm in height were further documented.
>
> The support beams are approximately 7.5 m. apart from one another. The ledge by which the support beams are sitting is approximately 1.75 m. above surface, and approximately 8.5 m in width. The concrete foundation at the north end is in moderate to poor condition, and exhibits substantial graffiti markings. At the south end, the bridge foundation maintains the same dimensions as the north end. Substantial weather damage and deterioration was observed upon the south end. [Bushnell et al. 2003:83]

The date of “April 29, 1932” was observed inscribed into the concrete on the eastern side of the southern bridge abutment of SIHP # -2075 and the initials “JK” were inscribed on the western side of the southern bridge abutment (Figure 51 and Figure 52).

SIHP # -2075 consists of the remnant abutments of the former Kaua‘i Belt Road, Keālia Bridge initially documented by Bushnell et al. (2003). Bushnell et al. (2003) assessed SIHP # -2075 as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. The bridge remnants lack integrity of design, materials, workmanship, feeling and association. Thus, the old belt highway bridge remnants (SIHP # -2075) are evaluated as not eligible for listing in the National Register or the Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.

Figure 49. SIHP # -2075, northern bridge abutment, view to northeast

Figure 50. SIHP # -2075 southern bridge abutment, view to west

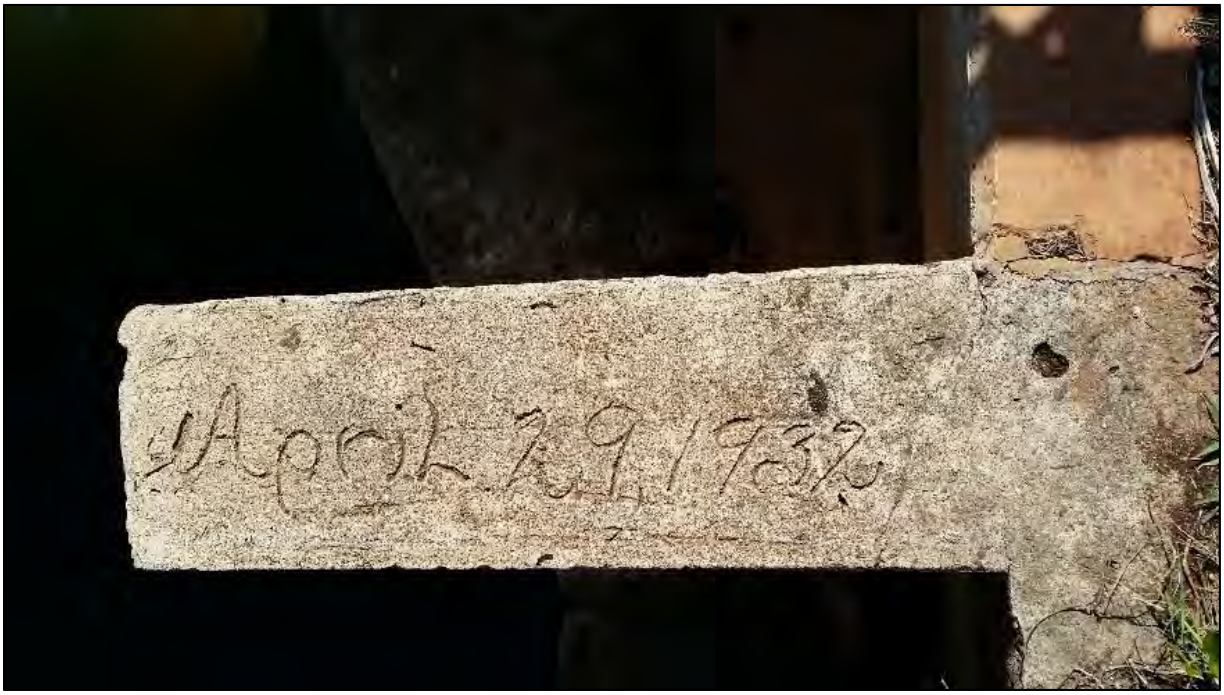


Figure 51. SIHP # -2075, showing the inscription of “April 29, 1932” on the eastern side of the southern abutment, view to east

Figure 52. SIHP # -2075, showing the inscription of “JK” on the western side of the southern abutment, view to northeast

Section 7 Summary and Interpretation

At the request of CH2M HILL and on behalf of the FHWA CFLHD, CSH completed this archaeological inventory survey report for the Kapa‘a Stream Bridge Replacement project, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, FHWA/CFLHD contract DTFH68-13-R-00027 TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway Right-of-Way.

Background research included various mythological and traditional accounts as well as historical information from the Kapa‘a and Keālia Ahupua‘a. Research indicates this area was rich in pre-Contact history, with references to several persons of high status and gods. Several *heiau* have been recorded in this area, however, locations of many of the *heiau* are unknown. This suggests the area was more significantly inhabited and/or utilized than is seen in the historic period.

Historically, the population of Kapa‘a has been documented as fairly sparse with some small settlements near the shore and *lo‘i* in the inland swamps. Keālia, on the other hand, boasted a relatively larger population, likely due to the Keālia River Valley, now known as Kapa’a Stream. There is one Land Commission Award on the northern end of Keālia Beach, approximately 100 m (328.1 ft) north of the project APE; subsurface testing in this locale has yielded evidence of human occupation ranging from pre-Contact times to the plantation era.

In the mid-1800s, plantation-style agriculture took root in the area. The earliest successful economic enterprise by a westerner in these *ahupua‘a* was the Krull Ranch and Dairy, which operated in the Kumukumu area in the 1860s. In 1877, the Makee Sugar Plantation was established in conjunction with members of the Hui Kawaihau, several of whom were retainers in Kalākaua’s court. The Makee Plantation built a mill and landing at Kapa‘a as part of the plantation infrastructure, known today as Makee Landing or the Kapa‘a Wharf. Following the move of the Kapa‘a mill to Keālia in 1885, a railroad was built from Makee Landing to Keālia with another railroad arm leading across the Moikeha drainage up Lehua Street and into the *mauka* regions of Kapa‘a. The *mauka* Moikeha Railroad Bridge (SIHP # -2078, Feature D) and the Old Kealia Railroad Bridge/Cane Haul Road (SIHP # -789A, Sub-Feature I) represent a part of the first railroad system constructed ca. 1891 to transport sugar cane.

In 1913, the pineapple industry started operations in Kapa‘a, with the opening of Hawaiian Cannery Companies, Ltd. A cannery was constructed on land north of Waika‘ea Canal. This cannery was in business for almost 50 years and made use of the railroad track that fronted it to transport pineapple to Ahukini Landing for shipment and also to send pineapple waste to the “pineapple dump” north of Keālia. As an economic force, tourism has taken the place of agriculture in the last several decades. The old railroad alignment in the Kapa‘a Town area was converted into a bike path in the 1980s.

Portions of the current project APE have been subject to previous archaeological studies. The northern portion of the project APE was included within a large archaeological reconnaissance survey of Keālia Ahupua’a (Hammatt and Chiogioji 1998). No historic properties were reported within or near the current project APE. The western (*mauka*) portion of the project APE along Kūhiō Highway was subject to archaeological monitoring during the installation of the Kaua‘i Rural Fiber-optic Duct Lines (Dega and Powell 2003). No historic properties were identified. Bushnell et al. (2003) conducted an AIS for the Kapa‘a/Keālia Bike and Pedestrian Path. Two

historic properties were identified within the project APE including the Old Kaua‘i Belt Highway bridge foundation (SIHP # -2075) and a new sub-feature of SIHP # -0789: Feature A, Kapa‘a Stream Cane Haul Road Bridge (SIHP # -0789: Feature A, Sub-Feature 1).

During the current AIS, two newly identified historic properties were documented within the project APE. The two historic properties included SIHP # -2278, the Kapa‘a Stream Bridge, and SIHP # -2279, a possibly historic water control complex.

SIHP # -2278, Kapa‘a Stream Bridge was constructed in 1953 and is a typical post-war bridge constructed of concrete. The bridge spans Kapa‘a Stream (formerly Keālia River). SIHP # -2279, a possible historic water control complex was observed extending along the shoulder of Kūhiō Highway (Route 56) and terminating at the intersection of the highway and Mailihuna Road. The water control complex consisted of two features consisting of an earthen ditch (Feature A) that terminates at a concrete culvert (Feature B). The terminus of the concrete culvert was not located.

Section 8 Significance Assessments

As discussed in Section 1.2, historic properties are generally at least 50 years old (although there are exceptions) and include buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and, in some instances, natural landscape features and/or geographic locations of cultural significance. The current investigation was tasked with the identification of archaeological historic properties.

For a historic property to be significant under HAR §13-275-6, the historic property should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association, and meet one or more of the following criterion:

a Be associated with events that have made an important contribution to the broad patterns of our history;

b Be associated with the lives of persons important in our past;

c Embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value;

d Have yielded, or is likely to yield, information important for research on prehistory or history; or

e Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

Historic property significance is evaluated and expressed as eligibility for listing in the National Register (pursuant to 36 CFR 60.4) or the Hawai‘i Register (pursuant to HAR §13-198-8). To be considered eligible for listing in the National and/or Hawai‘i Register, a historic property should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association, and meet one or more of the following broad significance criteria:

A that are associated with events that have made a significant contribution to the broad patterns of our history;

B that are associated with the lives of persons significant in our past;

C that embody the distinctive characteristics of a type, period, or method of construction, or that represent that work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;

D that have yielded, or may be likely to yield, information important in prehistory or history;

In consultation with the SHPD architecture branch, it was determined that the Kapa‘a Stream Bridge (SIHP # 50-30-08-2278) is not eligible for listing in the National Register or in the Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively. SHPD staff also indicated that the bridge was adequately documented. Thus, no architectural recordation was conducted. The bridge was assessed as significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history).

SIHP # -2279, a possibly historic water control complex, was assessed as significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). The bridge was evaluated as not eligible for listing in the National Register or the Hawai‘i Register. It possesses integrity of location, design, and materials. However, its age of construction remains unknown.

SIHP # -0789A, Sub-Feature 1 consists of the remnant portions of the original Keālia Stream Bridge Crossing initially documented by Perzinski et al. (2000) and further documented by Bushnell et al. (2003). Perzinski et al. (2000) and Bushnell et al. (2003) assessed the bridge crossing remnants (SIHP # -789A, Feature 1) as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. These remnants lack integrity of design, workmanship, setting, feeling and association. Thus, the bridge crossing remnants (SIHP # -789A, Feature 1) are evaluated as not eligible for listing in the National Register or the Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.

SIHP # -2075 consists of the remnant abutments of the former Kaua‘i Belt Road, Keālia Bridge initially documented by Bushnell et al. (2003). Bushnell et al. (2003) assessed SIHP # -2075 as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. The bridge remnants lack integrity of design, materials, workmanship, feeling and association. These remnants (SIHP # -2075) are evaluated as not eligible for listing in the National Register or in the Hawai‘i Register pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.

Section 9 Project Effect and Mitigation Recommendations

9.1 Project Effect

Four historic properties (SIHP #s -789A, -2075, -2278, and -2279) were identified within the project APE. Each was evaluated as not eligible for listing in the National Register or in the Hawai‘i Register.

In accordance with Federal regulations (36 CFR 800.5), the project effect recommendation is "No historic properties affected." No National Register-eligible historic properties occur within the project APE. In accordance with Hawai‘i State regulation (HAR §13-275-7), the project effect recommendation is "no historic properties affected." Each of the significant historic properties have been adequately documented.

9.2 Mitigation Recommendations

No further archaeological work is recommended. Each of the significant historic properties have been adequately documented. At the request of the project proponent, precautionary archaeological monitoring is planned as a good faith effort, based on community consultation.

Section 10 References Cited

Akina, Joseph

1913 I Ke hou i Ka Lulu-o-Moikeha i ka laula o kapaa. *Kuokoa* 2–9 May 1913. HEN Place Names, Kaua‘i. Bishop Museum Archives, Honolulu.

Alexander, William Patterson

1991 A Tour of Kauai in 1849: Private Journal of William DeWitt Alexander. *The Kauai Papers*, Kauai Historical Society, Līhu‘e, Kaua‘i, Hawai‘i.

Barrera, W.M., Jr. and P.V. Kirch

1973 Basaltic-Glass Artifacts from Hawaii: Their Dating and Prehistoric Uses. *Journal of the Polynesian Society*, 82:176–187. University of Auckland, Auckland, New Zealand.

Beckwith, Martha

1970 *Hawaiian Mythology*. University of Hawaii Press, Honolulu.

Bennett, Wendell C.

1931 *The Archaeology of Kaua‘i*. Bishop Museum Bulletin 80. Bernice Pauahi Bishop Museum, Honolulu.

Brigham, William T.

1974 *Stone Implements and Stone Work of the Ancient Hawaiians.* Memoirs of the Bernice Pauahi Bishop Museum, Vol I, No. 4. Kraus Reprint Company, Millwood, New York.

Buck, Peter H. (Te Rangi Hīroa)

1964 *Arts and Crafts of Hawaii: Section VIII Games and Recreation*. Bishop Museum Special Publication 45. Bishop Museum Press, Honolulu.

2003 *Arts and Crafts of Hawaii.* Bishop Museum Special Publication 45. Bishop Museum Press, Honolulu.

Bushnell, K.W., David W. Shideler, and Hallett H. Hammatt

2003 *Cultural Impact Assessment for the Proposed Kapa‘a-Keālia Bike and Pedestrian Path, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i Island, Hawai‘i (TMK: 4-5, 4-6-14, 4-7-03 & 04), Volume I and II)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Bushnell, K.W., Melanie Mann, Douglas Borthwick, Tony Bush, Todd Tulchin, David W. Shideler, and Hallett H. Hammatt

2003 *Archaeological Inventory Survey for the Proposed Kapa‘a-Keālia Bike and Pedestrian Path, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i Island, Hawai‘i (TMK: 4-5, 4-6-14, 4-7-03 & 04).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Chinen, Jon J.

1958 *The Great Māhele, Hawaii’s Land Division of 1848.* University of Hawaii Press, Honolulu.

Clark, John R.K.
2002 *Hawai‘i Place Names, Shores, Beaches, and Surf Sites*. University of Hawai‘i Press, Honolulu.

Commissioner of Public Lands. Hawai‘i (Territory)
1929 *Indices of Awards made by the Board of Commissions to Quiet land Titles in the Hawaiian Islands.* Hawai‘i State Archives, Honolulu.

Condé, Jesse C. and Gerald M. Best
1973 *Sugar Trains, Narrow Gauge Rails of Hawaii*. Glenwood Publishers, Felton, California.

Cook, Chris
1999 *Kaua‘i, the Garden Island: A Pictorial History of the Commerce and Work of the People.* Donning Company, Virginia Beach, Virginia.

Costello, Julia G. and Mary L. Maniery
1988 *Rice Bowls in the Delta: Artifacts Recovered from the 1915 Asian Community of Walnut Grove. California.* Occasional Paper 16. Institute of Archaeology, UCLA, Los Angeles, California.

Coulter, John Wesley
1931 *Population and Utilization of Land and Sea in Hawaii, 1853.* Bishop Museum Bulletin 88. Bernice Pauahi Bishop Museum, Honolulu.

Damon, Ethel M.
1931 *Koamalu*. 2 Vols. Privately printed at the Honolulu Star-Bulletin Press, Honolulu.

Dega, Michael and James Powell
2003 *Archaeological Monitoring During Phase I of the Kaua‘i Rural Fiber Optic Duct Lines Project, Kaua‘i Island.* Hawai‘i. Scientific Consulting Services, Inc., Honolulu.

Drennan, Trisha M. and Michael Dega
2007a *An Archaeological Inventory Survey Report Phase II of a Portion of 2,008 Acres in Keālia, Keālia Ahupua‘a, Kawaihau District, Island of Kaua‘i, Hawai‘i, [TMK: (4) 4-7-003:002 (por.) AND 4-7-004:001 (por.)]*. Scientific Consultant Services, Inc., Honolulu.

Drennan, T., Cathleen Dagher, and Robert L. Spear
2006 *An Archaeological Inventory Survey Report Phase I of a portion of 2,008 Acres in Kealia, Kealia Ahupua ‘a, Kawaihau District, Island of Kaua ‘i, Hawai‘i [TMK: (4) 4-7-003:002 (por.) and 4-7-004:001 (por.)]*. Scientific Consultant Services, Inc., Honolulu.

Drennan, Trisha M., Guerin Tome, Shayna Cordle, and Michael Dega
2007 *An Archaeological Inventory Survey Report Phase III of a Portion of 2,008 Acres in Keālia, Keālia Ahupua‘a, Kawaihau District, Island of Kaua‘i, Hawai‘i, [TMK: (4) 4-7-003:002 (por.) AND 4-7-004:001 (por.)]*. Scientific Consultant Services, Inc., Honolulu.

Dole, Charles S.
1916 The Hui Kawaihau. Paper read at the November meeting of the Kauai Historical Society on 16 November 1916. Līhu‘e, Kaua‘i, Hawai‘i.

Donohugh, Donald
2001 *The Story of Kōloa, A Kauai Plantation Town*. Mutual Publishing, Honolulu.

Elliott, Rex R. and Stephen C. Gould
1988 *Hawaiian Bottles of Long Ago: A Little of Hawaii's Past.* Hawaiian Service, Honolulu.

Ellis, William
1984 *Polynesian Researches Hawaii–Journal of William Ellis*. Fifth edition. Charles E. Tuttle Company, North Clarendon, Vermont.

Elmore, Michelle and Joseph Kennedy
2003 *An Archaeological Monitoring Report for the Proposed Kuhio Highway Drainage Improvements Project at Kapa‘a and Anahola (Project # 56AC-01-01) Located in Kawaihau District, Island of Kaua‘i*. Archaeological Consultants of the Pacific, Inc., Haleiwa, Hawai‘i.

Emory, Kenneth Pike, William J. Bonk, and Yoshihiko H. Sinoto
1968 *Fishhooks.* Bernice Pauahi Bishop Museum Special Publication Volume 47. Bishop Museum Press, Honolulu.

Fernandez, Bill
2009 *Rainbows Over Kapa‘a.* Central Pacific Media, Hawai‘i.

Fike, R.E.
1987 *The Bottle Book: A Comprehensive Guide to Historic, Embossed Medicine Bottles.* Peregrine Smith Books, Salt Land City, Idaho.

Folk, William H. and Hallett H. Hammatt
1991 *Field Inspection, Surface Collection and Assessment at Keālia Sand Quarry Site*. Letter report on file at Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawai‘i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

Fornander, Abraham
1916-1919 *Fornander Collection of Hawaiian Antiquities and Folk-Lore*. Volume 4. Thomas G. Thrum, translator and editor. Memoirs of the Bernice Pauahi Bishop Museum. Bernice Pauahi Bishop Museum, Honolulu.

Garden Island
1955 Geologists Says Kapaa Coral Removal No Threat to Town. *Garden Island* 21 September.

1963 Kapaa Blames Federal Role As Erosion Continues. Says Barrier on Reef is Required. *Garden Island* 30 October.

1983 Article. *Garden Island* April.

2010 Article. *Garden Island*. Online at www.gardenisland.com.

Godden, Geoffrey A.

1964 *Encyclopaedia of British Pottery and Porcelain Marks.* Herbert Jenkins, London.

Google Earth

2013 Aerial photographs of Hawai‘i. Google Inc., Mountain View, California. Available online at www.google.com/earth.html.

Graves, Michael and Windy K. McElroy

2004 *Advancing Archaeological Classificiation of Fish Hooks from Hawai‘i: A Case Study from Nu‘alolo Kai, Kaua‘i.* University of Hawai‘i, Honolulu.

Hammatt, Hallett H., Rodney Chiogioji, Gerald K. Ida, Victoria S. Creed, and Jerome V. Ward

1997 *An Archaeological Inventory Survey for the Kūhiō Highway Widening and Bypass Options within the Ahupua‘a of Wailua, South Olohena, North Olohena, Waipouli & Kapa‘a, Island of Kaua‘i,* with Appendix on Palynology. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hammatt, Hallett H. and David W. Shideler

2006 *Archaeological Literature Review and Field Check Study of Eight DOE Schools, Island of Kawaui‘I Hawai‘i Inter-Island DOE Cesspool Project.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hammatt, Hallett H. and Rodney Chiogioji

1998 *Archaeological Reconnaissance Survey and Assessment of the Lands of Keālia Ahupua‘a (6,690.9 Acres), Kawaihau District, Kaua‘i Island TMK 4-6-08:07, 4-7-01:01, 4-7-02:03, 47-02:05, 4-7-03:02, 4-7-04:01, 4-7-04:06.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Handy, E.S. Craighill and Elizabeth G. Handy

1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum Bulletin 233. Bernice Pauahi Bishop Museum, Honolulu.

Hawai‘i Bureau of Conveyances

1846- Hawai‘i. Bureau of Conveyances, Book 59:1-2. Department of Land and Natural Resources, Honolulu.

Hawai‘i State Archives

1837 Interior Department, Land, Incoming Letter. August 1837. Hawai‘i State Archives, Honolulu.

1881 Interior Department, Letterbook, Letter from Z.S. Spalding. Hawai‘i State Archives, Honolulu.

1882 Interior Department, Letterbook, Vol. 20. Letter from Spalding to the Honorable Jacob Hardy, Circuit Judge–Fourth Circuit Kauai. Hawai‘i State Archives, Honolulu.

Hawaii State Survey

1854 Hawaiian Islands [map]. Registered Map 141. Kumukumu, Kauai. W.H. Pease, Sur. Scale 10 chains=1”. Hawai‘i State Archives, Honolulu.

Hawai‘i TMK Service

2014 Tax Map Key [4] 4-6-014, 4-7-003, 4-7-088. Hawai‘i TMK Service, Honolulu.

Hawaiian Ethnological Notes (HEN)

1885 *Papers by Lahainaluna Students After Interviews with Old Residents of Kauai.* Hawaiian Ethnological Notes, Vol. 1, Lahainaluna Students Papers, HEN I:214 “Heiaus of Kealia and Kapaa” and “Well Known Things [or Places]”; HEN I: 215 “Famous Things mentioned by Two Men”; HEN I: 216 “Heiaus from Kapaa to Kealia” and “Things for which Kapaa was Known.” Bishop Museum Archives, Honolulu.

Hawaiian Territorial Planning Board

1940 *Master Plan of the Town of Kapaa*. In collaboration with Kauai County Board of Supervisors, Publication No. 8. Advertiser Publishing Company, Honolulu.

Honolulu Advertiser

1960 Kauai Tries to See into Future. *Honolulu Advertiser* 20 March.

Joesting, Edward

1984 *Kauai, The Separate Kingdom*. University of Hawaii Press and Kauai Museum Association, Ltd., Honolulu.

Jourdane, Elaine and Sarah Collins

1996 *Field Inspection of Inadvertent Burial Reported at Keālia, Kaua‘i, State Site # 50-30-08-1851.* State Historic Preservation Division, Department of Land and Natural Resources, Honolulu.

Juvik, Sonia P. and James O. Juvik (editors), Thomas R. Paradise (chief cartographer)

1998 *Atlas of Hawai‘i*. Third edition. University of Hawai‘i Press, Honolulu.

Kalākaua, David

1888 *The Legends and Myths of Hawaii*. R.M. Dagget, editor. Charles L. Webster and Company, New York.

Kamakau, Samuel Manaiakalani

1976 *The Works of the People of Old, Na Hana a ka Po`e Kahiko*, Bishop Museum Special Publication No. 61. Bishop Museum Press, Honolulu.

1992 *Ruling Chiefs of Hawai‘i.* Revised edition. Kamehameha Schools Press, Honolulu.

Kapa‘a Elementary School

1933 *Kapa‘a School 1883-1933: A “Century of Knowledge.*” Kapa‘a Elementary, Kapa‘a, Kaua‘i.

Kikuchi, William K. and Susan Remoaldo

1992 *Cemeteries of Kaua‘i,* Volume 1, Kaua‘i Community College and University of Hawai‘i, Puhi, Kaua‘i, Hawai‘i.

King, Robert D.
1935 Districts in the Hawaiian Islands. In *A Gazetteer of the Territory of Hawaii*, compiled by John Wesley Coulter. University of Hawaii Research Publications, No. 11. University of Hawai‘i, Honolulu.

Kovel, Ralph and Terry Kovel
1986 *Kovels' New Dictionary of Marks: Pottery & Porcelain 1850 to the Present.* Crown Publishers, Inc., New York.

Lai, Violet L., assisted by Kum Pui Lai
1985 *He Was a Ram, Wong Aloiau of Hawaii*. Published for the Hawaii Chinese History Center and the Wong Aloiau Association by University of Hawaii Press, Honolulu.

Lehner, Lois
1988 *Lehner's Encyclopedia of U.S. Marks on Pottery, Porcelain & Clay.* Collector Books, Paducah, Kentucky.

Liborio, S. Māhealani and Hallett H. Hammatt
2016 *Cultural Impact Assessment Report for the Kapa‘a Stream Bridge Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027, TMKs: [4] 4-6-003:001 por., 4-6-014:024 por., 031 por., 033 por., 090 por., 092 por., and 4-7-003 por., Kūhiō Highway Right-of-Way.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Lindsey, Bill
2014 Historic Glass Bottle Identification & Information Website. Accessed at http://www.sha.org/bottle.

Lydgate, John M.
1991 William E. Rowell's Reminiscences of Waimea. In *The Kauai Papers*. Kauai Historical Society, Līhu‘e, Hawai‘i.

Millar, Jim
1988 *The Handbook of Hawaiian Machine Made Soda Bottles*. Soda Mart, Goodletsville, Tennessee.

MKE Associated LLC and Fung Associates, Inc
2013 *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates LLC, ‘Aiea, Hawai‘i.

Munsey, Cecil
1970 *Illustrated guide to Collecting Bottles.* Hawthorn Books, Inc., New York.

Nakuina, Moses K.
1990 *The wind Gourd of La‘amaoma*, Esther T. Mookini and Sarah Nakoa, translators. Kalamaku Press, Honolulu.

Office of Hawaiian Affairs
2014 *Papakilo Database.* Office of Hawaiian Affairs cultural and historical database. Electronic document, http://papakilodatabase.com/main/index.php.

O'Hare, Constance R., David W. Shideler, and Hallett H. Hammatt

2003 *Burial Treatment Plan For Site 50-30-08-2074 Keālia Ahupua‘a, Kawaihau District, Kaua‘i Island, Hawai‘i (TMK 4-7-03:1 Portion)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Perzinski, David, Matt McDermott, and Hallett H. Hammatt

2000 *Archaeological Inventory Survey and Sub-Surface Testing of the Approximately 300 Acre Keālia Makai Parcel, Keālia Ahupua‘a, Kawaihau District, Kaua‘i Island (TMK 4-7-04:6)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Pukui, Mary Kawena

1983 *‘Ōlelo No‘eau: Hawaiian Proverbs and Poetical Sayings*. Bishop Museum Special Publication No.71. Bishop Museum Press, Honolulu.

Railway Modelling

2014 Railway modelling website. Online at www.rmweb.co.uk.

Rice, William Hyde

1974 *Hawaiian Legends.* Bishop Museum Bulletin 3. Honolulu; originally published 1923, Kraus Reprint, Millwood, New York.

1923 *Hawaiian Legends*. Bishop Museum Bulletin 3. Bernice Pauahi Bishop Museum, Honolulu.

Ross, Douglas

2012 *Migration Narratives and Material Traces of Japanese Canadian Heritage Community*. Selected Works of Douglas Ross, Online document, available: http://works.bepress.com/douglas_ross/13

Schmitt, Robert C.

1969 The Population of Northern Kauai in 1847. In *Hawaii Historical Review*, *Selected Readings*, 1969, edited by Richard A. Greer. Hawaiian Historical Society, Honolulu.

1973 The Missionary Censuses of Hawaii. *Pacific Anthropological Records* 20. Honolulu.

Thrum, Thomas G.

1906 Heiaus and Heiau Sites Throughout the Hawaiian Islands, Kauai. In *Hawaiian Almanac and Annual 1907*. Thos. G. Thrum, Honolulu.

1923 *More Hawaiian Folk Tales*. A.C. McClurg & Company, Chicago.

Toulouse, Julian Harrison

1971 *Bottle Makers and their Marks*. Thomas Nelson, Inc., Nashville and New York.

UH SOEST

1950 UH SOEST Kapaa Coast aerial photograph. University of Hawai‘i at Mānoa School of Ocean and Earth Science and Technology–Coastal Geology Group. Online at http://soest.hawaii.edu/

1976 UH SOEST Kapaa Coast aerial photograph. University of Hawai‘i at Mānoa School of Ocean and Earth Science and Technology–Coastal Geology Group. Online at http://soest.hawaii.edu/

U.S. Department of Agriculture

2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas. http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/ (accessed March 2005).

USGS (U.S. Geological Survey)

1910 Kapaa USGS Survey 7.5-Minute Series Topographic Quadrangle. USGS Information Services, Denver, Colorado.

1998 Kapaa USGS Survey 7.5-Minute Series Topographic Quadrangle. USGS Information Services, Denver, Colorado.

Waihona ‘Aina

2000 *The Māhele Database*. Electronic document, http://waihona.com (accessed 10 April 2014).

Whitten, David

2009 *Glass Factory Marks on Bottles*. Electronic document, http://www.myinsulators.om/glass-factories/bottlemarks.html

Wichman, Frederick B.

1998 *Kaua‘i Ancient Place Names and Their Stories*. University of Hawai‘i Press: Honolulu.

Zumwalt, Betty

1980 Ketchup, Pickles, Sauces: 19th Century Food in Glass. M. West Publishers, Fulton, California.

Appendix E
Historic Resource Inventory Form (Reconnaissance Level) for Kapaa Stream Bridge

HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM – Reconnaissance Level

FOR SHPD USE ONLY:	Site # Click here to enter text.	TMK # Click here to enter text.

GENERAL INFORMATION

Common / Present Name: Kapaa Stream Bridge
Historic Name: Kapaa Bridge

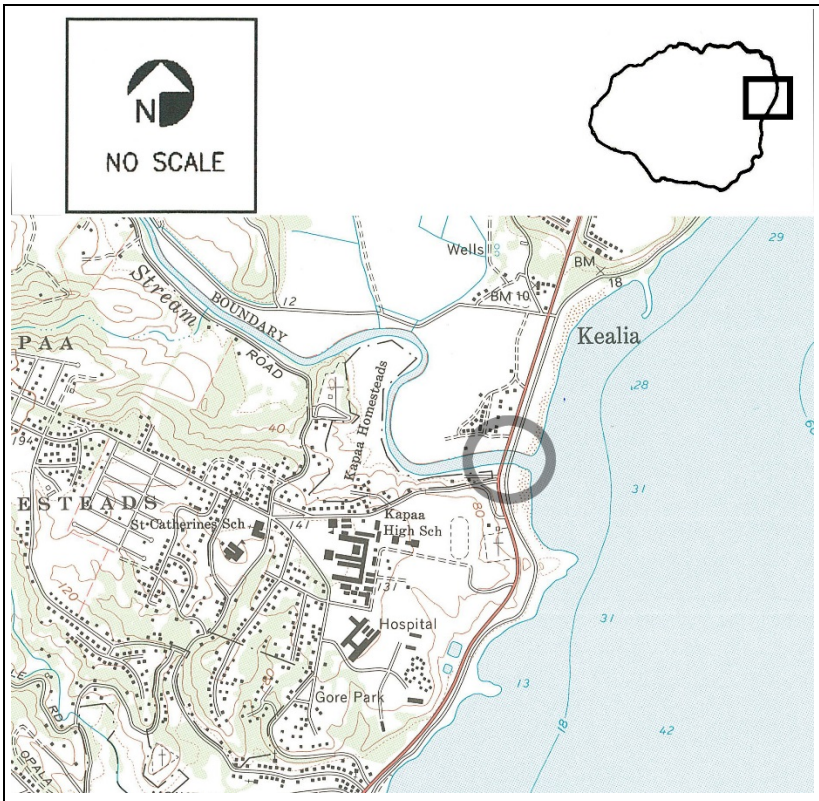
Address: Kuhio Highway (Rt. 56) at Kapaa Stream
City/ Town/ Location: Kealia
County: Kauai
TMK [(X)-X-X-XXX:XXX)]: (4)-4-7-003 Kuhio Highway right of way
Subdivision/Neighborhood: n/a
Latitude: 22d-05m-38.30s N
Longitude: 159d-18m-26.20s W

Original Use: Vehicular bridge
Current Use: Vehicular bridge

Architect/ Builder (if known): William R. Bartels, engineer.
J. M Tanaka, contractor.
Date of Construction (if known): 1953

Kapaa Stream Bridge, view facing north

LOCATION MAP



HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM – Reconnaissance Level

FOR SHPD USE ONLY:	**Site #** Click here to enter text.	**TMK #** Click here to enter text.

Prepared By: Dee Ruzicka Consulting Firm: Mason Architects, Inc.
Address: 119 Merchant St. Suite 501 Honolulu, HI 96813
Telephone Number: 808-536-0556 Email:dr@masonarch.com Date: 17MAR2016

Kapaa Stream Bridge, view facing northwest

Kapaa Stream Bridge, view facing west

CONDITION ASSESSMENT

Category (select all that apply):
- ☐ Building(s)
  - ☐ Residential
  - ☐ Commercial
  - ☐ Educational
  - ☐ Public/Civic
  - ☐ Religious
- ☒ Structure(s)
- ☐ Object(s)
- ☐ Site(s)/Landscape(s)
- ☐ Archaeology or potential for archaeology
  - Describe: _____

Alterations (additions, etc.) if known: Ca. 2002, metal railings were added to the bridge. This consisted of horizontal bikeway railings of square metal tubing that were added atop the original concrete parapets, and in the open space between the concrete rails. Thrie beam railings were also added at the curb at the edges of the sidewalks. Ca. 2010 numerous areas of spalled concrete were repaired. This included spalls on the underside of the bridge deck, the girders, and the concrete parapets.

Original Location, if moved: _____
Reason for move (if known): _____

Condition:
- ☐ Excellent
- ☒ Good
- ☐ Fair
- ☐ Deteriorated

Condition Explanation: _____

Eligibility (select all that apply):
- ☐ National Register of Historic Places
- ☐ State Register of Historic Places
  - ☒ Not Eligible
  - ☐ Eligible
  - ☐ Listed
  - ☐ Contributing to Historic District:

FOR SHPD USE ONLY:	**Site #**Click here to enter text.	**TMK #** Click here to enter text.

Name of District:
☐Unknown

Kapaa Stream Bridge, view facing south

Criteria of Significance (select all that apply)

☐A: Associated with Events
Event:

☐B: Associated with Significant Person(s)
Person(s): _____

☐C: Distinctive characteristics of a type, period or method of construction; work of a master; possess high artistic values (Architecture, Engineering, Design)

☐D: Have yielded or may be likely to yield information important to history or prehistory. Explain: _____

DESCRIPTION

Materials (please check those materials that are visible):

Height

☐Stories: _____
☐Below Ground
☐N/A
☒Other: bridge

Exterior Walls (siding):

☐Aluminum Siding
☐Asbestos
☐Brick
☐Ceramic
☒Concrete
☐Horizontal Wood Siding
☐Log
☐Metal
☐Shingles-Asphalt
☐Shingles-Wood
☐Stone
☐Stucco
☐Vertical Wood Siding
☐Vinyl Siding
☐Engineered Siding
☐Plywood
☐OSB
☐Fiberboard
☐Fiber Cement
☐Other: _____

Roof:

☐Asphalt, shingle
☐Asphalt, roll
☐Other: _____
☐Metal
☐Slate
☐Built Up
☐Ceramic Tile
☐Wood Shingle
☒None

Foundation:

☐Brick
☐Concrete Block
☐Concrete Slab
☐None – on earth
☒Poured Concrete
☐Raised/Pile
☐Stone
☐Other:_____

Structural Support:

☐Baled Hay
☐Concrete Block
☐Concrete Framed
☒Concrete Poured
☐Frame-wood
☐Frame-metal/steel
☐Brick-load bearing
☐Stone-load bearing
☐Puddled Clay
☐Rammed Earth
☐Sod
☐Other: _____

Windows:

FOR SHPD USE ONLY:	**Site #**Click here to enter text.	**TMK #** Click here to enter text.

☐Double Hung Sash
☐Single Hung Sash
☐Casement
☐Fixed
☐Stained Glass

☐Replacement
  ☐Aluminum
  ☐Vinyl
☐Jalousie
☐Ribbon

☐Glass Block
☒None/Unknown
☐Other: _____

Lanai(s)

☐Arcade
☐Balcony
☐Porte-Cochere
☐Recessed

☐Stoop
☐Portico
☐Verandah
☐Wrap-around

☒None
☐Other: _____

Chimney

☐Brick
☐Concrete
☐Stuccoed Masonry

☐Stone
☐Stove Pipe
☐Siding

☒None
☐Other: _____

FOR SHPD USE ONLY:	Site #Click here to enter text.	TMK # Click here to enter text.

Narrative Description

Narrative Description:

The Kapaa Stream Bridge (Feature MAI A) is a reinforced concrete, two span, tee beam bridge that carries the two lanes of Kuhio Highway (Route 56) over Kapaa Stream. The overall width of the bridge is 39' and its overall length of 155' includes the two spans of 72'-6" each and 5' long end stanchions at each end of the parapets. The setting of the bridge is rural. It is located near the mouth of Kapaa Stream. The ocean shoreline and the wide sand beach of Kealia Beach Park is adjacent to the east. North of Kapaa Stream, inland of Kuhio Highway there is open land with a grove of trees. On the makai side of Kuhio Highway is Kealia Beach Park with numerous small shelters and a maintenance shed. South of Kapaa Stream there is open and partially wooded land. The St. Catherine Catholic cemetery and 2010 Kauai Fire Station #8 (Kaiakea Fire Station) are south of the bridge.

The Kapaa Stream Bridge has a 2'-6" high, reinforced concrete parapet consisting of two, 10" high horizontal concrete rails with a 10" space between them. The top rail is 1' wide and the bottom rail is 8" wide. On the top surface of the top rail two horizontal metal rails have been added to give an overall height of 3'-8". A single horizontal rail has been added in the 10" space between the rails. The concrete portion of each parapet has expansion joints spaced at 12' -1". At each joint is a pair of concrete stanchions 1' square in plan. The concrete end stanchions of the bridge are rectangular, 5' long, 1'-6" wide, and 2'-6" high. Each has two horizontal lines scribed at 10" spacing scribed into its outboard sides. On the inboard sides the northeast and southwest end stanchions have the inscription "KAPAA" and the northwest and southeast end stanchions have the inscription "1952" on their inboard sides. Inboard of each concrete parapet is a 4' wide sidewalk. Each sidewalk has an added thrie beam guardrail at the curb that is supported by vertical, 6" steel I beams bolted to the sidewalk. Each of these added guardrails extends past the ends of the bridge.

The superstructure of the bridge is a reinforced concrete deck about 7" thick that is supported by 5 longintudinal concrete beams 1'-8" wide and about 5'-10" high. This is supported by a substructure consisting of a single reinforced concrete pier at the center of the stream channel and reinforced concrete abutments at the stream banks. The pier has battered sides that taper to a 2'-6" width at the top surface. The upstream and downstream ends of the pier are chamfered to form points. The concrete abutments of the substructure have vertical front faces (facing the stream). Clearance under the bridge is typically about 7' to 9' from the water surface to the lower edges of the longitudinal beams.

Kapaa Bridge is bridge number 007000560300985 in the National Bridge Inventory database.

Integrity:

The Kapaa Bridge retains sufficient integrity to enable NRHP listing. Integrity of location is retained. Integrity of setting is not retained due to the removal of a large housing area that was located immediately northwest of the bridge up until at least 1965. The area is now open land with groves of trees. The setting is further changed by the development of adjacent Kealia Beach Park and the pedestrian path at the former railroad bridge. Integrity

of design, materials, and workmanship are somewhat compromised by the addition of metal guard rails. The bridge's major design elements, construction materials, and their evident craftsmanship are intact. Integrity aspects of feeling and association are retained, the bridge retains the physical features that, taken together, convey its historic character.

Nearby Resources:

Within the Area of Potential Effect (APE), additional resources were identified:

Feature MAI B: This two-part feature is a (1)masonry pier and (2)masonry south abutment from Makee Plantation-era railroad bridge. Location: This bridge pier is located in the center of Kapaa Stream, about 30' east (downstream) from the Kapaa Stream Bridge. Description and evauation: This approximate 32' long basalt and concrete masonry pier lies under the 2009 Kapaa-Kealia Pedestrian and Bike Path. The longitudinal beams of the bike path pass over the pier and do not touch it. The pier is constructed of rough courses of quarry faced basalt lava rock masonry with concrete mortar. It is about 6' wide at the water surface and tapers to about 4' wide at the top. This taper includes an approximate 6" wide ledge. The upstream nose of the pier is chamfered to present a pointed end to the current. The downstream end of the pier is rounded. Atop the lava rock masonry portion of the pier is a poured concrete section about 4' wide and 22' long. The downstream end of the pier has settled about 3' to 4' into the stream bed. To account for this settling at one end, a wedge-shaped concrete cap about 15' long was added on the top surface of the 22' long poured concrete section. An inscription that reads "November 28, 1941" is visible in the top surface, makai side of the wedge-shaped cap.

The masonry abutment is located at the south end of the 2009 Kapaa-Kealia Pedestrian Bike Bath bridge over Kapaa Stream. It is about 20' wide and constructed of rough-coursed lava rock and concrete mortar with horizontal concrete slabs. The bike path bridge rests on a concrete bed that was added ca. 2009 atop the masonry abutment.

The construction date of the masonry pier and abutment (MAI B) is not known. However, a plantation railroad crossing over Kapaa Stream was located here as early as ca. 1885 as part of the railway system of Makee Sugar Co. This was a bridge with either a through truss or a pony truss design that carried both the 30" gauge plantation rail line and a narrow roadway. The rail line was located on the downstream side of the bridge and the roadway on the upstream side (Conde, Sugar Trains. P 182, Hawaii State Archives photo ca. 1885).

The Makee Sugar Co. began in 1877, its mill was located in Kealia, north of the bridge. The earlist plantation rail traffic across the bridge at this site was cars pulled by draft animals. The earliest record of steam locomotives at Makee Plantation begins in 1894 (Conde, Sugar Trains. P 180 & 184). By the mid 1920s over half of the plantation's field acreage was located south of Kapaa Stream, and the railroad bridge at the site of MAI B was the only rail route that crossed the stream from those southern fields to Makee's mill in the north (Conde, Sugar Trains. P. 180-181).

By July 1926, the railroad line crossing the bridge at this site also carried other traffic, the trains of the Ahukini Terminal & Railway Co., which was a common carrier that began service ca. 1921. Ahukini Terminal & Railway Co. connected the landings at Anahola, Kealia, Kapaa, and Ahukini. During the 1920s a spur to Nawiliwili was added. In 1930 the Ahukini Terminal & Railway Co. line had 10 miles of track and two steam locomotives to move freight between neighboring plantations and the landings.

By the early 1930s the Makee Plantation had about 45 miles of permanent railroad track which served to transport cane to the mill. In June 1933 Makee Plantation Co. was bought out by Lihue Plantation Co. and the entire Makee Plantation Co. mill was moved to Lihue and installed next to the existing mill there (Dorrance, Sugar Islands. P. 32). All of Makee's railway and rolling stock were transferred to Lihue Plantation, giving it over 80 miles of permanent track. The railroad bridge at the site of MAI B then operated to facilite the transport of cane south, from the former Makee fields located north of the stream to Lihue. In 1934 Ahukini Terminal & Railway Co. was dissolved and its assets of track and rolling stock taken over by Lihue Plantation, which then became responsible for all rail traffic over the railroad bridge at the site of MAI B.

This railroad bridge was converted for use as a vehicular bridge ca. 1958 as Lihue Plantation transitioned from rail to trucks for transporting cane. This transition began in 1957 but was not completed until the end of the 1959 harvesting season on October 10, when the final load of rail-transported cane was taken to the mill. During the 1959 harvest, Lihue Plantation hauled 270,443 tons of cane by rail and 504,313 tons by truck (Conde, Sugar Trains. P. 168).

The through/ pony truss bridge formerly at this site was steel construction, vestiges of the steel members remained in 2003, before the bridge was demolished for the 2009 construction Pedistrian and Bike Path Bridge for Ke Ala Hele Makalae (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 82).

The masonry pier and south abutment from Makee Plantation-era railroad bridge (MAI B) are evaluated as not eligible for the Hawaii or National Register of Historic Places. Although MAI B is component of the former bridge, which had an association with the history of plantation railways, it does not retain integrity necessary for listing. The demolition of all other of the bridge's essential physical features has removed major portions of the integrity aspects of design, materials, workmanship, feeling, and association that are necessary to represent its significance.

Feature MAI C: Concrete bridge abutments (pair). Location: each of these two abutments are located at either the north or the south bank of Kapaa Stream, adjacent to the east (downstream) of the Kapaa Stream Bridge. Description and evaluation: Each approximate 30' long abutment has a slight batter as it rises from the streambed. At the top of each abutment is a transverse ledge 5'-3" high and 3' wide that has a concrete retaining wall at its rear edge that is flush with grade. This retaining wall has wing walls at each end that define the ends of the ledge. On the upper surfaces of the wing walls at the south abutment there are inscriptions in

the concrete. The inscription "April 29, 1932" is on the wing wall at the east end, and the inscription "JK" is on the wing wall at the west end.

These bridge abutments mark the site of the former Kauai Belt Road bridge crossing over Kapaa Stream that was replaced with the construction of the 1953 Kapaa Stream Bridge. The belt road on Kauai was constructed from 1910 to 1920 (MKE Associates, Fung Associates. Hawaii State Historic Bridge Inventory, 2013. p. 8-10). A roadway crossed Kapaa Stream in this approximate location since at least ca. 1885. In the early years the roadway was carried on the same bridge as the Makee Plantation railway (see MAI B above). Ca. 1912, a separate bridge to carry the roadway was built (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 30). This was an arched, steel bridge with a through truss design (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 31). Paving of the belt road between main towns was accomplished during the 1920s and 1930s (Christopher Leland Cook, Kauai In History, A Guide to the Resources. P. xv).

The inscription "April 29, 1932" on the south abutment might be an indication that the ca. 1912 bridge was replaced in 1932 with another bridge, which was subsequently demolished upon completion of the adjacent 1953 (extant) bridge. A historic aerial photo at Hawaii State Archives taken December 22, 1950 shows the shadow of an arched, steel truss bridge at the site (HSA folder PPA-28-4. Photo K-2-20, December 22, 1950). Original drawings for the 1953 Kapaa Stream Bridge indicate that a steel truss bridge existed on MAI C Abutments at the time of construction (Hawaii Territorial Highway Department, Kauai Belt Road, FAP No.12(20), sheet 5564.8R, April 1952). It is also possible that the wing wall portion of abutment containing the inscription was added in 1932 to the existing abutment. With either scenario, the bridge that once existed on these abutments was gone by ca. 1958, when the former railroad bridge was converted to carry vehicular traffic for hauling cane.

The concrete bridge abutments (MAI C) are evaluated as not eligible for the Hawaii or National Register of Historic Places. Although the abutments are components of the former bridge, which had an association with the development of the Kauai Belt Road, they do not retain integrity necessary for listing. The demolition of all other of the bridge's essential physical features has removed major portions of the integrity aspects of design, materials, workmanship, feeling, and association that are necessary to represent its significance.

Feature MAI D: 2009 Pedestrian and Bike Path Bridge for Ke Ala Hele Makalae. Location: Crossing Kapaa Stream, about 30' east (downstream) from the Kapaa Stream Bridge. Description and evaluation: This is a recently-constructed, reinforced concrete pedestrian bridge. This bridge and the section of path from Lihi Park to Ahihi Point (Phase II) opened on June 26, 2009. This single-span bridge is about 140' overall length and about 12' wide with metal railings. The bridge was constructed astride the pier of the above feature MAI B and resting on the south masonry abutment of MAI B. The 2009 Pedestrian and Bike Path Bridge (MAI D) is evaluated as not eligible for the Hawaii or National Register of Historic Places. Under NR Ctiterion Consideration G, the pedestrian bridge does not meet the level of exceptional importance necessary for properties less than 50 years old.

Feature MAI E: Earth ditch. Location: About 225' south of Kapaa Stream Bridge, running alongside Kuhio Highway southwest of the intersection of Kuhio Highway and Mailihuna Road. Description and evaluation: This is an earth drainage ditch, currently dry. It is about 50' long, 4' wide and 2' deep at the deepest (north end), where it drains into a metal-grated box drain of recent construction that carries rainfall water under Mailihuna Road. The ditch is covered with vegetation. From an Architectural history perspective, the earth ditch (MAI E) is evaluated as not eligible for the National or Hawaii Register of Historic Places. It lacks engineering or architectural distinction and is not associated with an important historic person or event. Eligibility based on Criterion D has been evaluated separately by Cultural Surveys Hawaii as part of the Archaeological Inventory Survey.

Feature MAI F: Portion of St. Catherine Cemetery. Location: West side of Kuhio Highway, south of Kapaa Stream Bridge. Description and evaluation: This approximate 6.5 acre parcel is the cemetery for St. Catherine Catholic Church, Kapaa and corresponds to TMK (4)4-6-014:033. The parcel extends from Mailihuna Road about 1,600' south along Kuhio Highway. The APE touches the north and northeast edges of this parcel. The area of the parcel that is covered by the APE is vacant land, with a steep embankment about 10'' high that rises up from the road shoulders of Kuhio Highway and Mauilihuna Road. The cemetery's graves are outside the APE, at the southern end of the parcel (see Feature MAI G, below).

St. Catherine Church (now demolished) was formerly located near the center point of the 6.5 acre parcel, with the cemetery south of it. The church at this location was originally built in 1877. The land and materials for construction were donated by Z. S. Spaulding, owner of Makee Sugar Co. Parishioners working for the plantation provided the labor. The original church was wood construction, desiged by Father Emmeran Schulte. Spaulding and the St. Catherine parish also built and supported the nearby Kapaa English School (ca. 1890s, now demolished), which taught newly arrived plantation laborors (Portuguese and Filipino) and their children. The original church was altered in 1932 and 1938 with side wing additions. In 1959 St. Catherine Church moved into a newly built church at its present location about one mile west of the cemetery, at the intersection of Kawaihau and Hauaala Roads. The church building at the cemetery was demolished at an unknown date.

The portion of St Catherine Cemetery (MAI F) is evaluated as not eligible for the Hawaii or National Register of Historic Placed. This vacant land does not meet the eligibility requirements under Criteria Consideration A (Religious Properties) and Criteria Consideration D (Cemeteries). Under these Criteria Considerations the portion of the parcel has no secular engineering or architectural distinction and is not associated with an important historic person or event.

During the field inspection of Kuhio Highway for a distance of approximately ½ mile on either side of the Kapaa Stream Bridge, the following features were noted which are outside the APE:

Feature MAI G: Grave site of St. Catherine Cemetery. Location: West side of Kuhio Highway about 40' south of the APE, about 1,000' south of Kapaa Stream Bridge. Description and evaluation: Approximately 270 graves located on the treeless, sloping hillside above Kuhio Highway, in the south portion of TMK parcel (4)4-6-014:

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033. This cemetery was begun ca. 1890 at the southeast corner of the parcel. It served as the burial plot for the parish of St. Catherine Church, built in 1877 near the center of the parcel. A lava rock and concrete masonry wall fronts Kuhio Highway. Along this wall, are a pedestrian entry and three vehicle entries that are bordered by masonry cheek walls of lava rock and concrete mortar with painted concrete caps. The pedestrian entry has painted concrete steps leading up to the grave area. One vehicle entry has spherical concrete finials on the concrete caps of the cheek walls. The grave site of St. Catherine Cemetery (MAI G) is outside the APE and was not evaluated for eligibility for the National Register of Historic Places.

Feature MAI H: Calvalry Shrine and Resurrection Grotto. Location: The far southwest corner of the St. Catherine Cemetery parcel about 800' from the south edge of the APE, about 1,500' south of Kapaa Stream Bridge. Description and evaluation: This is a large Calvalry Shrine with a Resurrection Grotto. This feature is sited near the top of the sloping land of St Catherine Cemetery on the mauka side of Kuhio Highway. It is masonry construction with uncoursed lava rock and concrete mortar. Concrete steps on both sides of the grotto lead up to the shrine atop it. The shrine consists of a lava rock and concrete masonry base, topped by a painted concrete slab with three large painted staues of Christ crucified, Virgin Mary, and St Catherine. An engaged concrete altar is at the front of the lava rock base. The Calvalry Shrine and Resurrection Grotto were built between 1930 and 1944. They were restored in 1995. The Calvalry Shrine and Ressurection Grotto (MAI H) is outside the APE and was not evaluated for eligibility for the National Register of Historic Places.

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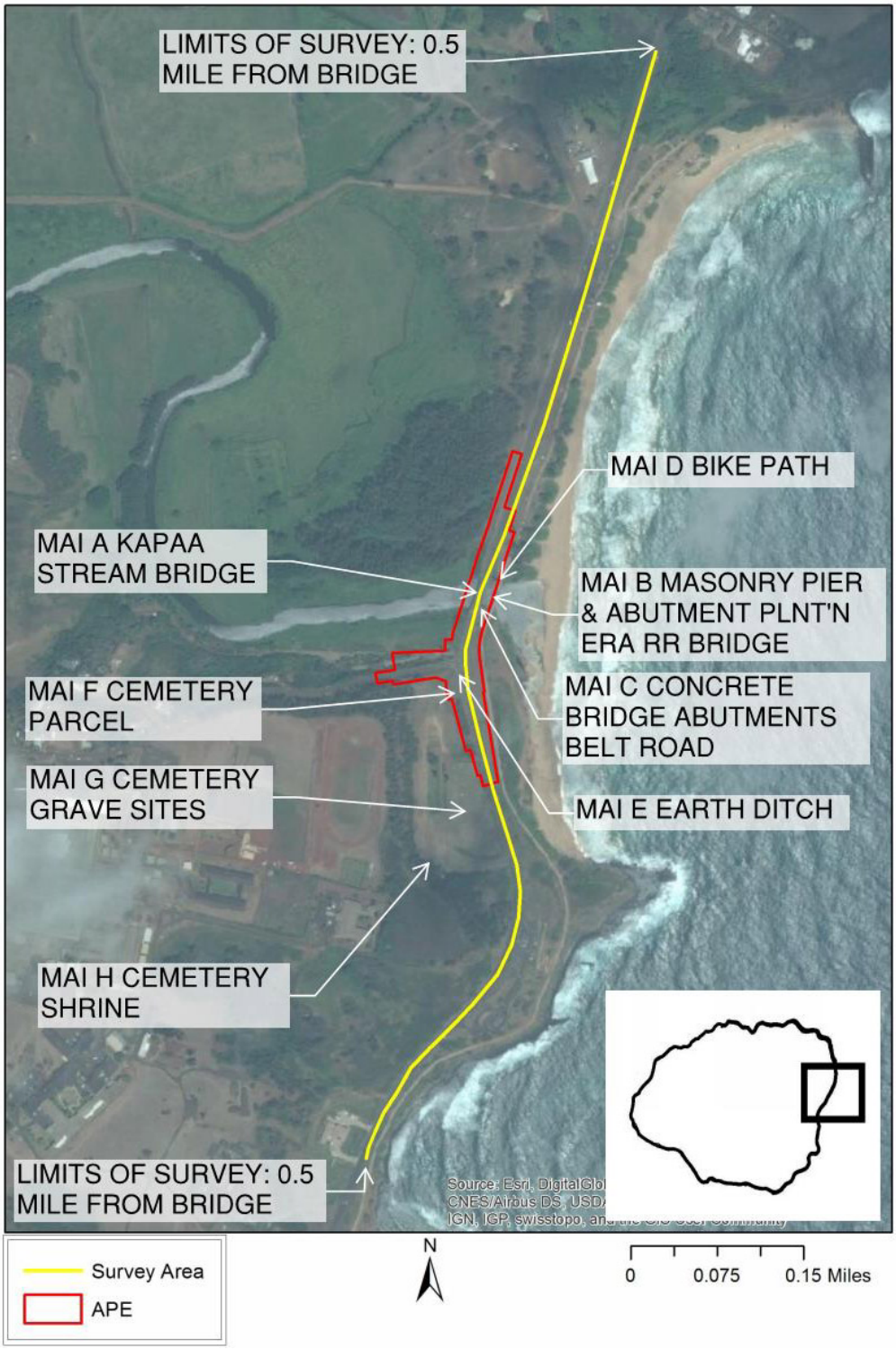
Kapaa Bridge Survey Area



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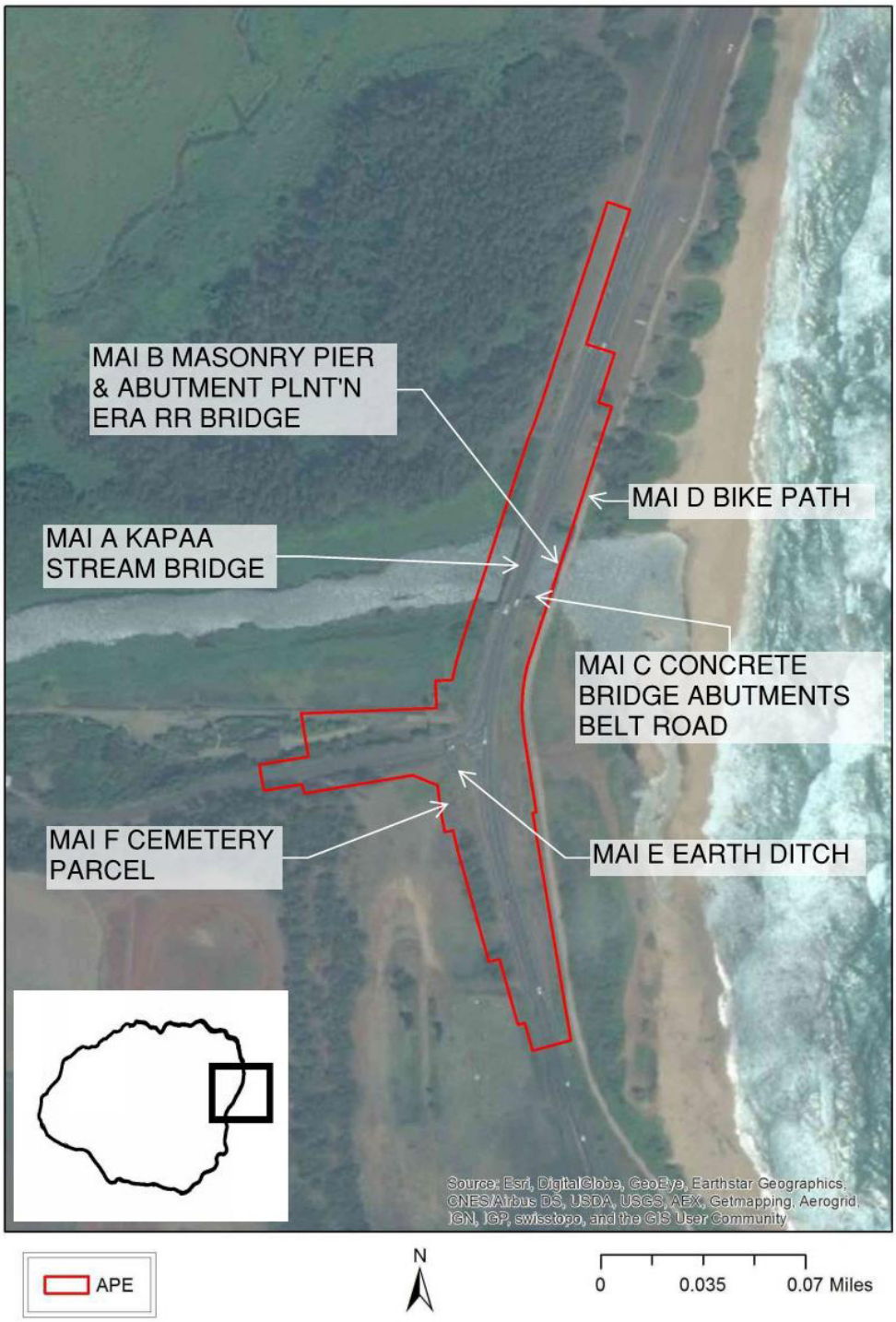
Kapaa Bridge APE
Historic Resources
within the APE



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Statement of Significance

Historical Context:

The Kapaa Stream Bridge was part of Federal Aid Highway Project (FAP) No. F12 (20) that constructed the approximate 0.43 mile section of Kuhio Highway from St Catherine Cemetery north to a point about 1,500' past Kapaa Stream. The project was begun during fiscal year of July 1, 1951 to June 30, 1952 with a contract valued at $240,462 issued to J. M. Tanaka, who was the contractor for that section of roadway and the Kapaa Stream Bridge. The project was completed on January 9, 1953 at a final total cost of $264,981 (Territory of Hawaii, Department of Public Works, Annual Report for Year ending June 30, 1953. P. 3). Note that although the official date of completion is January 9, 1953, the date inscriptions on the bridge read "1952."

Original drawings for the Kapaa Stream Bridge were prepared by the Hawaii Territorial Highway Department and are dated April 1952. These drawings indicate that the bridge design was by William Bartels. They were drawn by J. Young and checked by P. Yamashita. The cover sheet for the drawings, project FAP No. F12 (20), was signed by Robert M. Belt, Territorial Highway Engineer, and dated October 5, 1951. The cover sheet for the project drawings was countersigned on March 2, 1953 by Fred L. Schumacher, Territorial Department of Public Works District Engineer for the Island of Kauai, who certified the set as record drawings.

The type of concrete parapet railing used by the Territory of Hawaii for the Kapaa Stream Bridge, featuring two, heavy horizontal rails, was first utilized ca. 1948. This type of parapet replaced the earlier type of concrete parapet, with Greek-cross openings in the railing. One of the first applications of this new type of railing was on FAP No. F29(4) at Waimea to Makaweli Kauai that was completed on May 15, 1948 (Annual Report of the Superintendent of Public Works, Territory of Hawaii, Year ending June 30, 1948. P. 32-33). This new design with heavy horizontal rails became a common type on Kauai. It was used on many bridges built on Kauai between 1948 and the mid 1960s, including the 1953 Kapaa Stream Bridge. Numerous examples of this bridge parapet type still exist on Kauai, dating from 1948 to 1965, including the 1948 Moikeha Canal Bridge in Kapaa.

The belt road on Kauai was constructed from 1910 to 1920 (MKE Associates, Fung Associates. Hawaii State Historic Bridge Inventory, 2013. p. 8-10). A roadway crossed Kapaa Stream in this approximate location since at least ca. 1885. In the early years the roadway was carried on the same bridge as the Makee Plantation railway (see MAI B above). Ca. 1912, a separate bridge to carry the roadway was built (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 30). This was an arched, steel bridge with a through truss design (Bushnell, et al, Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike and Pedestrian Path. P. 31). On Kauai, paving of the belt road between main towns was accomplished during the 1920s and 1930s (Christopher Leland Cook, Kauai In History, A Guide to the Resources. P. xv).

William R. Bartels, designer of the Kapaa Bridge, was a bridge engineer for the Hawaii Territorial Highway Department. He received his education and training in Germany and immigrated to Hawaii in 1932 when he

commenced working with the Highway Department during the latter half of that year. He continued his career there until his retirement in 1958. During that period he was a prolific designer, responsible for large and sophisticated bridge construction projects in Hawaii, including many tee-beam and rigid-frame concrete bridges.

During the 1950s the Hawaii Territorial Highway Department was under the supervision of the Superintendent of Public Works, who was also the Territorial Highway Engineer. Although each island (Maui and Molokai were combined) had its own District Civil Engineer to supervise construction, all Territorial highway projects for all islands were accomplished under the direction of the Oahu branch, which had jurisdiction over all activities of the Highway Department on all of the islands of the Territory. The engineers on Oahu handled all designs, plans, specifications, and inspection of construction of all Territorial highways and bridges. Bartels, as an engineer attached to the Oahu branch, would have had this oversight on all bridge and roadway projects throughout the Territory.

Previous to FAP No. F12 (20) the Kauai Belt Road crossed Kapaa Stream on a steel, arched thru truss bridge (probably built ca. 1912) immediatly downstream of the 1953 Kapaa Stream Bridge. This steel bridge was demolished sometime after January 1953, but its concrete abutments are extant (Feature MAI C).

Significance Statement:

The Kapaa Stream Bridge is included in the November 2013 Hawaii State Historic Bridge Inventory and Evaluation by MKE Associates, LLC, and Fung Associates, Inc as a line item in the Kauai Bridge Matrix spreadsheet (page 3-6). This describes the Kapaa Bridge as a Program Comment bridge. However, program comments were never developed for Hawaii and this bridge must be analyzed on its own merits.

The Kapaa Stream Bridge is evaluated in this report as not eligible for the Hawaii or National Register of Historic Places. This bridge is a common type with other examples on Kauai. It does not contribute significantly to an understanding of the development of the Kuhio Highway. Although it was designed by William Bartels, it is not a particularly distinctive example of a tee beam bridge; nor is it considered a significant achievement of its designer.

References

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Drawings:

Historic drawings are available at the Hawaii Department of Transportation, Highway Design Section database as electronic scans. These include:

Project F12 (20), 13 sheets. Dated 1953

Project STP-056-1(43),. 8 sheets. Dated 1999

Project 56B-01-06M, 13 sheets. Dated 2006

Photographs:

Aerial photos showing the bridge in 1960 and 1965 are available at the Hawaii State Archives. A view taken on October 15, 1960 is in Folder PPA-29-1, photo 1-4. A view taken on January 15, 1960 is in Folder PPA-30-6, photo 1CC91. An earlier aerial view dated December 22, 1950 showing the previous bridge is available in Folder PPA-28-4, photo K-2-20.

Other Sources:

Bushnell, K.W., Melanie Mann, Douglas Bothwick, Tony Bush, Todd Tulchin, Hallett H. Hammatt. "Archaeological Inventory Survey for the Proposed Kapaa/ Kealia Bike and Pedestrian Path, Kapaa and Kealia, Kawaihau District, Kauai Island, Hawaii." Hawaii: Cultural Surveys Hawaii, Inc. February 2003.

Conde, Jesse C., and Gerald M. Best. Sugar Trains, Narrow Gauge Railways of fHawaii. Felton CA: Glenwood Publishers. 1973.

Conde, Jesse C. Sugar Trains Pictorial. Felton CA: Glenwood Publishers. 1975.

Cook, Christopher Leland. Kauai in History, A Guilde to the Resources. Honolulu: State Foundation on Culture and the Arts in cooperation with the Kauai Histrical Society. 2000.

Dorrance, William H. Sugar Islands, The 165-Year Story of Sugar in Hawaii. Honolulu: Mutual Publishing. 2000.

Hulsman, Marta M., Wilma Chandler, Bill and Judie Fernandez, Linda Kaialoa, Linda Moriarty, and Herman Texiera. Kapaa. Charleston SC: Arcadia Publishing . 2015.

Hungerford, John B. Hawaiian Railroads, A Memoir of the Common Carriers of the Fiftieth State. Reseda CA: Hungerford Press. 1963.

Marzen, Francis A., ed. The tree has grown: the church in Hawaii 1827-1977. Honolulu: Hawaii Catholic Church. 1977.

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MKE Associates, LLC, and Fung Associates, Inc. *Hawaii State Historic Bridge Inventory and Evaluation*. Honolulu: State of Hawaii, Department of Transportation, Highways Division. November 2013.

Superintendent of Public Works, Territory of Hawaii. *Report to the Governor, Territory of Hawaii by the Superintendent of Public Works.* Honolulu: Advertiser Publishing Co., LTD. Various dates.

Yucha, Trevor M., Nancine "Missy" Kamai, Hallett H. Hammat. "Draft, Phase I Archaeological Survey Report for the Kapaa Stream Bridge." Hawaii: Cultural Surveys Hawaii, IOnc. Prepared for CH2MHill on behalf of the Federal Highways Administration Central Federal Lands Highway Division. December 2014.

Appendix F
Final Cultural Impact Assessment for the Kapaa Stream Bridge Replacement Project, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai, October 2016

Final

Cultural Impact Assessment for the Kapaʻa Stream Bridge Replacement Project, Kapaʻa and Keālia Ahupuaʻa, Kawaihau District, Kauaʻi Island, Federal Highway Administration/ Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027 TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por., and 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way

Prepared for

CH2M HILL

and on behalf of the

Federal Highway Administration (FHWA)
Central Federal Lands Highway Division (CFLHD)

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Kailua, Hawaiʻi

(Job Code: KAPAA 15)

October 2016

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Management Summary

Reference	Cultural Impact Assessment Report for the Kapa‘a Stream Bridge Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i Island, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027, TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por., and 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way (Liborio et al. 2016)
Date	October 2016
Project Number(s)	• FHWA/CFLHD contract code: DTFH68-13-R-00027 • CH2MHILL Project Task ID: 499068.11.SU.CS • Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KAPAA 15
Agencies	FHWA/CFLHD, SHPD
Land Jurisdiction	State Department of Transportation (HDOT)
Project Proponent	FHWA/CFLHD, HDOT
Project Funding	FHWA/CFLHD
Project Location	The study area is located near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The study area is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle.
Project Description	The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.
Project Acreage	The project area includes approximately 4.9 acres (2.0 hectares).
Document Purpose	This CIA was prepared to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the proposed project’s potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts to cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control’s *Guidelines for Assessing Cultural Impacts*) which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai‘i significance criterion “e,” pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance criterion “e” refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due

	to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity" (HAR §13-275-6 and §13-284-6). The document will likely also support the project's historic preservation review under HRS §6E and HAR §13-275 and §13-284. The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS §6E-8 and HAR §13-284.
Results of Background Research	Background for this project yielded the following results (presented in approximate chronological order): 1. Kapa‘a literally translates to "the solid or the closing" (Pukui et al. 1974:86). Ke‘ālia means "the salt encrustation" (Pukui et al. 1974:102). 2. *Ka‘ao* (legend) places Hi‘iaka, the beloved sister of Pele the fire goddess, in the vicinity of the project area. Hi‘iaka and her companion, Wahine‘ōma‘o view Wai‘ale‘ale, Nounou Hill, and Kapa‘a. Their canoe lands on the beach of Kapa‘a where they jump ashore and Hi‘iaka chants (Ho‘oulumāhiehie 2008:167–168). 3. The earliest foreign accounts of life in Keālia appear in the 1830s when missionary censuses recorded a total population of 283 people. Approximately 264 adults and 18 children were accounted for in the *ahupua‘a* (land division extending from the mountain to the sea). The population in Keālia then declined from 283 to 143; the introduction of foreign diseases account for the decline. Kapa‘a's population during this time was unknown. 4. Māhele documentation provides insight into habitation and agricultural patterns. Kapa‘a was designated as Crown Lands while Keālia was granted to the *ali‘i wahine* (chiefess) Miriam (or Mikahela) Ke‘ahikuni Kekau‘ōnohi, who was the granddaughter of Kamehameha, one of Liholiho's wives, and served as Kaua‘i governor from 1842 to 1844. Seventeen land claims were made in Keālia and 15 were awarded. Six claims were awarded in the vicinity of the project area. Approximately 67 cultivation *lo‘i* (irrigated terrace) were claimed within the *kuleana* (land claim). *‘Auwai* (ditch), *kō‘ele* (small land unit farmed by a tenant for the chief), and *loko* (ponds) were also referenced in land claims, which exemplifies the rich agriculture within the *ahupua‘a*. 5. The first large scale enterprise in Kapa‘a and Keālia was in 1877 with the Makee Sugar Plantation and the Hui Kawaihau (Dole 1916:8). The Hui was originally a choral society that began in Honolulu with membership including both Hawaiian and *malihini* (foreigner). It was Kalākaua's thought that Hui members

	could join forces with Makee. Makee was given land to build a mill in Kapa‘a and agreed to grind cane grown by Hui members. A fire destroyed the Hui’s second crop of cane and Makee had an untimely death resulting in his lease passing onto his son-in-law. The mill was moved to Keālia and the smokestack and landing was still present into the 1900s. Railroad construction for the plantation began in the mid 1890s. The rail line was part of a 20-mile network of plantation railroad with some portable track leading into Keālia Valley. 6. The lowlands of Kapa‘a were used for rice farming, which occurred in the latter half of the 1800s. *Kuleana* owners leased or sold their parcels *mauka* (toward the mountain) of the swamp land to Chinese rice farmers. 7. Keālia Ahupua‘a had many traditional trails that led to Anahola with two principle routes: a *makai* (toward the ocean) route and a *mauka* route. The exact location of the *makai* route is unknown although it is thought to run along the plateau lands, somewhat removed from the coastline.
Results of Community Consultation	CSH attempted to contact Native Hawaiian Organizations (NHOs), agencies, and community members. Consultation was received from the following community members: 1. Valentine Ako, *Kupuna* (elder) 2. Milton Ching, *Kama‘āina* (native born) and cultural descendant 3. Beverly Muraoka, *Kupuna* 4. Kenneth Ponce, Retired fireman 5. Puanani Rogers, Leader for the Ho‘okipa Network
Non-Cultural Community Concerns and Recommendations	Based on information gathered from the community consultation, participants voiced the following concerns not related to the cultural context. 1. Impacts of construction on traffic flow, pedestrians, and motorists—the community voiced no recommendations regarding these concerns, but expressed their support for bridge improvements due to their concerns regarding road traffic safety.
Impacts and Recommendations	Based on information gathered from the cultural and historic background, as well as through community consultations, the proposed project may potentially impact undetected *iwi kūpuna* (ancestral bones). CSH identifies potential impacts and makes the following preliminary recommendations. 1. Previous archaeology indicates several burials have been found in the vicinity (0.5-mile radius or less) of the project area (State Inventory of Historic Places [SIHP] #s 50-30-08-1851, -7040, and -0884). Community consultation indiciated knowledge of

	iwi kūpuna in the vicinity of the project area. Based on these findings, there is a high possibility *iwi kūpuna* may be present within the project area and that land disturbing activities during construction may uncover presently undetected burials or other cultural finds. Should burials (or other cultural finds) be encountered during ground disturbance or via construction activities, all work should cease immediately and the appropriate agencies should be notified pursuant to applicable law, HRS §6E.

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Section 1 Introduction

1.1 Project Background

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) completed this cultural impact assessment report for the Kapa‘a Stream Bridge, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, FHWA/CFLHD contract DTFH68-13-R-00027 TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por., and 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. The study area is located near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The study area is depicted on a portion of the 1996 Kapaa U.S. Geographical Survey (USGS) topographic quadrangle (Figure 1), tax map plats (Figure 2 and Figure 3), and an aerial photograph (Figure 4).

The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.

The study area includes approximately 8.6 acres. For the purposes of this archaeological reconnaissance, the area of potential effect (APE) was defined the entire 8.6-acre study area.

1.2 Document Purpose

The purpose of this CIA is to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the project’s potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts on cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control’s *Guidelines for Assessing Cultural Impacts*), which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai‘i significance criterion “e,” pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance criterion “e” refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity” (HAR §13-275-6 and §13-284-6). The document will likely also support the project’s historic preservation review under HRS §6E and HAR §13-275 and §13-284. The document is intended to support the project’s environmental review and may also serve to support the project’s historic preservation review under HRS §6E-8 and HAR §13-284.

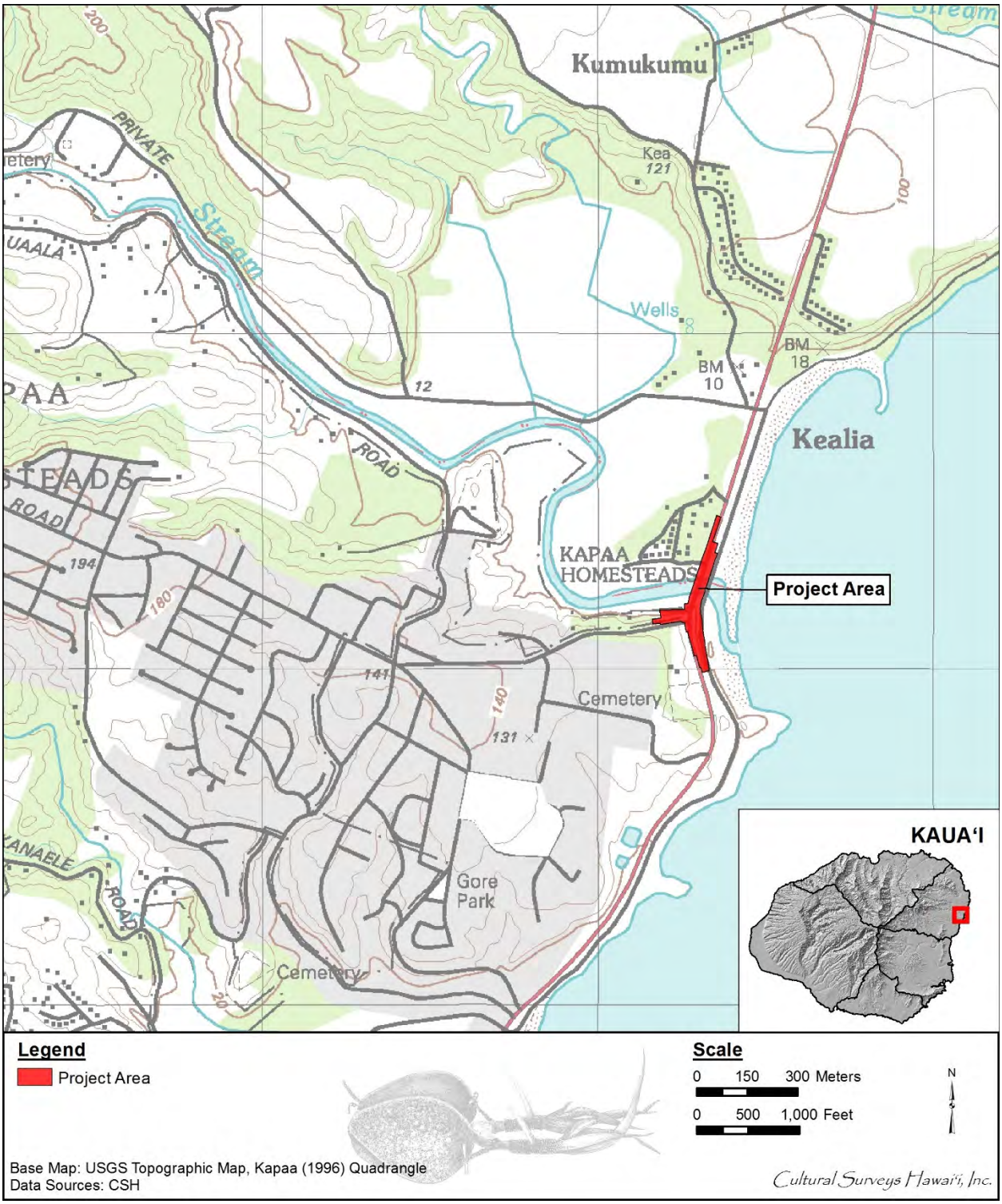

Figure 1. Portion of the 1996 Kapaa USGS 7.5-minute topographic quadrangle showing the location of the study area

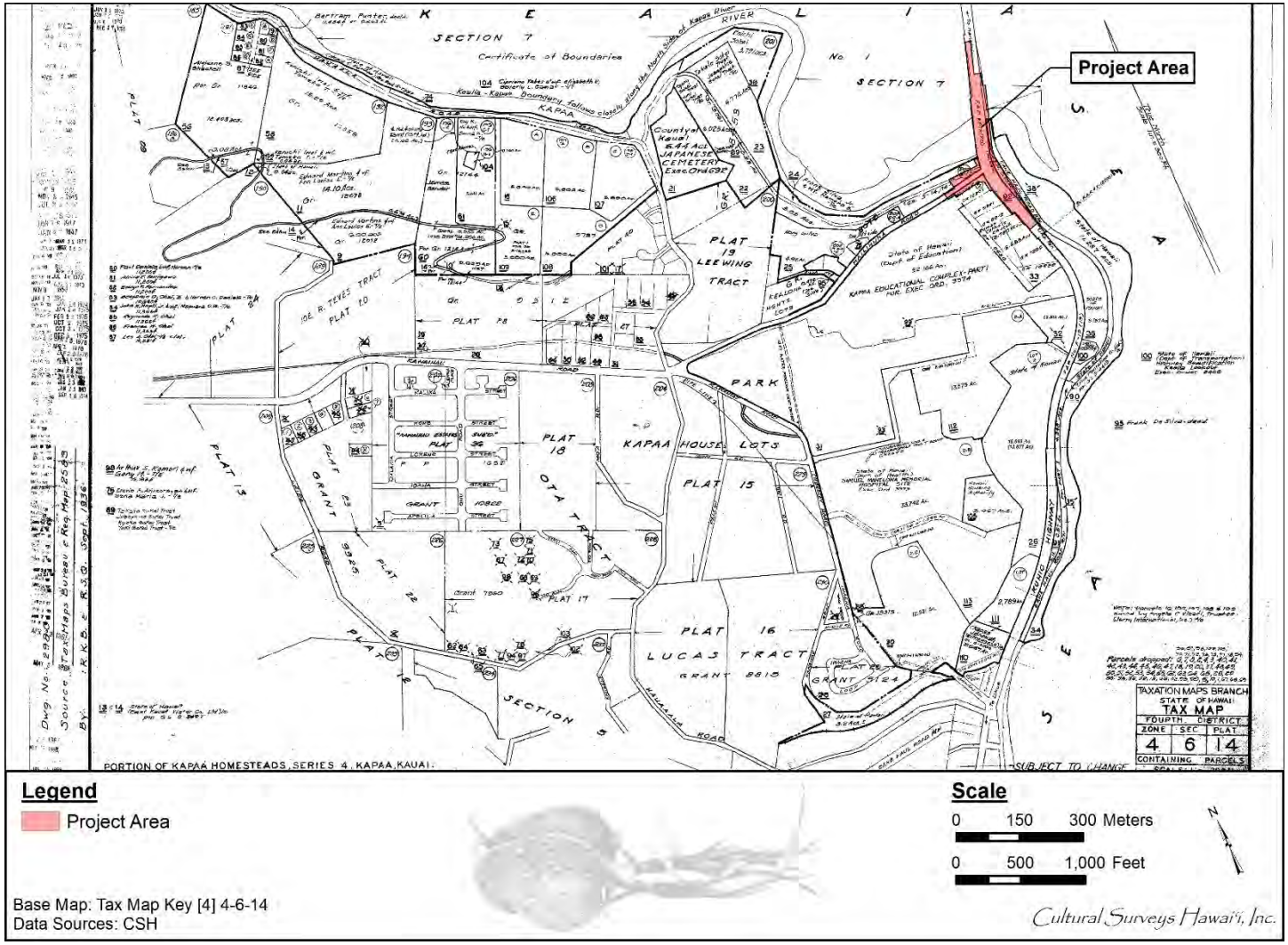

Figure 2. Tax Map Key (TMK) [4] 4-6-14, showing the location of the study area (Hawai‘i TMK Service)

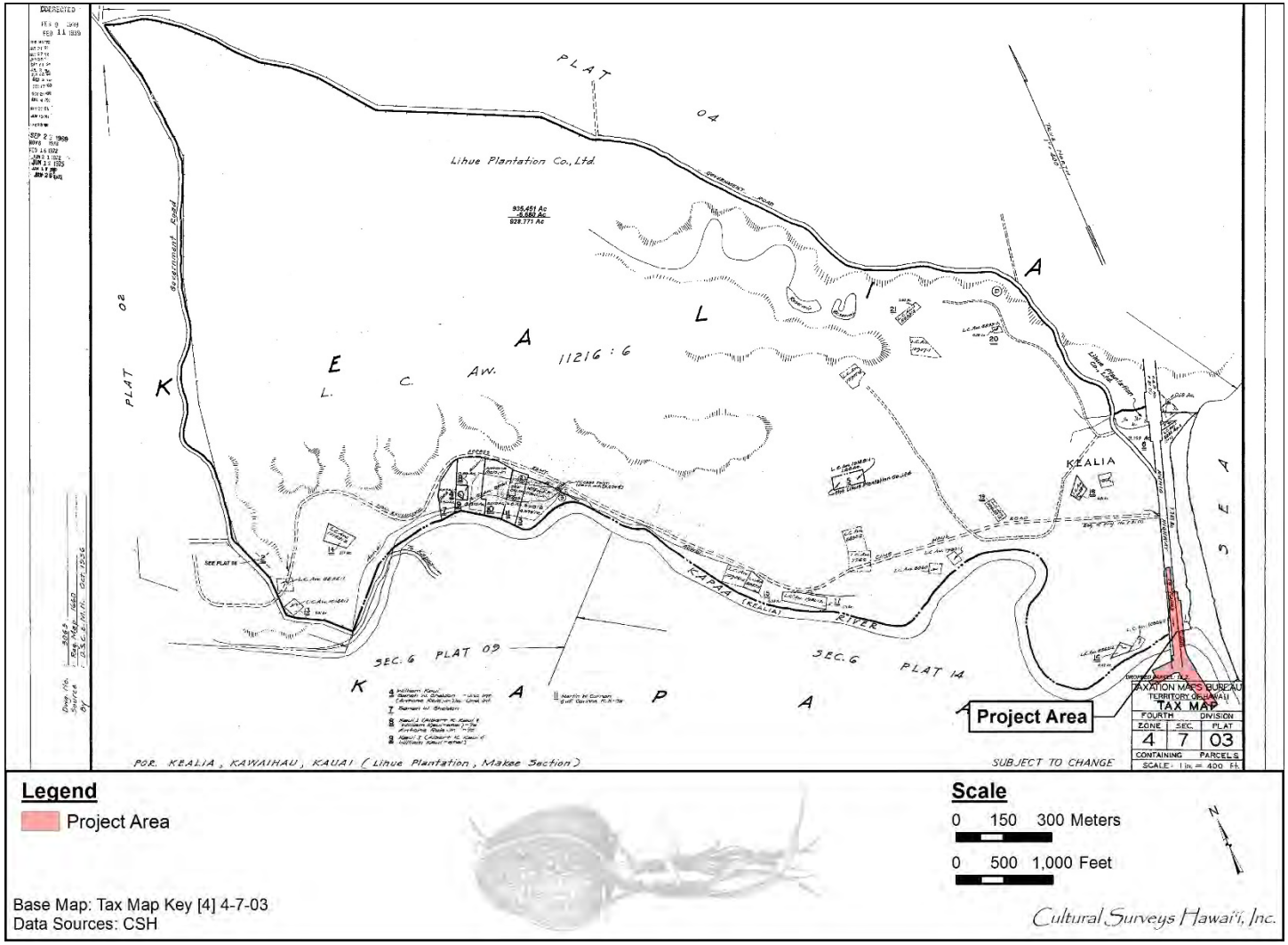

Figure 3. TMK: [4] 4-7-03, showing the location of the study area (Hawai‘i TMK Service)

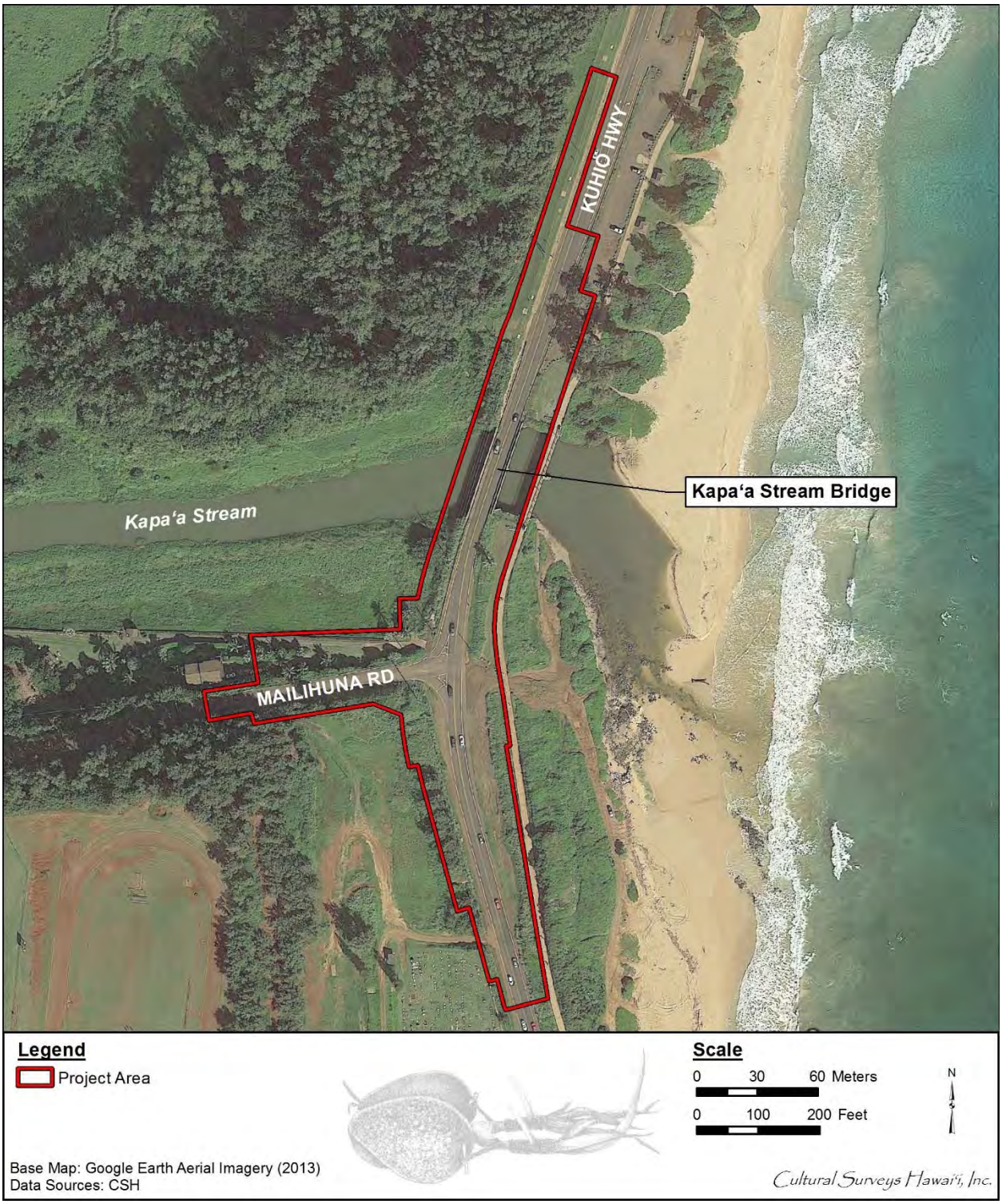

Figure 4. 2013 aerial photograph showing the location of the study area (Google Earth 2013)

Due to federal funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act. The proposed project is also subject to Hawai‘i State environmental and historic preservation review legislation (HRS §343 and HRS §6E-8/ HAR §13-275, respectively).

1.3 Scope of Work

The scope of work for this CIA includes the following:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
2. Review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
3. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices at or near the parcel; present and past uses of the parcel; and/or other practices, uses, or traditions associated with the parcel and environs.
4. Preparation of a report that summarizes the results of these research activities and provides recommendations based on findings.

1.4 Environmental Setting

1.4.1 Natural Environment

1.4.1.1 *Makani* (Prevailing Winds)

The study area, within Kapa‘a and Keālia Ahupua‘a is associated with specific wind configurations. *The Wind Gourd of La‘amaomao* records the story of how descendants of the wind goddess La‘amaomao, Pāka‘a and his son Kuāpāka‘a, control the winds of Hawai‘i through a gourd that contains the winds and could be called forth by chanting their names (Nakuina 1992). Pāka‘a’s chant traces the winds of Kaua‘i in the *moku* (district) of Kawaihau (Puna). Kēhau is the name of a gentle land breeze of Kapa‘a (Nakuina 1990:139), and in the *Epic Tale of Hiiakaikapoliopele* “the wind of Kapa‘a is a Pepe‘ekiukena” (Ho‘oulumāhiehie 2008:18). Fornander shared Malamalamaiki as a wind of Ke‘ālia (Fornander 1918:5:96).

He Mālamalama ka makani o Keālia, The wind of Keālia is a Mālamalama: (Ho‘oulumāhiehie:2008:vol I:19, Vol. II:18).

In the story of Pāka‘a the chant challenging the fishermen of Kapa‘a to race him to shore, mentions the breeze called Kehau and Malamalama-iki (Wichman 1991:166) (See Pāka‘a below).

He Pepe‘ekiukena ka makani o Kapa‘a, the wind of Kapa‘a is a Pepe‘ekiukena (Ho‘ulumāhiehie 2008 Vol. I:18, Vol II:18).

1.4.1.2 *Ua* (Precipitation)

Precipitation is a major component of the water cycle, responsible for depositing *wai* (fresh water) on local flora. Pre-Contact *kānaka* (Native Hawaiians) recognized two distinct annual seasons. The first, known as *kau* (period of time, especially summer) lasts typically from May to October and is a season marked by a high-sun period corresponding to warmer temperatures and steady trade winds. The second season, *ho‘oilo* (winter, rainy season) continues through the end of the year from November to April and is a much cooler period when trade winds are less frequent, and widespread storms and rainfall become more common (Giambelluca et al. 1986:17). Typically the maximum rainfall occurs in January and the minimum in June (Giambelluca et al. 1986:17). Rainfall on the coastal plains and plateaus of Kapa‘a and Keālia averages approximately 40 inches per year (Juvik and Juvik 1998:56). The Hā‘ao, Kea, and Ho‘olua rains have been identified as the rains associated with Kapa‘a and the greater Puna District of Kaua‘i.

The Hā‘ao rain is identified in a *mele* (song) entitled “Kawaikini” that describes the summit of Kaua‘i Island’s highest point, Mount Waialeale:

Aloha ke kapa huki palai

I ka lupea e ka ua Hā‘ao

Greetings to the shores that conceal and confuse

Made attractive by the Hā‘ao rain

(From the song “Kawaikini;” Hawaiian source: Holstein 121 translated and cited in Akana 2015:30).

In a lament for ‘Emalani Kaleleonālani, the Kea rain of Puna, Kaua‘i is identified:

He ua Kea ko Puna

Keu a maila i Kuaahiahi

He ua ho‘omālie kai no Makaīwa

E nana ana I ka laulā o Kapa‘a

Puna has a white (Kea) rain

Raining now at Kuaahiahi

A rain that quiets the sea of Makaīwa

Measuring the expanse of Kapa‘a

(From a Makena, or lament, for ‘Emalani Kaleleonālani. Source: Nogelmeier 355 cited in Akana 2015:72-73)

The rains that gather around Mount Wai‘ale‘ale’s summit Kawaikini are sometimes observed in fair weather, however, the broad plain of Kapa‘a is not included in this view due to the mountain ridge of Nounou. This view is described in Hi‘iaka’s chant of Malaeka‘akoa, the lame fisherman chief, and is included in Emerson’s tale, “Pele and Hi‘iaka.” Within this *oli* (chant), Hi‘iaka notes

that even in fair weather you cannot see Kapa‘a’s broad upland plain from Ha‘ena. (Emerson 1915:109):

Kunihi ka mauna i ka la‘i, e,

Wai-aleale, la, i Wai-lua;

Huki iluna ka popo ua o Ka-wai-kini

Alai ia a‘e la e Nounou,

Nalo ka Ipu-ha‘a,

Ka laula ma uka o Ka-pa‘a, e.

Pa‘a i ka leo, he ole e hea mai.

E hea mai ka leo, e

The mountain turns the cold shoulder,

Facing away from Wai-lua,

Albeit in time of fair weather.

Wai-kini flaunts, toplofty, its rain-cap;

And the view is cut off by Nounou,

Thus Humility Hill is not seen.

Nor Ka-pa‘a’s broad upland plain.

You seal your lips and are voiceless

Best to open your mouth and speak (Emerson 1915:109).

The Ho‘olua rain has also been identified as the rain for the surf spot known as Makaiwa (Fornander, 1919:5:996 in Anonymous 1987:90). According to Fornander, Makaiwa has also been associated with *mo‘olelo* regarding Mō‘īkeha.

1.4.1.3 *Wai* (Streams, Rivers, and Estuaries)

Two canals have been constructed to drain the marshy areas behind Kapa‘a Town, Waika‘ea Canal (known to most local people as Waiakea Canal) and Mō‘īkeha Canal. Kapa‘a Town is built upon a sand berm which forms the *makai* (toward the ocean) buffer to the inland swamp. To the north of Kapa‘a, Keālia Ahupua‘a shows more characteristics of a typical stream valley with a good sized alluvial plain dissected by a major stream, the Kapa‘a Stream (Keālia River) in addition to a plateau land dissected by a few small drainages including Kumukumu and Hōmaikawa‘a streams.

Kapa‘a can be characterized as fairly flat, with irregularly shaped gulches and small valleys in the uplands, through which small tributary streams run including Kapahi, Makaleha, and Moalepe. While some of these streams combine with other tributaries in neighboring Keālia to form Kapa‘a Stream (often referred to as Keālia River) which empties into the ocean at the northern border of the *ahupua‘a* (land division usually extending from the uplands to the sea), others flow directly

into the lowlands of Kapa‘a creating a large (approximately 170-acre) swamp area that has been mostly filled in modern times (Handy and Handy 1972:394, 423).

1.4.1.4 *‘Āina* (Land); Soil Surveys

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and s`oil survey data gathered by Foote et al. (1972), soils within the study area include Beaches (BS), Mokuleia fine sandy loam (Mr), Mokuleia clay loam (Mta), and Lihue silty clay, 25 to 40% slopes, eroded (LhE2) (Figure 5).

Beaches (BS) are described as follows:

> Beaches (BS) occur as sandy, gravelly, or cobbly areas on all the islands . . . They are washed and rewashed by ocean waves. The beaches consist mainly of light-colored sands derived from coral and seashells. A few of the beaches, however, are dark colored because their sands are from basalt and andesite.
>
> Beaches have no value for farming. Where accessible and free of cobblestones and stones, they are highly suitable for recreational uses and resort development. [Foote et al. 1972:28]

Soils of the Mokuleia Series are described as follows:

> This series consists of well-drained soils along the coastal plains on the islands of Oahu and Kauai. These soils formed in recent alluvium deposited over coral sand. They are shallow and nearly level. Elevations range from nearly sea level to 100 feet. The annual rainfall amounts to 15 to 40 inches on Oahu and 50 to 100 inches on Kauai. The mean annual soil temperature is 74° F. Mokuleia soils are geographically associated with Hanalei, Jaucas, and Keaau soils.
>
> The soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of kiawe, klu, koa haole, and bermudagrass in the drier areas and napiergrass, guava, and joee in the wetter areas. [Foote et al. 1972:95]

The current project area is comprised of Mokuleia fine sandy loam (Mr) and Mokuleia clay loam, poorly drained variant (Mta). Mokuleia fine sandy loam occurs on the eastern and northern coastal

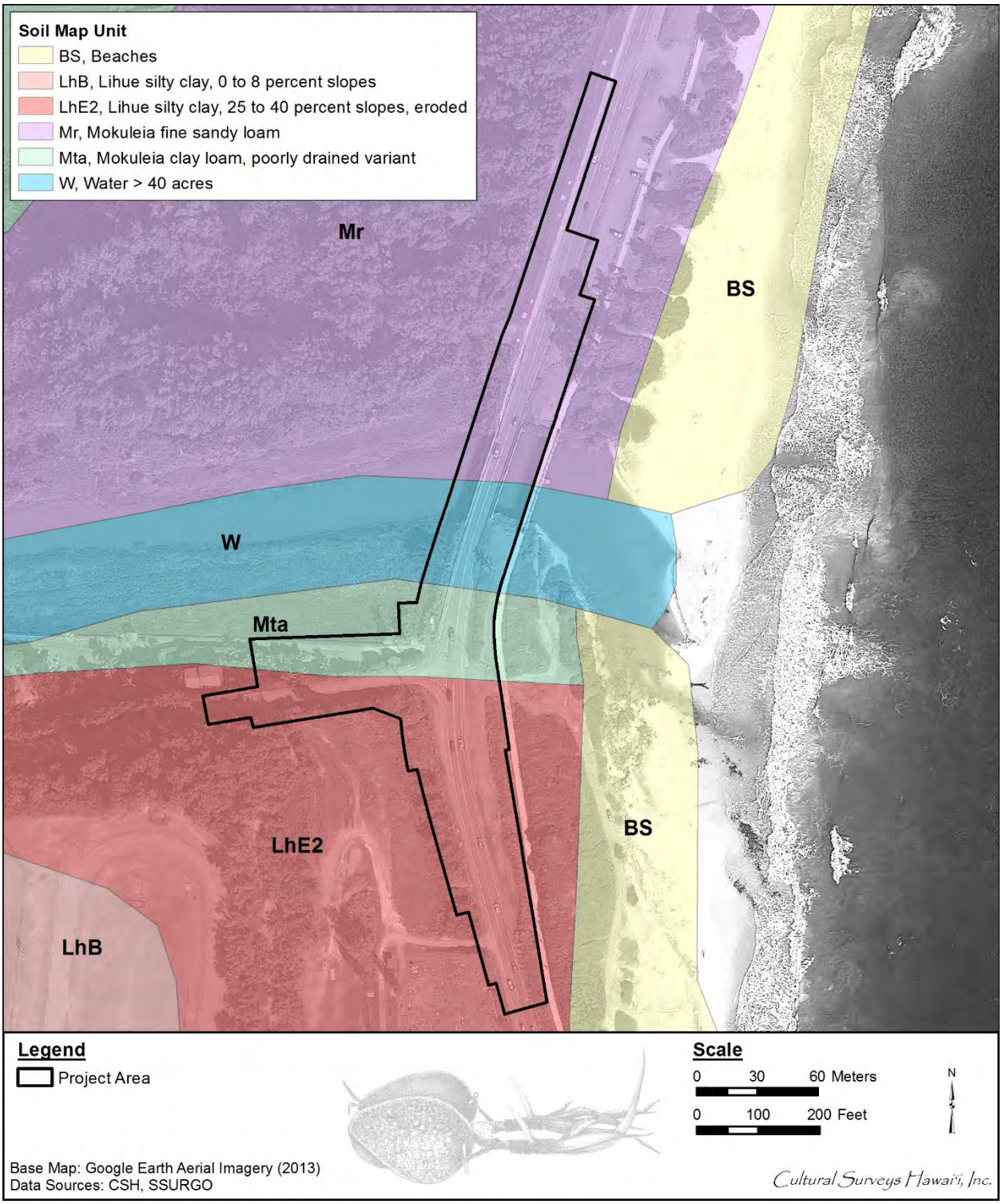

Figure 5. Aerial photograph (Google Earth 2013), showing study area along Kūhiō Highway crossing Kapa‘a Stream, with overlay of soil series (soil boundaries from Foote et al. 1972)

plains of Kaua‘i Island and is nearly level (Foote et al. 1972:95). This particular soil is used for pasture and sugarcane crops. Mokuleia clay loam, poorly drained variant only occurs on Kaua‘i, is nearly level, and poorly drained (Foote et al. 1972:96). This soil type is usually used for sugarcane, taro, and pasture.

Soils of the Lihue Series are described as follows:

> This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amount to 40 to 60 inches. The mean annual soil temperature is 73° F. Lihue soils are geographically associated with Ioleau and Puhi soils.
>
> These soils are used for irrigated sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, woodland, and homesites. The natural vegetation consists of lantana, guava, koa haole, joee, kikuyugrass, molassesgrass, guineagrass, bermudagrass, and Java plum. [Foote et al. 1972:82]

Lihue silty clay, 25 to 40% slopes, eroded, is similar to Lihue silty clay, 0 to 8% slopes except the surface layer is thin. Erosion hazard for this particular soil type is severe (Foote et al. 1972:83). This soil type is also used for pasture, woodland, and wildlife habitats. Smaller areas with this soil type have the ability to grow pineapple and sugarcane.

1.4.2 Built Environment

The study area’s built environment includes a portion of Route 56 (Kūhiō Highway) including the intersection of Mailihuna Road and Kapa‘a Stream Bridge. Portions of the Kapa‘a to Keālia bike path are also located within the study area. The land surrounding the study area is not significantly developed. The largest establishment near the bridge site is Kapa‘a High School soccer field, track, and baseball diamond, which are located approximately 300 m (984.3 feet [ft]) to the southwest. To the north and northwest of the study area the land is primarily utilized for agricultural and residential purposes.

Section 2 Methods

2.1 Archival Research

Research centers on Hawaiian activities including *ka‘ao* (legends), traditional *mo‘olelo* (stories), *wahi pana* (storied places), *‘ōlelo no‘eau* (proverbs), *oli*, *mele*, traditional subsistence and gathering methods, ritual and ceremonial practices, and more. Background research focuses on land transformation, development, and population changes beginning with the early post-Contact era to the present day.

Cultural documents, primary and secondary cultural and historical sources, previous archaeological reports, historic maps and photographs were reviewed for information pertaining to the study area. Research was primarily conducted at the CSH Library. Other archives and libraries including the Hawai‘i State Archives, the Bishop Museum Archives, the University of Hawai‘i at Mānoa’s Hamilton Library, Ulukau, The Hawaiian Electronic Library (Ulukau.org 2014), the State Historic Preservation Division (SHPD) Library, the State of Hawai‘i Land Survey Division, the Hawaiian Historical Society, and the Hawaiian Mission Houses Historic Site and Archives are also repositories where CSH Cultural Researchers gather information. Information on Land Commission Awards (LCAs) were access via Waihona ‘Aina Corporation’s Māhele database (Waihona ‘Aina 2000), the Office of Hawaiian Affairs (OHA) Papakilo Database (Office of Hawaiian Affairs 2014), and the Ava Konohiki Ancestral Visions of ‘Āina website (Ava Konohiki 2015).

2.2 Community Consultation

2.2.1 Scoping for Participants

We begin our consultation efforts with utilizing our previous contact list to facilitate the interview process. We then review an in-house database of *kūpuna* (elders), *kama‘āina* (native born), cultural practitioners, lineal and cultural descendants, Native Hawaiian Organizations (NHOs; includes Hawaiian Civic Clubs and those listed on the Department of Interior’s NHO list), and community groups. We also contact agencies such as SHPD, OHA, and the appropriate Island Burial Council where the proposed project is located for their response to the project and to identify lineal and cultural descendants, individuals and/or NHO with cultural expertise and/or knowledge of the study area. CSH is also open to referrals and new contacts.

2.2.2 “Talk Story” Sessions

Prior to the interview, CSH cultural researchers explain the role of a CIA, how the consent process works, the project purpose, the intent of the study, and how their *‘ike* (knowledge) and *mana‘o* (thought, opinion) will be used in the report. The interviewee is given an Authorization and Release Form to read and sign.

“Talk Story” sessions range from the formal (e.g., sit down and *kūkā* [consultation, discussion] in participants choice of place over set interview questions) to the informal (e.g., hiking to cultural sites near the study area and asking questions based on findings during the field outing). In some cases, interviews are recorded and transcribed later.

CSH also conducts group interviews, which range in size. Group interviews usually begin with set, formal questions. As the group interview progresses, questions are based on interviewee's answers. Group interviews are always transcribed and notes are taken. Recorded interviews assist the cultural researcher in 1) conveying accurate information for interview summaries, 2) reducing misinterpretation, and 3) filling in missing details to *mo‘olelo*.

CSH seeks *kōkua* (assistance) and guidance in identifying past and current traditional cultural practices of the study area. Those aspects include general history of the *ahupua‘a* (land division usually extending from the uplands to the sea); past and present land use of the study area; knowledge of cultural sites (for example, *wahi pana*, archaeological sites, and burials); knowledge of traditional gathering practices (past and present) within the study area; cultural associations (*ka‘ao* and *mo‘olelo*); referrals; and any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the study area.

2.2.3 Completion of Interview

After an interview, CSH cultural researchers transcribe and create an interview summary based on information provided by the interviewee. Cultural researchers give a copy of the transcription and interview summary to the interviewee for review and ask them to make any necessary edits. Once the interviewee has made those edits, we incorporate their *‘ike* and *mana‘o* into the report. When the draft report is submitted to the client, cultural researchers then prepare a finalized packet of the participant's transcription, interview summary, and any photos that were taken during the interview. We also include a thank you card and honoraria. This is for the interviewee's records.

It is important to CSH cultural researchers to cultivate and maintain community relationships. The CIA report may be completed, but CSH researchers continuously keep in touch with the community and interviewees throughout the year—such as checking in to say hello via email or by phone, volunteering with past interviewees on community service projects, and sending holiday cards to them and their *‘ohana* (family). CSH researchers feel this is an important component to building relationships and being part of an *‘ohana* and community

"I ulu no ka lālā i ke kumu—the branches grow because of the trunk," an *‘ōlelo no‘eau* (#1261) shared by Mary Kawena Pukui with the simple explanation: "Without our ancestors we would not be here" (Pukui 1983:137). As cultural researchers, we often lose our *kūpuna* but we do not lose their wisdom and words. We routinely check obituaries and gather information from other informants if we have lost our *kūpuna*. CSH makes it a point to reach out to the *‘ohana* of our fallen *kūpuna* and pay our respects including sending all past transcriptions, interview summaries, and photos for families to have on file for genealogical and historical reference.

Section 3 *Ka‘ao* and *Mo‘olelo*

3.1 Traditional *Ka‘ao* Associated with Kapa‘a and Keālia

Storytelling is better heard than read for much becomes lost in the transfer from the spoken word to the written word. Hawaiian storytellers of old were greatly honored and provided a major source of entertainment. Their stories contained teachings while interweaving elements of Hawaiian lifestyles, genealogy, history relationships, arts, and the natural environment. *Ka‘ao* are often full of hidden and double meanings (Pukui 1995:ix).

Beckwith notes that Hawaiians use the term *ka‘ao* "for a fictional story or one in which fancy plays an important part"; *mo‘olelo* is "a narrative about a historical figure, one which is supposed to follow historical events. Stories of the gods are *mo‘olelo*." In reality, the distinction between *ka‘ao* as fiction and *mo‘olelo* as fact cannot be "pressed too closely. It is rather in the intention than in the fact" (Beckwith 1970:1). Thus a so-called *mo‘olelo*, which may be enlivened by fantastic adventures of *kupua* (supernatural beings), "nevertheless corresponds with the Hawaiian view of the relation between nature and man" (Beckwith 1970: 1). A *ka‘ao*, on the other hand, "so consciously composed to tickle the fancy rather than to inform the mind as to supposed events" (Beckwith 1970:1).

The following section presents traditional accounts of ancient Hawaiians living in the vicinity of the project area. These accounts originate before the time of the first Hawaiian and lead to an age of mythical characters whose epic adventures inadvertently lead to the Hawaiian race of *ali‘i* (chief) and *maka‘āinana* (commoner) alike. The *ka‘ao* shared below from in and around the project area are some of the oldest Hawaiian stories that have survived and they still speak to the characteristics and environment of the area and its people.

3.1.1 Hi‘iaka's Arrival in Kapa‘a

In *The Epic Tale of Hiiakaikapoliopele*, Hi‘iaka, the beloved sister of Pele, travels from Hawai‘i to Kaua‘i in order to find Lohi‘auipo, a lover of Pele. As Hi‘iaka and her companions arrived near Kaua‘i Island and came ashore in the vicinity of the project area, this is what they witnessed.

> *Pane akula ‘o Hi‘iaka, "‘A‘ohe ia he ao āu, e ke aikāne, e ‘ike akula. ‘O Wai‘ale‘ale kēnā, he kuahiwi."*
>
> *A i ia wā I paeaea a‘e ai ‘o Hi‘iaka i kēia kau.*
>
> *Kūnihi ka mauna i ka la‘i ē*
>
> *‘O Wai‘ale‘ale lā ē, I Wailua*
>
> *Huki a‘ela i luna ka papa*
>
> *O Anokawailani*
>
> *Ālai ‘ia a‘ela e Nounou*
>
> *Nalowale Kaipuh‘a*
>
> *Ha‘a i ka laulā*
>
> *Ha‘a ka ipu, ha‘a ma kai*

O Kapa‘a

Ha‘a ka ipu, ha‘ ma uka

O Kapa‘a ē

Mai pa‘a ka leo

He‘ole ka heahea mai ē [Ho‘oulumāhiehie 2008a:177–178]

Just then Wahine‘ōma‘o raised a cry of surprise, ‘Hey! What is that thing soaring so high over the sea? Is it a cloud?’

Hi‘iaka responded, ‘That is no cloud you see, my friend. That is Wai‘ale‘ale, a mountain.’ And then Hi‘iaka intoned this chant.

Steep is the mountain in the calm

Wai‘ale‘ale rises there, at Wailua

Pulled up heavenward is the bridge of Anokawailani

Blocked from view by Nounou Hill

Kaipuha‘a disappears completely

Low-lying in its expanse

Shallow is the gourd, low-lying at the shore of Kapa‘a

Shallow is the gourd, low-lying in the uplands of Kapa‘a

Do not restrain the voice

Leaving no beckoning call of welcome. [Ho‘oulumāhiehie 2008b:166–167]

Hi‘iaka was called to from the top of the slopes of Wai‘ale‘ale, “Come ashore!!! Come land ashore!!!” (Ho‘oulumāhiehie 2008: Vol.2:167) The following section notes her arrival to Kapa‘a, and the chant which she recites as she reaches the shore:

E koa wa‘a! E koa wa‘a

E ka wa‘a o ku‘u mau kaikunāne

Mau kunānae ‘ōpū loko‘ino

Aloha ‘ole ē

Aloha ‘ole ana ia‘u ka pōki‘i

Ō ho‘i, a pāpā ia leo aku

Aia (Hi‘i(aka) I ka pali o Kē‘ē

I Honopū, I Waialoha

Aloha mai an aka ipo

‘O Lihi‘auipo I nā hala

O Naue I ke kai. [Ho‘oulumāhiehie 2008a:179]

O canoe-hewn koa! O koa tree made as a canoe

O canoe of my brothers

Those hard-hearted brothers, without compassion

With no concern for me, their little sister

Return now, and carry the message

Hi‘iaka is at the cliffs of Kē‘ē

At Honopū, at Waialoha

The lovers shall offer welcome

Lohi‘auipo amid the hala of Naue by the sea.

When Hi‘iaka’s chant was finished, she urged her friend, saying, ‘We should go. Lehua Island has snatched away the sun.’ [Ho‘oulumāhiehie 2008b:167–168]

After coming ashore Hi‘iaka and her companions continued on their journey toward Hanalei.

3.1.2 Hi‘iaka and Wahine‘ōma‘o Journey through Keālia

The following *ka‘ao* tells of a traditional Hawaiian method of verifying a supernatural being. As in other folklore, a spirit has no weight—often interpreted as having no feet—and so when passing over a delicate leaf if the leaf did not break it could be concluded that the being is supernatural and not of this world. That is the test used on Hi‘iaka and her companion in the following tale.

On their way to Hā‘ena, Hi‘iaka and her companion Wahine‘ōma‘o came upon different *Kupua*.

First a certain *Kupua*, the demi-god of the locality, guarding the surf, saw them coming and sent messengers to see if they walked over the *ti* leaf without breaking it, which was a sign that they were supernatural beings—*akua*. Hiiaka deceived them by sending Wahine-omao ahead as she was more human and her feet tore the leaves. The messengers returned and reported that the strangers were human beings.

Next they came upon a Kupua swollen to twice his natural size, but he was unable to stop them. [Rice 1923:13–14]

Finally, the company stopped near Ke‘ālia to help a man cook his *lū‘au* (young taro tops, especially as baked with coconut cream and chicken, or octopus) to eat with his *poi* (the Hawaiian staff of life, made from cooked taro corms). Noticing an ailing woman in the man’s house, Hi‘iaka said a prayer which brought the woman back to health. All the *kāhuna* (priests, sorcerers) in the region had been unable to help the woman previously (Rice 1923:14).

Showing the method of determining whether a person was supernatural or not by leading them to pass over a leaf, in this story it is a *ti* leaf. In a story from the same island, “A Story of Pumaia,” the character Pupuilima said, “I will spread an ape [large taro-like plants; *Alocasia macrorrhizos*] leaf on the ground; and if it breaks, then they are men, but if it does not, then they area spirits” (Fornander 1919:552).

3.1.3 Palila and His Banana Grove Called Ka‘ea

High in the *mauka* (toward the mountain) region of Kapa‘a in the Makaleha Mountains at a place called Ka‘ea is reported to be the supernatural banana grove of the Kaua‘i *kupua* Palila, grandson of Hina (Handy and Handy 1972:424). Joseph Akina, writing for *Kuokoa* newspaper in 1913, describes Palila’s banana grove:

> The stalk could hardly be surrounded by two men, and was about 35 feet high from the soil to the lowest petiole. The length of the cluster from stem to lowest end of the bunch of bananas was about 1 3/4 fathoms long (one anana and one muku). There were only two bananas on each about 4 inches around the middle. There were just two bananas, one on the east side and one on the west, each about a foot or more in length. The one on the east side was tartish, like a waiawi (Spanish guava) in taste and the one on the west was practically tasteless. The diameter of the end of the fruit stem of this banana seemed to be about 1 feet. This kind of banana plant and its fruit seemed almost supernatural. [Akina 1913]

3.2 Traditional *Mo‘olelo* of Kapa‘a and Keālia

The study area is located at the intersection of the traditional *ahupua‘a* of Kapa‘a and Keālia in the ancient district of Kawaihau (Puna), one of five ancient districts on Kaua‘i (King 1935:228). For taxation, educational, and judicial reasons, new districts were created in the 1840s. The Kawaihau (Puna) District became the Līhu‘e District (with the same boundaries), named for an important town in that district. In 1878, by act of King Kalākaua to secure a future and name for the new Hui Kawaihau, the new district of Kawaihau was created. This new district encompassed the *ahupua‘a* ranging from Olohena on the south to Kīlauea on the north. Subsequent alterations to district boundaries in the 1920s left Kawaihau District with Olohena as its southernmost boundary and Moloa‘a as its northernmost boundary (King 1935:222).

3.2.1 Palila and Ka‘ea

High in the *mauka* region of Kapa‘a in the Makaleha mountains at a place called Ka‘ea, is reported to be the supernatural banana grove of the Kaua‘i *kupua* or demigod Palila, grandson of Hina (Handy and Handy 1972:424). Joseph Akina writing for *Kuokoa* in 1913 describes Palila's banana grove:

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> banana seemed to be about 1 Yo feet. This kind of banana plant and its fruit seemed almost supernatural... (Akina 1913: 5).

3.2.2 Ka Lulu O Mō‘īkeha

Kapa‘a was the home of the legendary *ali‘i* (chief), Mō‘īkeha. Born at Waipi‘o on the island of Hawai‘i, Mō‘īkeha sailed to Kahiki (Tahiti), the home of his grandfather Maweke, after a disastrous flood. On his return to Hawai‘i, he settled at Kapa‘a, Kaua‘i. Kila, Mō‘īkeha’s favorite of three sons by the Kaua‘i chiefess, Ho‘oipoikamalani, was born at Kapa‘a and was said to be the most handsome man on the island. It was Kila who was sent by his father back to Kahiki to slay his old enemies and retrieve a foster son, the high chief La‘amaikahiki (Beckwith 1970:352–358; Fornander 1916:160; Handy and Handy 1972:424; Kalākaua 1888:130–135). As mentioned previously, Mō‘īkeha’s love for Kapa‘a is recalled in the *‘ōlelo no‘eau*: “Ka lulu o Moikeha i ka laulā o Kapa‘a. *The calm of Moikeha in the breadth of Kapa‘a*” (Pukui 1983:157).

“Lulu-o-Moikeha” is described as being situated “near the landing and the school of Waimahanalua” (Akina 1913:5). The landing in Kapa‘a was known as the Makee Landing and was probably constructed in the late 1870s, along with the Makee Sugar Mill. Today, in place of the old Makee Landing is part of a breakwater located on the north side of Mō‘īkeha Canal near the present day Coral Reef Hotel.

3.2.3 Pāka‘a and the Wind Gourd of La‘amaomao (Keahiahi)

Kapa‘a also figures prominently in the famous story of Pāka‘a and the Wind Gourd of La‘amaomao. Pāka‘a was the son of Kūanu‘uanu, a high-ranking retainer of the Big Island ruling chief Keawenuia‘umi (the son and heir to the legendary chief ‘Umi), and La‘amaomao was the most beautiful woman of Kapa‘a and member of a family of high status *kahuna.* Kūanu‘uanu left the island of Hawai‘i, traveled throughout the other islands and finally settled on Kaua‘i at Kapa‘a.

It was there that he met and married La‘amaomao, although he never revealed his background or high rank to her until the day a messenger arrived, calling Kūanu‘uanu back to the court of Keawenuia‘umi. By that time, La‘amaomao was with child but Kūanu‘uanu could not take her with him. He instructed her to name the child Pāka‘a if it turned out to be a boy. Pāka‘a was raised on the beach at Kapa‘a by La‘amaomao and her brother Ma‘ilou, a bird snarer. He grew to be an intelligent young man and it is said he was the first to adapt the use of a sail to small fishing canoes. Although Pāka‘a was told by his mother from a very young age that his father was Ma‘ilou, he suspected otherwise and after constant questioning, La‘amaomao told her son the truth about Kūanu‘uanu.

Determined to seek out his real father and make himself known to him, Pāka‘a prepared for the journey to the Big Island. His mother presented to him a tightly covered gourd containing the bones of her grandmother, also named La‘amaomao, the goddess of the winds. With the gourd and chants taught to him by his mother, Pāka‘a could command the forces of all the winds in Hawai‘i. While this story continues on at length about Pāka‘a and his exploits on the Big Island and later on Moloka‘i, it will not be dwelt upon further here. It is important to note that several versions of this story do include the chants that give the traditional names of all of the winds at all the districts on all the islands, preserving them for this and future generations (Beckwith 1970:86–87; Fornander 1918-1919:5:78–128; Nakuina 1990; Rice 1923:69–89; Thrum 1923:53–67).

The story of young Pāka‘a, the son of the Hawai‘i Island Pāka‘a, as told by Frederick B. Wichman begins on the cliffs of Keahiahi. He mentions in his author’s notes that the Pāka‘a story is from Abraham Fornander.

Frederick Wichman (1998:84) writes that Pāka‘a grew up on a headland named Keahiahi, and Pāka‘a is attributed with the invention of the crab-claw sail. Other sails existed before this time and brought the Hawaiians to the Islands, but the crab-claw sail was particular to Hawai‘i.

Pāka‘a lived with his mother La‘maomao and his uncle Ma‘ilou the bircatcher in a small house on the cliffs of Keahiahi that lie between Kapa‘a and Keālia. Pāka‘a gets short shrift when the fishermen hand out fish to the people, and decides he can change that situation and catch his own fish.

> Pāka‘a watched the fishermen and noticed how difficult it was to paddle the canoes out to the deep sea grounds, even with eight paddlers aboard. He sat under the hala trees on the point of Ke-ahiahi, the waves breaking at his feet and watched the fishermen launch their canoes and paddle through the winding channel through the reef and struggle out over the breakers into the open sea.
>
> Going out was bad enough but coming back was worse for the canoes were heavy with fish and the paddlers were tired. If the sea was running high, the channel through the reef was hard to find and many canoes had been overturned and the day’s work eaten by the sharks. [Wichman 1991:161]

One day, as Pāka‘a observes two young chiefs launching a kite, and noticing a large *pai‘ea* crab pointing a claw in the air, and seeing the eight-man canoe struggling back to shore, Pāka‘a had an idea--so he created, with some *lauhala* (leaves of the pandanus; *Pandanus odoratissimus*) strips and a square net a contraption which billowed in the wind and looked like a giant crab claw. So he asked the fishermen if he could join them on their next trip. Then he asked his uncle’s permission to borrow his outrigger canoe and lashed his contraption to the outrigger crosspiece. Pāka‘a called it a sail. His uncle was proud of him. And wished him well. Pāka‘a kept the sail folded up and out of view, and joined the other fishermen who paid him no attention as they sailed out.

After a while, Ka-leho (the head fisherman) looked back at the land and saw that on one side Ke-ahiahi point and the village of Ke-kau-onohi were lined up one above the other while on the other side the mountain trail to Pa'a was just visible over Kalepa hill and knew that he had reached the deep sea fishing ground of Ka-lae-loa-lalo where the *mālolo* (Hawaiian flying fishes; *Parexocoetus brachypterus*) could often be found…Pāka‘a got many winged *mālolo* and then when the day’s fishing was done, he dared the others to race him back to the shore. They finally accepted his challenge Then Pāka‘a hoisted his sail and turned the canoe so the wind would fill his crab-claw net. The other fishermen laughed at first. Ka-leho let him have his chance. And Pāka‘a sang:

> The sea swells and rolls,
>
> A wave that rises and falls but does not break.
>
> My canoe rides the long backed billow,
>
> The billows that follow one after another.

> The spray files up from the prow,
>
> My prow aims at the land.
>
> Pushed by the breeze Ke-hau.
>
> The breath of Malamalama-iki,
>
> Blows my crab-claw sail.
>
> Say! Where are you?
>
> Paddles flash in the sun,
>
> The reflection scared the mālolo of Ka-lae-loa-lalo.
>
> Who shall be first to the sands of Kolokolo? [Wichman :1991:166]
>
> The fishermen began paddling toward shore. They watched as Pāka‘a paddled farther out to sea and began to fumble with a pole that had a mat tied to it. It looked so funny that they began to laugh, and soon they lost the rhythm of their own paddling. Suddenly Pāka‘a’s mast was up and the sail filled with wind. Pāka‘a turned toward shore and shot past the astonished fishermen, landing on the beach far ahead of them. That night, Pāka‘a, his mother, and his uncle had all the *mālolo* they could eat. [Wichman 1998:85]

People gathered around as he landed to look at the strange sail, the first that had ever been seen in Hawai‘i. Pāka‘a then folds his sail up and takes it and the fish home. This story is also part of the Paka‘a story in William Hyde Rice’s *Legends of Hawai‘i*; Paakaa and his son Kua-a-paakaa 1923:69-90).

In the story above where Kaleho knows he is at the proper fishing ground, we have the same fishing ground description as mentioned as in the Lahaina Student papers of 1885, except in the story of Pāka‘a we know what kind of fish are found in this fishing ground.

> The Lahainaluna Student description (No. 5) is: “Kalaeloa is a fishing ground. Kaiwa, the hill is its landmark when it appears over the heiau site of Kuhua. That is the lower landmark. When the trail to ascend Paa appears to be close to the hill of Kalepa, that is the upper landmark” [Kauai Historical Society, Lahinaluna Schools Composition No. 18, 1885:211-214, translation by Mary Pukui]

3.2.4 Ka‘ililauokekoa

Kapa‘a is also mentioned in numerous traditions concerning Kawelo (Kaweloleimākua), Ka‘ililauokekoa *(*Mō‘īkeha’s daughter, or granddaughter, dependent on differing versions of the tale), the *mo‘o* (lizard, water spirit) Kalamainu‘u and the origins of the *hīna‘i hīnālea* or the fish trap used to catch the *hīnālea* (small to moderate sized wrasse; *Labridae*) fish, and the story of Lonoikamakahiki (Rice 1923:106–108).

Kaili-lau-o-kekoa as told by William Hyde Rice:

> Kaili-lau-o-kekoa, The-Covering-of-the-Koa-Leaf, was the only daughter of Moikeha and Hooipo, two very high chiefs of Kauai. Her parents loved the child greatly, and gave her every care, engaging a nurse, or kahu, to be with her always.

As Kaili-lau-o-kekoa grew, her beauty increased. After she had ridden the surf at Maka‘iwa, near Waipouli, or had played konane, a complicated game resembling chess, her cheeks glowed like the rising sun.

One day, when her parents had gone to cultivate taro in Kapahi, Kaili-lau-o-kekoa was alone, playing konane with her nurse. Suddenly a strange man stood before the door. He asked the girl if she enjoyed konane very much. When she answered that she did, he suggested that she play a game with him. Kaili-lau-o-kekoa won the game by a score of nine to four. She said to the stranger, “You have been defeated by the daughter of Moikeha.”

The man asked, “Is Moikeha still living?” “Yes,” answered Kaili-lau-o-kekoa. “He has gone to the taro patches now. Moikeha loves surf-riding and my mother. He will stay on Kauai till he dies.”

After the stranger had heard these words, he said, “I believed that he was dead. I regret not being able to take him back to Molokai with me. When he returns, tell him that the high chief of Molokai has been here, and has been defeated by Moikeha's daughter in a game. Give your father and mother the aloha of Heaa-kekoa.”

When the chief from Molokai had spoken these words, he got into his canoe, and started for his island.

Now, at Pihanakalani, where all good things abounded, a legendary spot on Kauai above the Wailua river, that cannot be found nowadays there lived two very high chiefs: Kaua-kahi-alii, The-Battle-of-the-Lone Chief, and his sister Ka-hale-lehua, The-House-of-Lehua. In this gardenspot of Pihanakalani was the far-famed fountain of Wai-o-ke-ola, Water-of Life, which could restore the dead to life, and renew the youth of the aged. Kaua-kahi-alii owned a very loud-sounding flute called Kanika‘wi, which could be heard as far away as Kapaa.

One night Kaili-lau-o-kekoa had been playing konane with her nurse until midnight. That night, while the girl slept, the nurse heard the flute crying, “Kaili-lau-o-kekoa, do you sleep?”

When the girl awoke in the morning her nurse told her the words she had heard. Kaili-lau-o-kekoa was greatly excited and said, “Today we shall sleep all day so that I may be awake at midnight, for I must hear this voice from the hills when it calls me.”

So they slept until evening. Then they played konane to keep themselves awake. At midnight they heard the flute voice calling, “Kaililau-o-kekoa, do you sleep in Puna? Is not the surf high?”

“I do not sleep. I shall search for you until I find you,” answered the breathless Kaili-lau-o-kekoa.

Then she and her nurse started on their search. They climbed up the mountain side and at daylight reached Kuamoo.

When the sister of the flute player saw these two women coming, she sent the heavy mist and the blinding rain to delay their journey. They found shelter in a hollow tree and when the rain had ceased they went on. Kaili-Iau-o-kekoa soon saw a house where a bright fire was burning. As the two women approached the house of Ka-hale-lehua, the sister of the flute-player, she took pity on them, and welcomed them. She took off their wet clothes, and gave them each a dry pa‘u [skirt]. Then she prepared a meal for her unbidden guests. She placed before them a platter of lipoa limu, choice sea-weed, and little striped manini [convict tang; *Acanthurus triostegus*] fish, still alive. Kaili-Iau-o-kekoa was greatly surprised to see the live fish, and said to her nurse, “We live near the sea yet we never have live fish. This place is far from the sea. How is it that the fish are still alive?”

Her hostess answered her by saying that she and her brother had a fish pond near their house.

After the meal was finished Kaili-Iau-o-kekoa went in search of the flute that had called her away from home. She came to the room of Kaua-kahi-alii and found the flute hidden in his breast. At once a great love for this chief filled the heart of the girl, and she forgot her fond parents and stayed with him.

When the parents of Kaili-lau-o-kekoa found that their daughter was gone, they began to search for her. At last they came to the house where she was living with the young chief, and carried them both to Kapaa. There they tied the chief to a post in a house.

The first day he was given nothing to eat. On the second day a boy passed by, and, seeing the prisoner, asked if he had been given any food or water. When he heard that he had received none, he returned to his parents and made known to them the chief's condition. They ordered their son to put water in a coconut shell, and to get another one for food, so that he could throw them to the prisoner. With these he crawled through the rushes so that no one would see him. The boy carried out his parents’ instructions on that day, and on many following days. The chief began to look well again.

When the father of Kaili-lau-o-kekoa had recovered from his anger he called his daughter to him and asked her to explain how she came to be in the mountains. She told him that she had heard the flute calling to her, and had wanted to make of the man who played it either a husband or a friend.

Her parents decided to allow the kahuna to settle the matter. When they were called together, and had heard the story they all agreed that Kaili-lau-o-kekoa should marry the chief if he could give his genealogy. As soon as Kaua-kahi-alii was called before them, he proved that he was a very high chief, and so the beautiful chiefess was given to him in marriage.

The boy who had carried food and water to the chief in prison became his great friend and was made luna, or head-man, over all his lands.

3.2.5 Kalukalu Grass of Kapa‘a

"*Kūmoena kalukalu Kapa‘a,*" or "Kapa‘a is like the *kalukalu* mats," is a line from a chant recited by Lonoikamakahiki. *Kalukalu* is a sedge grass, used for weaving mats (Fornander 1917:4(2):318–19). Pukui (1983:187) associates the *kalukalu* with lovers in "Ke kalukalu moe ipo o Kapa‘a: *The kalukalu of Kapa‘a that sleeps with the lover*." According to Wichman (1998:84), "a *kalukalu* mat was laid on the ground under a tree, covered with a thick pile of grass, and a second mat was thrown over that for a comfortable bed," thus the association with lovers. Kaua‘i was famous for this particular grass, and it probably grew around the marshlands of Kapa‘a. It is thought to be extinct now, but an old-time resident of the area recalled that it had edible roots, "somewhat like peanuts." Perhaps it was a famine food source (Kapa‘a Elementary School 1933: vi) (See Section 3.5.2 *Kalukalu* Grass of Kapa‘a from Lonoikamakahiki).

3.3 *Wahi Pana*

Wahi pana are legendary or storied places of an area. These legendary or storied places may include a variety of natural or human-made structures. Oftentimes dating to the pre-Contact period, most *wahi pana* are in some way connected to a particular *mo‘olelo*, however, a *wahi pana* may exist without a connection to any particular story. Davianna McGregor outlines the types of natural and human-made structures that may constitute *wahi pana*:

> Natural places have mana, and are sacred because of the presence of the gods, the akua, and the ancestral guardian spirits, the ‘aumakua. Human-made structures for the Hawaiian religion and family religious practices are also sacred. These structures and places include temples, and shrines, or heiau, for war, peace, agriculture, fishing, healing, and the like; pu‘uhonua, places of refuge and sanctuaries for healing and rebirth; agricultural sites and sites of food production such as the lo‘i pond fields and terraces slopes, ‘auwai irrigation ditches, and the fishponds; and special function sites such as trails, salt pans, holua slides, quarries, petroglyphs, gaming sites, and canoe landings [McGregor 1996:22].

As McGregor makes clear, *wahi pana* can refer to natural geographic locations such as streams, peaks, rock formations, ridges, offshore islands and reefs, or they can refer to Hawaiian land divisions such as *ahupua‘a* or *‘ili*, and man-made structures such as fishponds. In this way, the *wahi pana* of Kapa‘a and Keālia tangibly link the *kama‘āina* of Kapa‘a and Keālia to their past. It is common for places and landscape features to have multiple names, some of which may only be known to certain *‘ohana* or even certain individuals within an *‘ohana*, and many have been lost, forgotten or kept secret through time. Place names also convey *kaona* (hidden meanings) and *huna* (secret) information that may even have political or subversive undertones. Before the introduction of writing to the Hawaiian Islands, cultural information was exclusively preserved and perpetuated orally. Hawaiians gave names to literally everything in their environment, including individual garden plots and *‘auwai*, house sites, intangible phenomena such as meteorological and atmospheric effects, *pōhaku* (rock, stone), *pūnāwai* (freshwater springs), and many others. According to Landgraf (1994), Hawaiian *wahi pana* "physically and poetically describes an area while revealing its historical or legendary significance" (Landgraf 1994:v).

3.3.1 Ka‘ea

Handy and Handy have recorded the words of a *kama‘āina* (Native born) who wrote to the newspaper *Ku‘oko‘a* (19 May 1913); he described the waterfalls of Makaleha, billowing clouds on Pohaku-pili and a banana grove at Ka‘ea.

> As my eyes traveled on the left of the waterfall of Makaleha, I saw a billowing cloud on Pohaku-pili but could not see Palila’s banana grove, the grove spoken of in olden days,
>
> A banana grove at Kaea,
> [where] the bananas were fully ripe.
> They did not ripen in ten days
> But were fetched from the pit
> [where they were buried for ripening].
> [Handy and Handy 1972:424]

Ka‘ea is a ridge “Where bodies of those slain in battle were buried (Boundary Commission Testimony 1:33:35); it is also described as a “survey reference point on Nounou mountain, a small open spot surrounded by hau & koa trees, [an] old burying ground” (Gay 1872a; Commission of Boundaries 1872:33). John Papa ‘Ī‘ī also commented that “Left at Kaea are the bones of the traveler” (‘I‘ī 1959:157). Utilizing the variant of Ka‘ea, Waihoikaea, ‘Ī‘ī states, “So it is that the bones of the traveler are at Waihoikaea, which lies above Nounou, on the east side of the hill (‘I‘ī 1959:83). *Iwi* (bone) are also mentioned again by Pukui and Elbert, who, in referencing Ka‘ea cite, “A waiho i ka ‘ea nā iwi o kama hele, the traveler’s bones are left in the air [said of one dying in a foreign land]” (Pukui and Elbert 1986:36).

3.3.2 Kapa‘a

Kapa‘a is the name of a land section, town, ditch, elementary school, weir, and beach park in the Kawaihau District (formerly Puna) in Kaua‘i. Kapa‘a literally translates as “the solid or the closing” (Pukui et al. 1974:86). Kapa‘a was a navigational center of the Pacific during the period of voyagers, starting with Mō‘īkeha. Kapa‘a is where the famous navigator chief and first *ali‘i ai moku* (paramount chief) of Kaua‘i ended his days. This is also where his son Kilo is born, who would sail to Tahiti to fetch La‘amaikahiki, another son of Maweke so his father could see him again. Kapa‘a is home of the legendary inventor of the crab-claw sail, Pāka‘a. Young Pāka‘a’s uncle, Mailou was a reknowned bird catcher of Kapa‘a, and his mother La‘amaomao possessed the magic wind gourd, in which all the winds of the islands were kept. This was also the the home of Kaililauokekoa, the daughter of Mō‘īkeha who married the flute-playing chief.

3.3.3 Kahana

The name of a land (possibly) and *‘ili* (land section, a subdivision of an *ahupua‘a*) in Kapa‘a where uncultivated *lo‘i* (taro pond field) were claimed (LCA 03971). Kahana literally translates as “cutting” but may also be translated as the drawing of a line or a turning point (Pukui et al. 1974:63).

3.3.4 Kaweloleimākua and Kauahoa in Waipahe‘e

In the *mauka* areas of Keālia is a place called Waipahe‘e, a slippery slide used for recreation up until recent times. This *wahi pana* is associated with Kaweloleimākua and Kauahoa, who one day traveled to this place with their companion ‘Aikanaka (Wichman 1998:86). Here the two boys engaged in a contest of who could make the best *lei* (garland) for their chief. Kauahoa won this contest by making his *lei* of *liko lehua* (*lehua* [flower of the *‘ōhia* tree; *Metrosideros macropus*] bud) while Kaweloleimākua made his of fern. The boys then held a contest *na‘ina‘i mimi* to see who could urinate the longest, but because Kauahoa was much bigger than Kawelo, he also won this contest. Later, when the two were men engaged in war, Kawelo reminded Kauahoa of this boyhood excursion in an attempt to avoid bloodshed between them, however, he was unsuccessful.

3.3.5 Keahiahi/Kuahiahi/Kaahiahi

Keahiahi Point is the rocky headland at the north end of Kapa‘a, where where the legendary Paka‘a (who is said to have designed the crab-claw sail for fishing canoes) was brought up with his mother La‘maomao possessor of the the Wind Gourd (which contained all the winds of Hawai‘i, and his uncle Mailou, a birdcatcher, who allowed young Paka‘a to try the new sail out on his canoe. This is where the first Kapa‘a School was once located. It is also near LCA 8837 which Kampuaa (LCA 8837) claims is in the *‘ili* of Awawaloa.

3.3.6 Keālia

Literally translated, Ke‘ālia means “the salt encrustation” (Pukui et al. 1974:102). This *ahupua‘a* is just north of Kapa‘a. Keālia was granted to the *ali‘i wahine* (chiefess) Miriam (or Mikahela) Ke‘ahikuni Kekau‘ōnohi, who was the granddaughter of Kamehameha, and one of Liholiho’s wives, and served as Kaua‘i governor from 1842 to 1844. It is the home of the Makee Sugar Mill in the early 20th century. Kekau‘ōnohi’s home also served for many years as a triangulation point for fishermen.

In the Hi‘iakaikapoliopele story, while “On their way to Hā‘ena, Hi‘iaka and Wahine‘ōma‘o stopped near Ke‘ālia to help a man cook his *lū‘au* to eat with his *poi*. Noticing an ailing woman in the man’s house, Hi‘iaka said a prayer which brought the woman back to health. All the *kahuna* in the region had been unable to help the woman previously (Rice 1974:14).

3.3.7 Nounou

Nounou is the name given to the *mauka* hill or mountain section known commonly as “Sleeping Giant.” Kawelo’s parents taught him the “art of stone fighting (nounou) so that in the second battle (fought on the mountain called Nounou) he is victorious over ‘Aikanaka” (Beckwith1970:409). Nounou is a local landmark. Nounou is also a trianglulation point for fishermen on on the ocean.

Nounou is a *pu‘u* or mountain, with an elevation of 1241 ft. (Soehren 2016; Gay 1872a; USGS 1910), as well as a trail, and a forest reserve in the Kawaihau district of Kaua‘i. The tyrant ‘Aikanaka made his last stand on Nonou against his cousin Kaweloleimakua or Kawelo. As a fortress or *pu‘u kaua*, ‘Aikanaka was able to direct his forces while atop Nonou (Akina 1913). According to Wichman:

> When ‘Aikanaka was the *ali‘i nui* of Kaua‘i, he lived in a *heiau* on top of Nounou. From here he directed the battles against his cousin Kaweloleimakua. One by one ‘Aikanaka’s fiercest warriors were overthrown and killed until finally Kawelo

> stood outside the *heiau* and called to ‘Aikanaka to surrender. ‘Aiakna replied that Kawelo was only a *moa* (chicken) since he was the grandson of Chied Moa and therefore a servant of the king. This so shamed Kawelo that he almost threw himself over the cliff, but his wife pulled him back. She reminded him that the small *kāhili* whose feathers brushed ‘Aikanaka’s back were made of *moa* feathers and therefore a rooster was higher than a king. When ‘Aikanaka heard this, he was so chagrined that he abandoned the kingdom and went to live in Wahiawa. Kawelo burned the *heiau* to signal that he had won the war and was the new ruler of Kaua‘i [Wichman 1998:74-75].

3.3.8 *Heiau* of Kapa‘a and Keālia

During their expeditions around Hawai‘i in the 1880s collecting stories from *ka po‘e kahiko* (the people of old), Lahainaluna students stopped in Kapa‘a and Keālia and gathered information regarding *heiau* (pre-Christian place of worship) of the region (Hawaiian Ethnological Notes 1885). Fourteen *heiau* were named, suggesting the two *ahupua‘a* were probably more politically significant in ancient times.

Table 1 lists the names of the *heiau*, their location if known, their type, associated chief and priest, any comments, and the reference. The exact locations of these *heiau* are unknown. The general locations of two of the *heiau* correlate with *wahi pana* of Kaluluomoikeha and Kuahiahi (see Section 3.2.2 Ka Lulu O Mō‘īkeha and Section 3.3.5 Keahiahi/Kuahiahi/Kaahiahi). Kaluluomoikeha is thought to be the general area near the Mō‘īkeha Canal and the present day Coral Reef Hotel. Kuahiahi (also spelled Kaahiahi and Keahiahi) is the rocky headland at the north end of Kapa‘a where the first Kapa‘a School was once located.

Table 1. List of *Heiau* in Kapa‘a and Keālia (source: Bushnell et al. 2003)

Name	Location	Type	Associated Chief/Priest
Kaluluomoikeha	Kapa‘a	Unknown	Mō‘īkeha
Kawelomamaia	N. of Keālia/near Kawelomamaia Stream	Po‘okanaka Class	“Dedicated to Shark God” (Bennett 1931:129).
Kuahiahi	Kapa‘a (where government school stands now)	Unknown	Kiha/ Lukahakona
Kumalae	Kapa‘a/Keālia	Unknown	Unknown
Mailehuna	Kapa‘a (Mailehuna is the area of the present day Kapa‘a School)	Unknown	Kiha, Kaumuali‘i/ Lukahakona
Mano	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Napuupaakai	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Noemakalii	Kapa‘a/Keālia	“Heiau for birth of Kauai Chiefs, like Holoholokū”	Unknown
Pahua	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona

Name	**Location**	**Type**	**Associated Chief/Priest**
Piouka	Kapa‘a/Keālia	“Unu-type heiau”	Unknown
Pueo	Kapa‘a	Unknown	Kiha, Kaumuali‘i/ Lukahakona
Puukoa	Kapa‘a/Keālia	“*Unu*” (*heiau* for fishermen or an agricultural *heiau*)	Unknown
Una	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona
Waiehumalama	Kapa‘a/Keālia	Unknown	Kiha/ Lukahakona

3.4 *‘Ōlelo No‘eau*

3.4.1 *‘Ōlelo No‘eau* #1450

This proverb describes the love Mō‘īkeha had for Kapa‘a (Pukui 1983:157).

Ka lulu o Moikeha i ka laulā o Kapa‘a.

The calm of Moikeha in the breadth of Kapa‘a.

The chief Mō‘ikeha enjoyed the peace of Kapa‘a, Kaua‘i, the place he chose as his permanent home.

3.4.2 *‘Ōlelo No‘eau* #1736

The following proverb describes the soft bed made of the *kalukalu* plant (Pukui 1983:187).

Ke kalukalu moe ipo o Kapa‘a.

The kalukalu of Kapa‘a that sleeps with the lover.

Lovers were said to like whiling the time in the soft *kalukalu* plants.

3.5 *Oli* and *Mele*

3.5.1 Chant of Puna

Akina (1913) tells the story of how Mō‘īkeha’s son Kila stocks the islands with the *akule* (big-eyed or google-eyed scad; *Trachurops crumenophthalmus*), *kawakawa* (mackerel tuna; *Euthynnus yaito*), and *‘ōpelu* (mackerel scad; *Decapterus pinnulatus*) fish. When Kila travels to Kahiki, he seeks out his grandfather Maweke and explains that he is the child of Mō‘īkeha. When Maweke asks Kila if Mō‘īkeha is enjoying himself, Kila answers with the following chant of Puna:

I walea no ku‘u makuakāne i ke ao	My father enjoys the billowing clouds
ho‘okanunu, iluna o Pōhakupili	over Pōhaku-pili,
I ka poi uouo ono ae no a,	The sticky and delicious poi,
Me ka i‘a i na mai o ka Puna,	With the fish brought from Puna,
Ka opae hoainahanaha o Kapalua;	The broad-backed shrimp of Kapalua,
Na opae kua hauli o Pohakuhapai,	The dark-backed shrimp of Pōhakuhapai,
Na puawa ona mai no o Maiakii,	The potent awa root of Maiaki‘i,
Me ka ulu moelehu mai no o Makialo	The breadfruit laid in the embers at Makialo,
Me na kalo pehi hua o Keahapana,	The large heavy taros of Keah’āpana
A i kekee nalu ae no hoi o Makaiwa,	The crooked surf of Makāiwa too
A i ke kahuli aku kahuli mai o ka pua	The bending hither and thither of the reed
uku me ka pua neki,	and rush blossoms,
A i ka nu‘a ae no o ke kalukalu	The swaying of the kalukalu grasses
o Puna,	of Puna
A i na mea nui nepunepu no a ku‘u	The large, plump, private parts of
mau makuahine.	my mothers,
O Hoioipo ikamalanai me Hinau-u,	Of Ho‘oipoikamalanai and Hinau-u,
A i ka la hiki ae no a napoo aku,	The sun that rises and sets,

Walea ai no ka nohona ia Kaua‘i	He enjoys himself on Kaua‘i,
Ua puna a puni Kaua‘i ia Mō‘īkeha	All of Kaua‘i is Mō‘īkeha’s
[Akina 1913:6]	

Maweke is delighted and when the boy is questioned as to his purpose, Kila tells his grandfather he is seeking fish for his family. Maweke tells Kila to lead the fish back to his homeland. This is how Kila led the *akule*, *kawakawa*, and *‘ōpelu* to Hawai‘i.

3.5.2 *Kalukalu* Grass of Kapa‘a from Lonoikamakahiki

The following chant is taken from “How Lonoikamakahiki Revealed the Bones of the Chiefs Killed by Keawenuiaumi.” Within this *oli*, there is a reference to the *kalukalu* grass of Kapa‘a. In Fornander’s version, Hauna produces the bones of another chief from a gourd (the chief of Kau) and says to Lonoikamakahiki: “Here is another chief, that of Kau. He has also lived with us, and seeing how few we were, deserted, and at the battle of Puumaneo was slain by Keawenuiaumi.” He secured the bones in his hands, and he chanted:

Aloha Kahalemilo o ka la la,	Dear is the house of Milo in the sun,
Hale pakaiaulu o Moanauli.	The elevated house of Moanauli.
Uli hew aka ili	Your skin is bruised without cause,
Mehe mea I moe a ipo la,	Bruised as though by a lover.
No Hanalei nei aloha,	This lover is from Hanalei,
No kuu kane lau awa o Puna.	My lover of the awa leaf of Puna.
Kumoena kalukalu Kapaa,	Kapaa is like the kalukalu mats,
Ohai huli Papiohuli	Where the ohai turns at Paiohuli
Eia mai ua mea la!	Here are some more!
[Fornander 1916-1919:318-319].	

3.5.3 Hula ‘o Makee

A traditional *mele*, “Hula ‘o Makee” is given in Clark’s *Beaches of Kaua‘i and Ni‘ihau* and refers to the loss of the ship “Makee” near Kapa‘a Beach Park.

‘Auhea iho nei la ‘o Makee	Where is the Makee?
A ka Malulani la e huli hele nei	The Malulani looks everywhere.
Aia aku nei kahi i Kapa‘a	There she is at Kapa‘a
Ka Waiho kapakahi i ka ‘apapa	Keeled over on the reef.
‘O ke kani honehone a ke oeoe	Softly sounds the whistle
A e ha‘i mai ana la i ka lono.	Telling the news [Clark 1990:10]

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Section 4 Traditional and Historical Accounts

4.1 Pre-Contact Historical Background

4.1.1 *Ali‘i* of Kaua‘i

Although Kapa‘a and Keālia pale in comparison to their neighbor to the south, Wailua, the religious center in early Kaua‘i history, Kapa‘a was the center of the voyaging chiefs in the Pan-Pacific traveling era (11th & 12th centuries). Kapa‘a also was a more secular center during those early times.

The coming of Māweke and his sons to the Hawaiian Archipelago dates back to approximately the 10th and 11th centuries (Fornander 1996:3). Māweke and his kin are believed to have inititally occupied the whole of O‘ahu, however, they eventually voyaged to and subsequently occupied the islands of Kaua‘i, Maui, and Moloka‘i shortly after. The bloodline of Māweke has been noted as among the highest of Hawaiian *ali‘i*; it was from his line that Mō‘īkeha, the future *ali‘i nui*, of Kaua‘i would spring forth:

> As a northern O‘ahu chief, Māweke was a lineal descendent of the Nanaulu line, which Fornander considers to be the more reliable genealogy being least affected by interpretation compared with the Ulu lineage. Although both the Nanaulu and Ulu lines are descended from Wākea and Papa, the Nanaulu lineage is most often referred to by the Kaua‘i and O‘ahu chiefs but less so by Maui chiefs and hardly ever with Hawai‘i chiefs.
>
> According to Fornander, the son of high chief Kekuapahikala and Maihikea, Māweke is 29 generations after the time of the gods, Wākea and Papa, and the first recorded chief of O‘ahu. In these stories we see Māweke as the ruler of O‘ahu during an era when Polynesian people are constantly travelling between various island groups across the Pacific and beyond.
>
> According to newspapers and other sources, Prince Māweke was from Tahiti and a contemporary of ‘Aikanaka, the father of Hema. Māweke married the two sisters of Nu‘uhiwa, the grandson of Paumakua. Māweke had 3 sons with Naiolaukea. These were Mulieleali‘i, Keaunui, and Kalehenui who resided in Ko‘olau, O‘ahu. The stories of Mo‘ikeha, Māweke’s celebrated grandson have been recorded by Fornander, Kamakau, and Kalākaua [Kamehameha Schools 2016].

In oral history Kapa‘a is famous as the home of the great *ali‘i* Mō‘īkeha who lived here in his later years. This high chief was born in Waipi‘o, Hawaii, but went to Kahiki after a disastrous flood in that valley. When he came back to these islands he lived at Kapa‘a, but, after his death his bones were taken to Kahiki. Near the shore in Kapa‘a is a place called Lulu-o-Moikeha (The She1tered-place-of-Moikeha). Before Mō‘īkeha 's death his son Kila (brother to the son who is reputed to have brought the breadfruit from Kahiki to Oahu) went to Kahiki seeking his father's father, and to him identified himself by a chant describing the charms of Kapa‘a:

> My father enjoys the billowing clouds over Pohaku-pili
> The sticky and delicious poi,
> With the fish brought from Puna,

> The broad-backed shrimp of Kapalua,
> The dark-backed shrimp of Pohaku-hapai,
> The potent ‘awa root of Mai‘aki‘i
> The breadfruit laid in the embers at Makialo,
> The large heavy taros of Keahapana . ...
> He enjoys himself on Kauai,
> All of Kauai is Moikeha's.

The tale of Kila returning to the Hawaiian Islands was recorded by a newspaper writer in Kapa‘a, and spoke of the following:

> …he brought back with him these kinds of fishes: the akale [akule], kawakawa, and ‘opelu. Before his time Kahiki had these, not Hawaii. Now they are found everywhere in our island waters [Handy and Handy 1972:423-424].

Proceeding Mō‘īkeha were the following *ali‘i ‘ai moku* (chief who rules a *moku*) of Kaua‘i (in chronological order): Haulanuiaiakea, (son of Mō‘īkeha, born on Kaua‘i), La‘amaikahiki (ca. 951-1011, son of Mō‘īkeha, born in Tahiti and returns to Tahiti), Ahukinialaa (son of La‘amaikahiki, born on Kaua‘i), and Kamahano (son of Ahukinialaa, born on Kaua‘i).

4.1.2 Kapa‘a

Handy and Handy have described land in Puna Moku, wherein the *ahupua‘a* of Kapa‘a lies:

> The *moku* of Puna included ten *ahupua‘a* along the southeast coast of Kauai. The topography is very much like that of southern Ko‘olau: a broad *kula*, intersected by streams flowing from the eastern slopes of the ridge on the east side of Hanalei Valley, until we come to Wailua River which cuts far back to Mt. Wai‘ale‘ale, and also drains the northern slopes of Kilohana crater (1,134 feet high). This was an area of diversified farming: taro, sweet potatoes, breadfruit, coconuts…. South of Kealia was an interesting irrigation ditch, which is described by Wm. C. Bennett:
>
>> ‘A large, simple dirt ditch, about 6 feet in width of varying depths which is traditionally referred to as a Hawaiian ditch. The interesting part is a deep cut about 100 feet long made through a low ridge along-side of which the ditch ran. The lands to be irrigated were on the other side of this ridge and so the cut was made to a depth of 10 or 15 feet through loose rock and subsoil’
>
> [Handy and Handy 1972:423]

Bennett also provided descriptions of the Kapa‘a area: “In the foothills of the mountains [back of the Hawaiian homestead area] are many little valleys which contain taro terraces. Single rows of stone mark the divisions with some 2-foot terraces” (1976:128).

A *kama‘āina* of Kapa‘a wrote in *Ku‘oko‘a* (May 9, 1913):

> As I looked up toward the mountains, O how beautiful it was! The waterfall of Makaleha fell on the distant height of Kapahi, the inland forest where I lived for many years and knew so well. As my eyes traveled on the left of the waterfall of

> Makaleha, I saw a billowing cloud on Pohaku-pili but could not see Palila’s banana grove, the grove spoken of in olden days,
>
> A banana grove at Kaea,
>
> [where] the bananas were fully ripe.
>
> They did not ripen in ten days
>
> But were fetched from the pit
>
> [where they were buried for ripening].
>
> Your writer had himself gone to the top of the mountain and saw the stalk and fruit of this banana grove of Kaea, had tasted and eaten and this is what it was like: The stalk could hardly be surrounded by two men, and was about 35 feet high from the soil to the lowest petiole. The length of the cluster from stem to lowest end of the bunch of bananas was about one and three-quarters fathoms long. There were only two bananas on each, about 1/2 inches around the middle ... The diameter of the end of the fruit stem of this banana seemed to be about 10 feet. This kind of banana plant and its fruit seemed to be almost supernatural ... [as does the retrospective imagination of the raconteur!]

4.1.3 Keālia

Documented land use included prehistoric burial interment in Keālia. Physical evidence of prehistoric utilization of Keālia *makai* are the human burials located at the south end of Donkey Beach (SIHP # 50-30-08-1899-1, 2, 3, and 4) (Perzinski et al. 2000:100).

While traditional sources record little about Keālia Ahupua‘a during the years preceding western contact in the late 18th century, the presence of *lo‘i* and terraces on wide flats suggest that it could have supported a stable population (Perzinski et al. 2000:100).

4.2 Early Historic Accounts of Kapa‘a and Keālia

The earliest written documentation of life in the *ahupua‘a* appears in the 1830s when missionary censuses recorded a total population of 283, comprising 265 adults and 18 children within Keālia (Schmitt 1973:25). Other Protestant missionary records focused more specifically on areas where mission stations were established. An 1847 census of 23 land divisions in the Hanalei and Kawaihau Districts gives population figures for Keālia (Schmitt 1969). Most notable is the decline in population in Keālia, from 283 in the 1830s to 143, a reduction of almost half (Schmitt 1969:229). Accounting for the high death toll caused by the introduction of foreign disease, this still seems like an extremely high death rate. Kapa‘a’s population during this time period is unknown. A population distribution map by Coulter (1931) (Figure 6) indicates the population of Kaua‘i ca. 1853 “was concentrated chiefly on the lower flood plains and delta plains of rivers where wet land taro was raised on the rich alluvial soil” (Coulter 1971:14).

Although most of the historic documents for Kaua‘i in this period revolve around missionary activities and the missions themselves, there were indications that the Kapa‘a area was being considered for new sugarcane experiments similar to those occurring in Kōloa. In a historic move, Ladd and Company received a 50-year lease on land in Kōloa from Kamehameha III and Kaua‘i Governor Kaikio‘ewa of Kaua‘i. The terms of the lease allowed the new sugar company “the right

of someone other than a chief to control land" and had profound effects on "traditional notions of land tenure dominated by the chiefly hierarchy" (Donohugh 2001:88). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawai‘i State Archives 1837). The lease was granted by Kauikeaouli (Kamehameha III) for the lands of Kapa‘a, Keālia, and Waipouli for 20 years for the following purpose:

> [F]or the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him. [Hawai‘i State Archives 1837]

Unlike Ladd and Company, which eventually became the Koloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapa‘a, Keālia, and Waipouli. In a brief search for information on Honolulu merchant Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well-known Honolulu merchant who is documented as having experimented with grinding sugarcane in Waimea, Kaua‘i at about the same time the 1837 lease for lands in Kapa‘a, Keālia, and Waipouli was signed (Joesting 1984:152).

In 1849, William P. Alexander, son of a Wai‘oli missionary, recorded a trip he took around Kaua‘i. Although, he focuses on the larger mission settlements like Kōloa and Hanalei, he does mention Kapa‘a and Keālia.

> A few miles from Wailua, near Kapaa we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over the reef, and up on the beach, where it now lies. A few miles further we arrived at Keālia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water. [Alexander 1991:123]

In later years, the notorious Kapa‘a reef was to become the location of many shipwrecks once a landing was built there in the 1880s.

One of the first people to succeed in business in the Keālia area was a German by the name of Ernest Krull. In 1854, a government survey was prepared for Kumukumu, Kaua‘i (Hawai‘i State Survey, Registered Map [RM] 141). In handwritten notes of the map, Mr. Krull indicated his desire to buy government interest to the land for $200.00. Apparently Mr. Krull was successful in obtaining Kumukumu because by the early 1860s, he was running a thriving business supplying whaling ships with beef and dairy products (Joesting 1984:171). Mr. Krull's ranch and dairy were located in the Waipahe‘e area of Kumukumu in a place called Kalualihilihi (Kapa‘a School 1983:4). His residence also served as a rest stop for travelers during the 1860s (Lydgate 1991:142). Mr. Krull continued to lease a portion of the tablelands above Keālia until 1876 when he sold his ranch to Colonel Z.S. Spalding and Captain James Makee (Hawai‘i State Archives 1879; Kapa‘a School 1983:4).

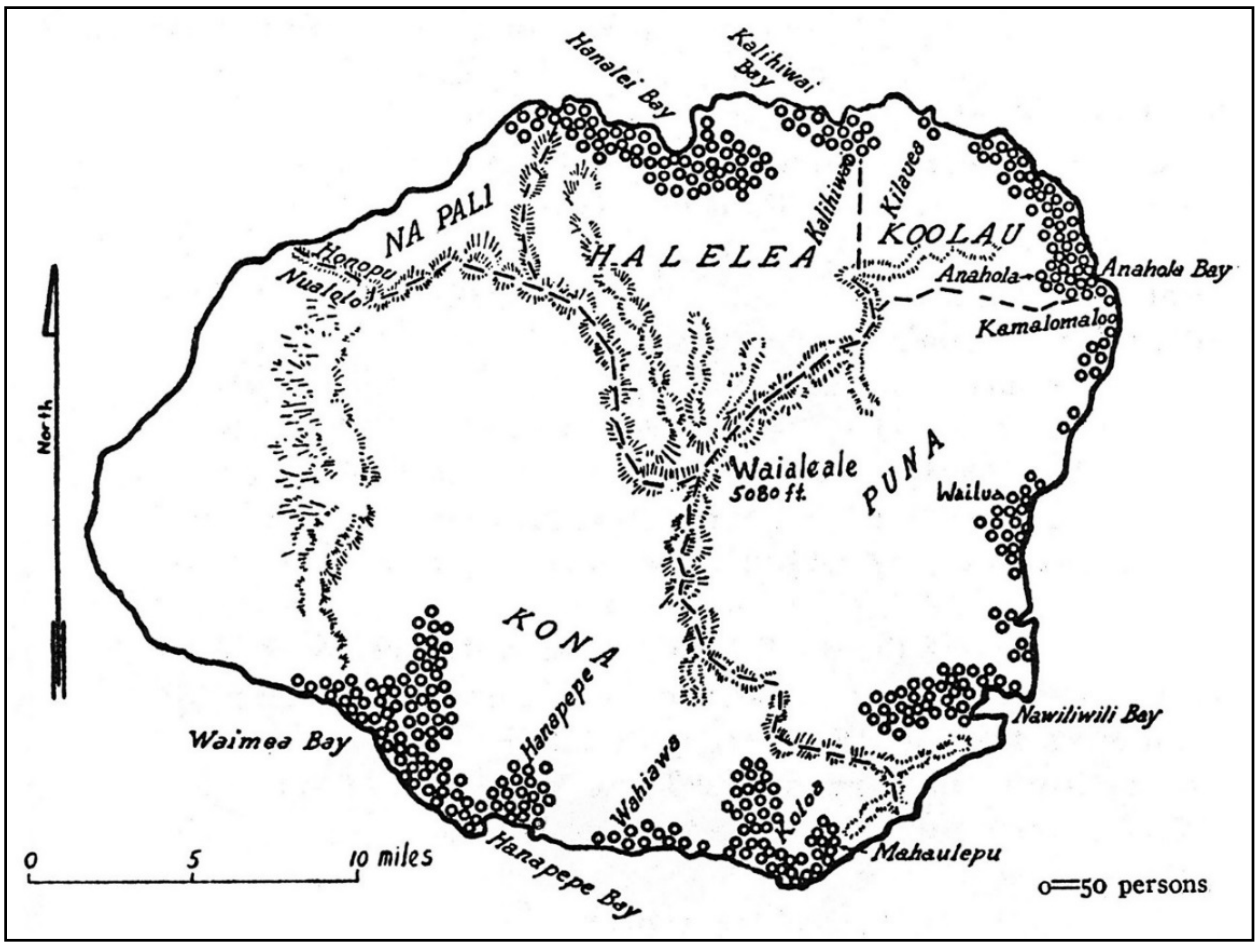

Figure 6. Map showing population estimate for Kaua‘i in 1853 (Coulter 1931:16)

4.3 The Māhele and the Kuleana Act

To maintain sovereignty of the land, Kauikeaouli (Kamehameha III) in 1846–1848 supervised the Māhele—the division of Hawaiian lands—that transformed the land system in Hawai‘i from collective to private ownership. The Māhele was modeled after western concepts. Crown Lands were to be reserved for the *mō‘ī* (king, sovereign) and the royal house, Konohiki Lands were claimed by *ali‘i* and their *konohiki* (headman of an *ahupua‘a* under the chief), and Government Lands set aside to generate revenue were managed by the government. In 1850, these three categories of land were subject to the rights of the *maka‘āinana* and other tenants (naturalized foreigners, non-Hawaiians born in the Islands, or long-term resident foreigners), who could make claims for their habitation and agricultural plots, known as *kuleana* (Native land rights) parcels (Chinen 1958:8–15).

Under the Kuleana Act of 1850, the *maka‘āinana* were required to file their claims with the Board of Commissioners to Quiet Land Titles (Land Commission) within three years in order to apply for fee-simple title to their lands. The claim could only be filed after the claimant arranged and paid for a survey, and two witnesses testified that they knew the claimant and the boundaries of the land, knew that the claimant had lived on the land since 1839, and knew that no one had challenged the claim. Then the *maka‘āinana* could present their claims to the Land Commission to receive their Land Commission Award (LCA) (Kame‘eleihiwa 1992).

Not everyone who was eligible to apply for *kuleana* lands did so and not all of those claims were awarded. Some claimants failed to follow through and come before the Land Commission, some did not produce two witnesses, and some did not get their land surveyed. In addition, some *maka‘āinana* may have been reluctant to claim *‘āina* (land) that had been traditionally controlled by their *ali‘i*, some may not have been familiar with the concept of private land ownership, and some may have not known about the Māhele, the process of making claims (which required a survey) or the strict deadline for making claims. Further, the Land Commission was comprised largely of foreign missionaries, so the small number of claimants and awards may reflect only those *maka‘āinana* who were in good standing with the church. Significantly, the surveying of the land was not standardized (Kame‘eleihiwa 1992:296–297).

A total of 14,195 claims were filed and 8,421 awards were approved for about 29% of the 29,220 adult Native Hawaiian males living at the time of the Māhele, averaging 3 acres each (Kame‘eleihiwa 1992:295). Out of the potential 2,500,000 acres of Crown and Government lands, 28,658 acres of land were awarded to the *maka‘āinana*, less than 1% of the total acreage of Hawai‘i (Kame‘eleihiwa 1993:295). The small number of *kuleana* awards and their small size prevented the *maka‘āinana* from maintaining their independent subsistence lifestyle, often forcing them to abandon their newly acquired property (Chinen 1958:32).

During the Māhele, Kapa‘a was designated as Crown Lands (Commissioner of Public Lands 1929). The *‘ili* (land division smaller than an *ahupua‘a*) of Paikahawai and Ulakiu in Kapa‘a Ahupua‘a were retained as Government Lands. The land claims during this period show eleven claims, three by Keo, one of which is a wrong number, one is rejected and one is awarded. Nine claimants, including the Lunalilo, are awarded land. None of these land claims are located within the vicinity of the survey area. Interestingly, the residential “village” of Kapa‘a did not exist as a single entity, but was a series of probably small settlements or compounds, perhaps even individual

house lots that stretched along the shoreline of the *ahupua‘a* and included (south to north) Kupanihi (Makahaikupanihi), Kalolo (Kaulolo), Puhi, and Ulukiu (Figure 7 and Table 2)

Keālia (6,500 acres) was granted to the *ali‘i wahine* (chiefess) Miriam Ke‘ahikuni Kekau‘ōnohi (Land Commission Award 11216; Royal Patent 6071). Kekau‘ōnohi was a granddaughter of Kamehameha I, as well as being one of Liholiho’s wives. She served as Kaua‘i governor from 1842 to 1844. Nineteen land claims were made in Keālia by seventeen individuals; one was wrongly numbered and 15 were awarded including Kekau‘ōnohi. Claims awarded in the Ahupua‘a of Kapa‘a and Keālia are depicted in Figure 7 and Figure 8, respectively. A total of six claims were awarded within the immediate vicinity of the current survey area (Figure 10 and Table 2).

Sixty-seven cultivated *lo‘i* were claimed in the *kuleana*, with reference to numerous uncultivated *lo‘i* and boundaries of other cultivated *lo‘i* that were not claimed. In the Māhele documents, there are ten instances in which the individual *lo‘i* are referred to with their personal names. Two ditches or *‘auwai* (irrigated ditch) are recorded, Kaauwaelalo (LCA 01980) and Kahaukua (LCA 10148). Keālia River and Keahapuna (Keahapana) River were also named as boundaries, although they may refer to the same river. This information suggests taro farming continued to be central to Keālia. In addition, four *kō‘ele* (land cultivated by a tenant for a local chief) are named in the Keālia Māhele documents. This suggests the *konohiki* of Keālia maintained a fair amount of power and played an active role in land and water distribution even as population was declining and foreign powers were beginning to trickle in.

Another noteworthy resource in Keālia were ponds or *loko wai*. Four ponds were mentioned, though no reference to location is given for two of them. Akiana Pond (LCA 8060) is thought to be located in the ‘ili of Akiana and Loko Waipunaula (LCA 8833) is thought to be in Waipunaula ‘Ili. In addition to the fishponds providing fresh fish, the Keālia records indicate freshwater fish were also caught in the rivers and streams. Although many Hawaiians did not submit or follow through on claims for their lands, the distribution and written testimonies of LCAs can provide insight into patterns of residence and agriculture. There were several disputes over orange trees (LCAs # 3413-B, 2381, and 10473). In one case, the *konohiki* affirmed that he himself had taken away two orange trees belonging to a claimant. Oranges were a prize item for trade with ships as they prevented scurvey.

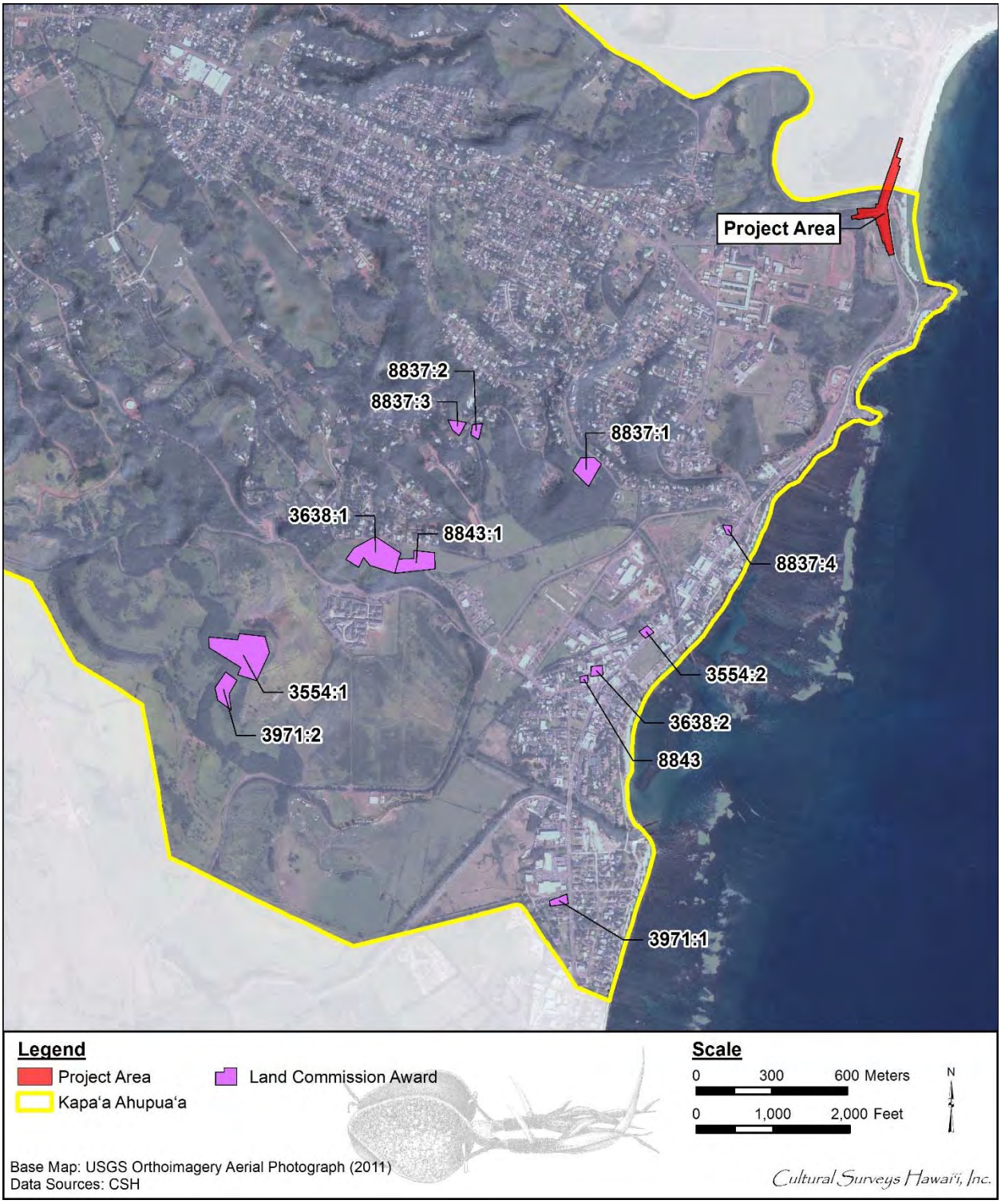

Figure 7. Aerial photograph showing Land Commission Awards located within Kapa‘a Ahupua‘a (USGS Orthoimagery 2011)

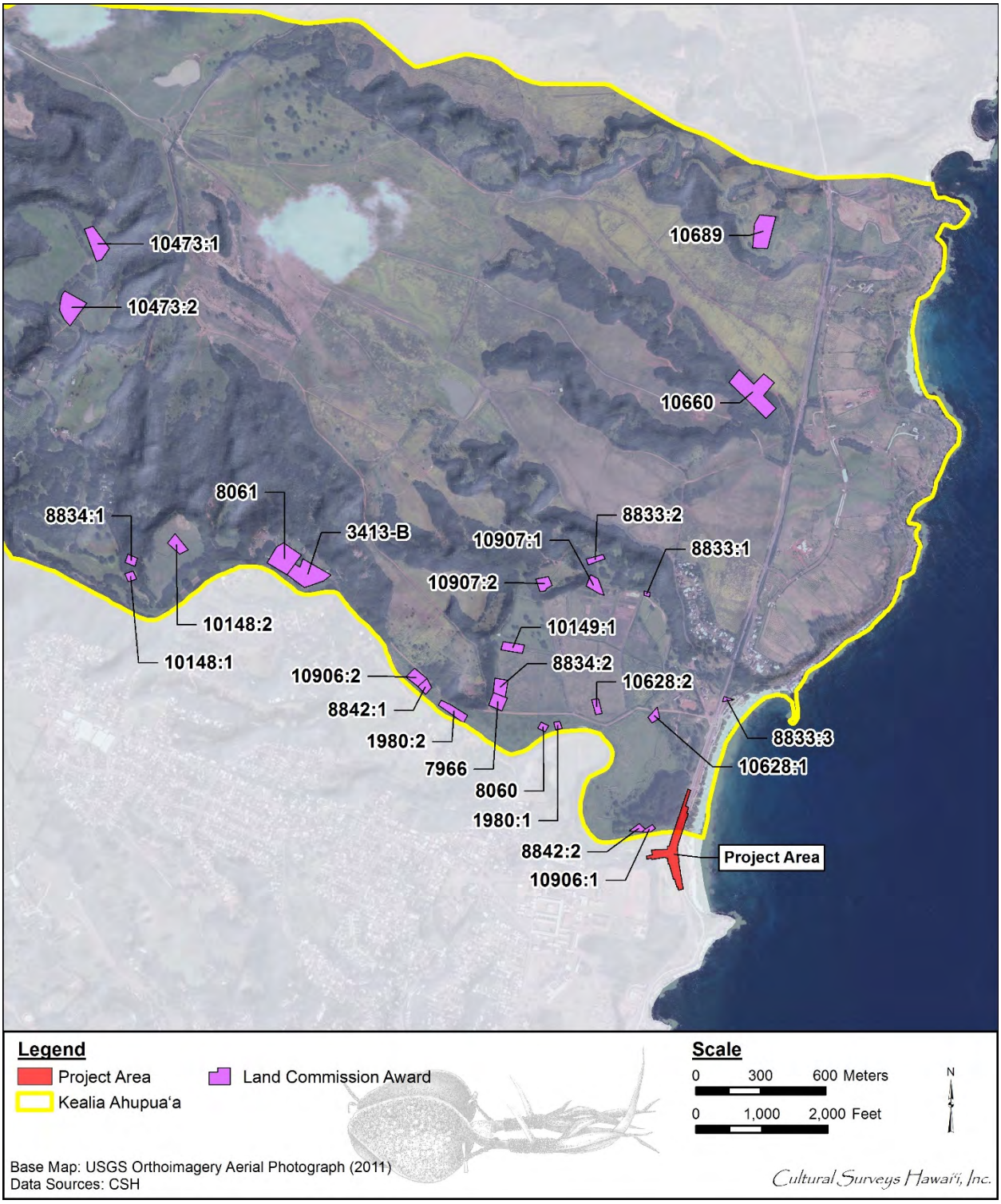

Figure 8. Aerial photograph showing Land Commission Awards located within Kēalia Ahupua‘a (USGS Orthoimagery 2011)

Figure 9. Aerial photograph showing Land Commission Awards located within the immediate vicinity of the survey area (Google Earth 2013)

Table 2. Land Commission Awards within the Vicinity of the Survey Area

LCA #	Claimant	*‘Ili*	Claim/Land Use	Award
01980	Puali	Haulei, Kaeleele	House lot, four *lo‘i*, *kula* (not available in Appendix A	One parcel
08060	Hulialo	Haulei, Kalohipa	House lot, two *lo‘i*, *kula* (not available in Appendix A	One parcel
08833	Kiapia	Waipunaula, Kiohale	Five *lo‘i*, *kula*, and house lot	Two parcels
08842	Kaawapupuole	Kauaha, Makapono	House lot, four *lo‘i*, *kula*	Two parcels
10628	Puhi	Kaunakakai, Kuaiula	House lot, one *lo‘i*	Two parcels
10906	Umiumi	Kaukuolono	Two *lo‘i*, *kula*, and house lot	Two parcels

4.4 Boundary Commission Reports for Kapa‘a (1872) and Keālia (1870)

Mr. J. W. Makalena, was authorized by the Commissioner of Crown lands to act in their behalf in the settlement of the Boundaries for Kapa‘a. There were also two witnesses: Pahuwai and Kaahu, who detailed the boundaries as they knew them, before the decision was made. In 1870, E. Krull appealed to the Commission for the Ahupua‘a of Keālia. In this report the testimonies of witnesses were not given, although it also notes that there were some testimonies provided prior to the commissioner making a decision regarding boundaries (See Appendix E Boundary Commission Reports for Kapa‘a and Keālia).

4.5 Makee Sugar Company

The first large-scale agricultural enterprise in the Kapa‘a/Keālia area was begun in 1877 in Kapa‘a by the Makee Sugar Plantation and the Hui Kawaihau (Dole 1916:8). The Hui Kawaihau was originally a choral society begun in Honolulu whose membership consisted of many prominent names, both Hawaiian and *haole* (foreigner). It was Kalākaua’s thought that the Hui members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kaua‘i. Captain Makee was given land in Kapa‘a to build a mill and he agreed to grind cane grown by Hui members. Kalākaua declared the land between Wailua and Moloa‘a a fifth district called Kawaihau and for four years the Hui attempted to grow sugarcane at Kapahi, on the plateau lands above Kapa‘a. After a fire destroyed almost one half of the Hui’s second crop of cane and the untimely death of Captain James Makee, one of their principal advocates, the Hui began to disperse and property and leasehold rights passed on to Makee’s son-in-law and the new Makee Plantation owner, Colonel Z.S. Spalding (Dole 1916:14).

As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapa‘a (Figure 10). Following Captain Makee’s death, Colonel Spalding

took control of the plantation and in 1885 moved the mill to Keālia (Cook 1999:51). The deteriorating stone smokestack and landing were still there well into the 1900s (Damon 1931:359; see Figure 10). Condé and Best (1973:180) suggest railroad construction for the Makee Plantation started just prior to the mid-1890s. There is one reference to a railroad line leading from the Kapa‘a landing to Keālia in 1891. During Queen Lili‘uokalani’s visit to Kaua‘i in the summer of 1891, the royal party was treated to music by a band, probably shipped in from O‘ahu. “The band came by ship to Kapa‘a and then by train to Keālia” (Joesting 1984:252). This line is depicted on a 1910 USGS map that shows it heading south from Keālia Mill and splitting near the present Coral Reef Hotel, one finger going to the old Kapa‘a Landing (Makee Landing) and another line heading *mauka*, crossing the present Moikeha Canal, traveling southwest up Lehua Street and through what is now goat pasture, along a plateau and into the *mauka* area behind Kapa‘a swamp lands (Figure 11). This railroad line was part of a 20-mile network of plantation railroad with some portable track and

Figure 10. “Kapa‘a Wharf Remains, Kapa‘a, Kauai, Hawaii” (ca. 1934) also known as the Old Makee Landing (top photo). Today there is a breakwater associated with the Moikeha Canal in the general location (bottom photo) (source: Bushnell et al. 2003)

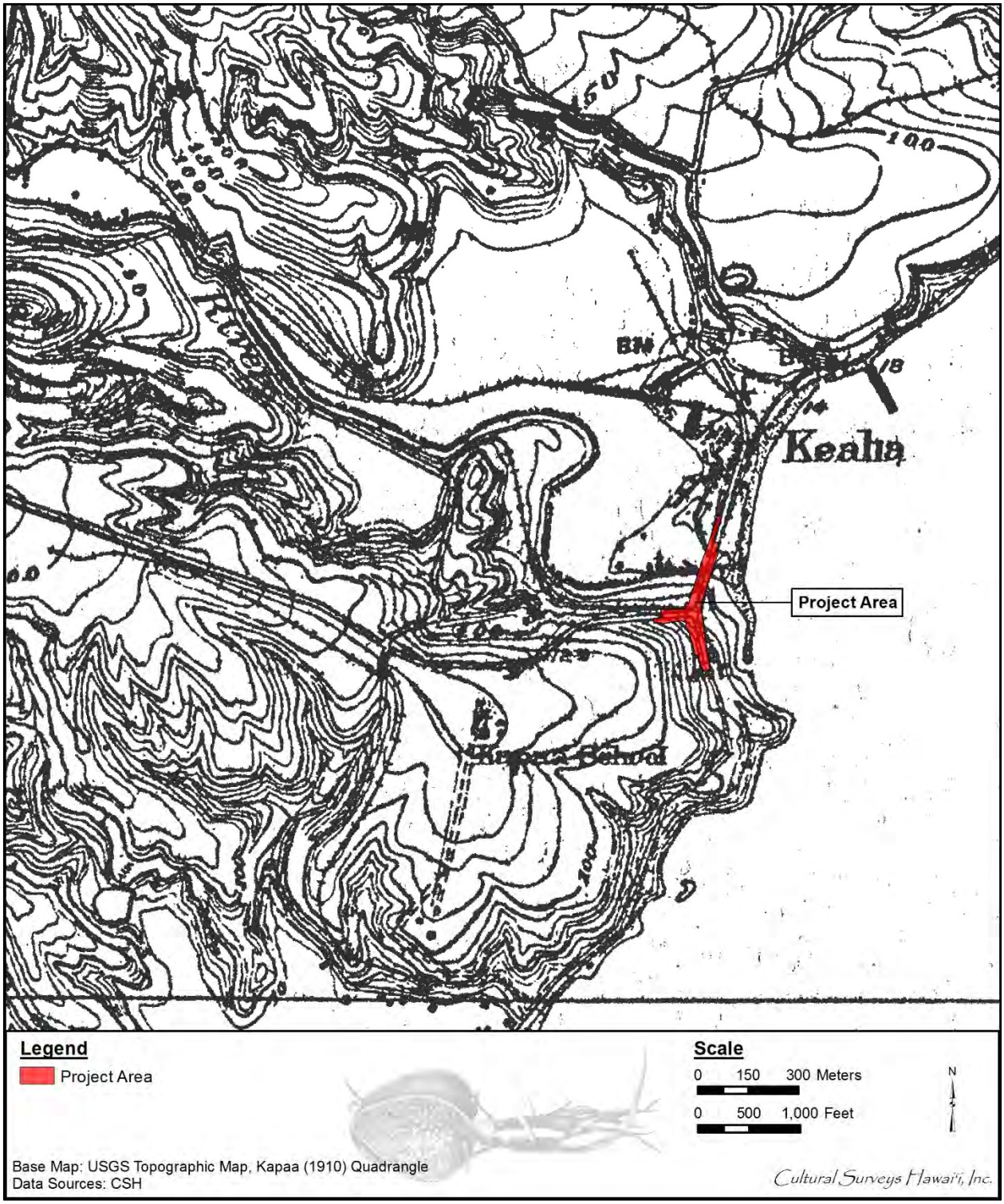

Figure 11. Portion of the 1910 Kapaa USGS topographic map depicting historic road and railroad alignment within and in the vicinity of the current study area

included a portion of Keālia Valley and the *mauka* regions of the plateau lands north of Keālia (Condé and Best 1973:180).

By the late 1800s, Makee Plantation was a thriving business with more than 1,000 workers employed (Cook 1999:51). Hundreds of Portuguese and Japanese immigrants found work on Makee Plantation and the new influx of immigrants required more infrastructure. In 1883, a lease for a school lot was signed between Makee Sugar Company and the Board of Education (Kapa‘a School 1983:9). Stipulations found in the Portuguese immigrant contracts with Makee Sugar Company stated that “children shall be properly instructed in the public schools” (Garden Island 1983). The original Kapa‘a School was constructed in 1883 on a rocky point adjacent to the Makee Sugar Company railroad (Figure 12). Traditionally, this point was known as Kaahiahi (Kapa‘a School 1983:10). In 1908, Kapa‘a School was moved to its present site directly *mauka* on Mailihune Hill (Figure 13).

As in much of the rest of Hawai‘i, Chinese rice farmers began cultivating the lowlands of Kapa‘a with increasing success in the latter half of the 1800s. Several Hawaiian *kuleana* owners leased or sold their parcels *mauka* of the swamp land to Chinese rice cultivators. Other Chinese rice cultivators appealed to the government for swamp lands, first leasing and later buying. As a result of the growing rice and sugar industries, the economic activity displaced the house lot *kuleana* on the *makai* side of the marsh for increasing commercial and residential development (Lai 1985:148–161).

Narrow wagon roads gave way to macadamized roads in the early part of the twentieth century. This new road was called the Kaua‘i Belt Road and parts of it are thought to have followed the “Old Government Road” (Cook 1999). In Kapa‘a, the present day Kūhiō Highway probably follows the same route as the original Government Road and subsequent Kaua‘i Belt Road. The locations of the *kuleana* awards in Kapa‘a indicate the majority of the house lots were situated along the Government Road. LCA 3243 names a “road” as one of its boundaries.

In Keālia, however, there is evidence that numerous traditional trails led to Anahola with possibly two principal routes, a *makai* route and a *mauka* route. In 1881, Z.S. Spalding, proprietor of the Makee Sugar Plantation, appealed to the Department of the Interior with a formal petition to have the *makai* road (in Keālia) officially closed, stating that the natives were breaking through his fences to take shortcuts between Keālia and Anahola (Hawai‘i State Archives 1881). The exact location of the *makai* road is unknown although it is thought to have been on the plateau lands, somewhat removed from the coastline, in areas fit for sugarcane production. The route of the Old Government Road, also known as the “Mauka road” is described as, “crossing the Kealia River above the Rice Plantation and passing over the hill near Mr. Spalding’s residence” (Hawai‘i State Archives 1882). When the Kaua‘i Belt Road was constructed in the first two decades of the twentieth century, a portion of the old Government Road route was abandoned. The new route crossed the river at the *makai* end of Keālia Stream, paralleled the ocean and the railroad track, and then turned *mauka* passing through Keālia town and went up the hill to meet up with the “Old government Road.” The Keālia Bridge built for the Kaua‘i Belt Road is thought to date to ca. 1912. A traveler writing about their travels in 1913 mentions the bridge: “In the twinkling of an eye we passed on the steel bridge of Kealia. This new bridge is beautiful” (Akina 1913) (Figure 14).

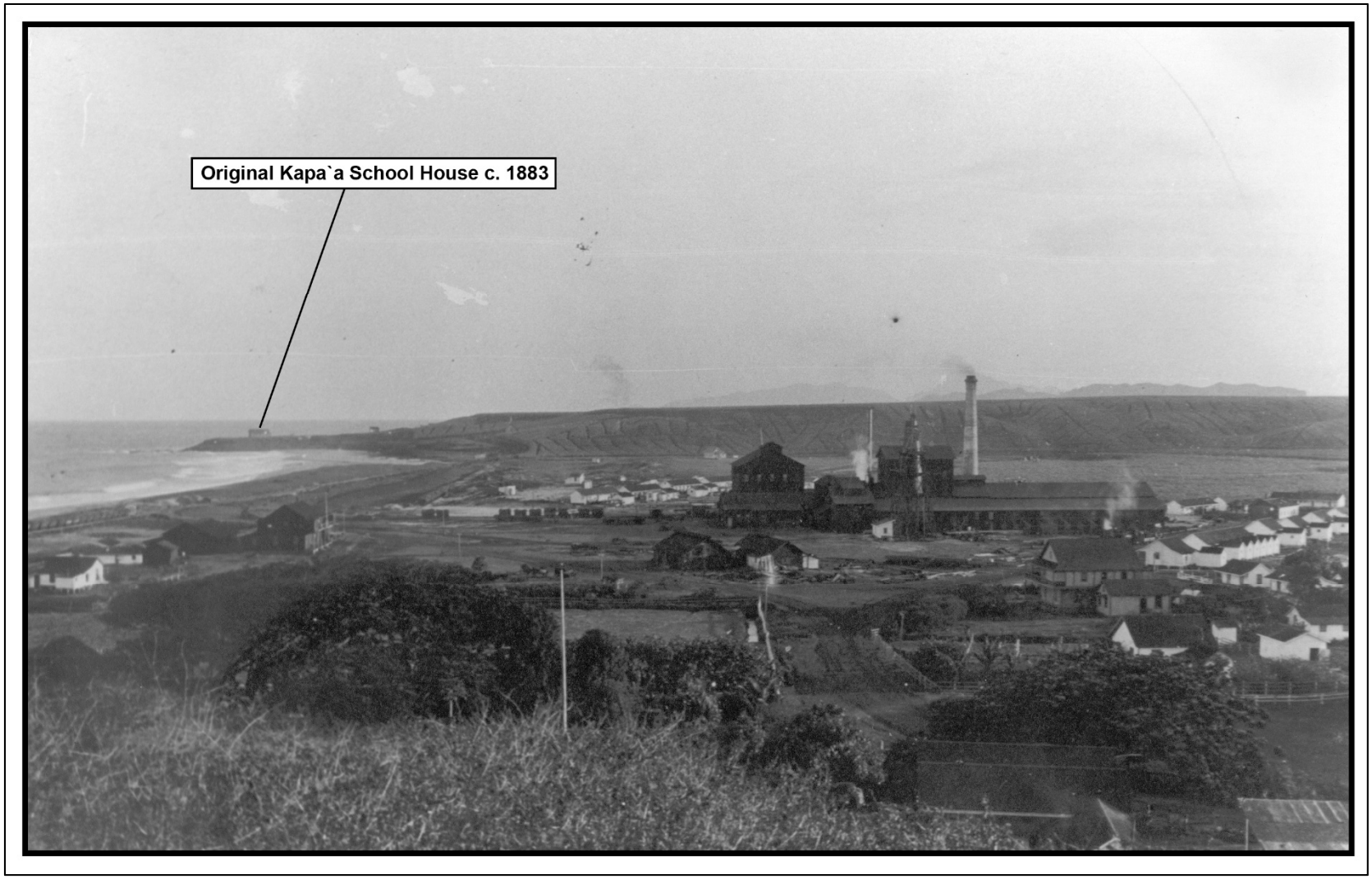

Figure 12. Historic photograph of Keālia Mill and town (courtesy of the Kaua‘i Historical Society)

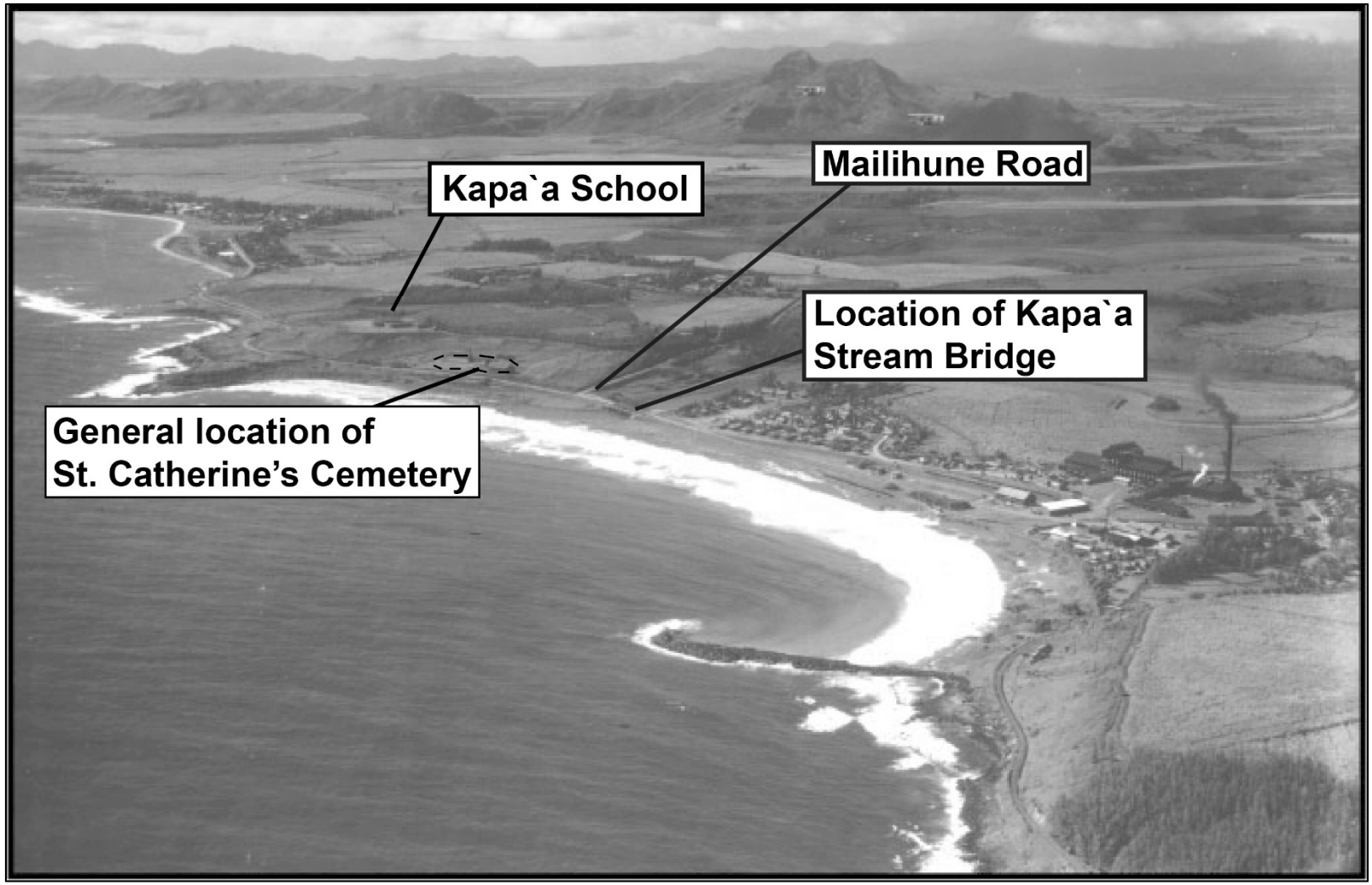

Figure 13. “Aerial View of Kealia, Kauai, Hawaii, Looking Landward” ca. 1933 (source: Bushnell et. al 2003) (note Mailihuna Road is misspelled)

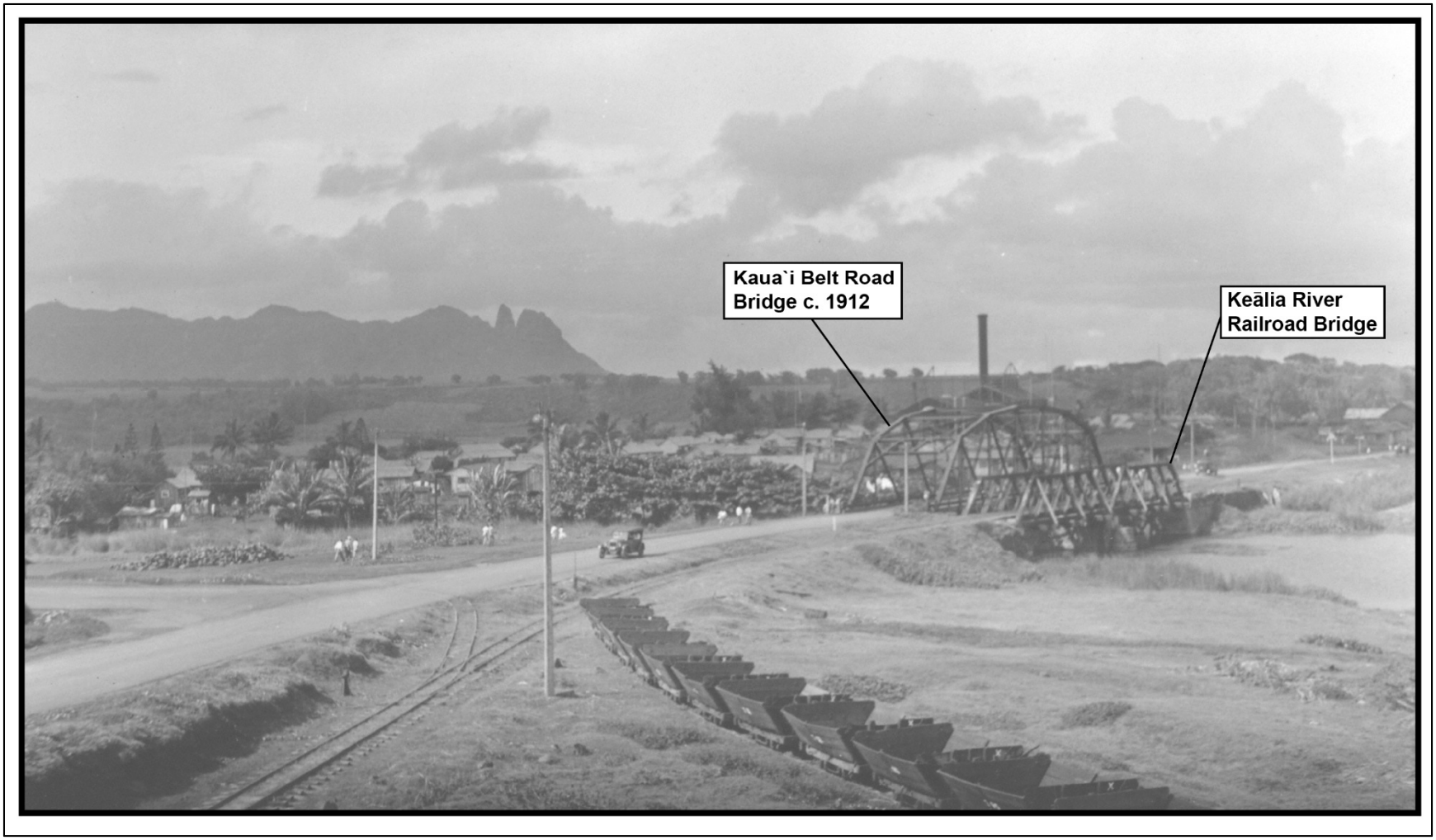

Figure 14. “Kealia in Background, Kealia, Kauai, Hawaii” ca. 1934, photograph by Funk (source: Bushnell et al. 2003)

4.6 Twentieth Century History of Kapa‘a and Keālia (1900–Present)

In the early 1900s, government lands were auctioned off as town lots in Kapa‘a to help with the burgeoning plantation population. An oral account mentioned that in the 1930s and 1940s, the area north of Moikeha Canal in Kapa‘a was mostly settled by Portuguese families (Bushnell et al. 2003). Another oral account mentioned the Japanese were very prominent in the 1920s and 1930s, largely replacing the Chinese merchants of the turm of the century in the Kapa‘a business sector (Bushnell et al. 2003). Several territorial government structures were once situated adjacent to the coastal areas of Kapa‘a. The Board of Health, Territory of Hawaii ran a dispensary in Kapa‘a starting in 1926. This was located at the *makai* edge of Niu Street near the Kapa‘a Beach Park parking lot. A fire station was once located in the area now occupied by the Coral Reef Hotel and a courthouse and jail cell once stood at the location of the present Kapa‘a Neighborhood Center. It is not known when these structures were removed or abandoned.

4.6.1 Land Grants, (1908-present) and Hawaiian Homesteading (1922-present)

Grants were issued for Kapa‘a starting in 1908 with the Town Lots, and later the grants are for Hawaiian Homestead lands (1921). Hawaiian Homes Commission Act, of 1920 was passed by Congress under President Warren Harding on July 9, 1921. Homestead leases are for residential, agricultural, or pastoral purposes were then issued. The intent of the homesteading progam is to provide for economic self-sufficiency of native Hawaiians through the provision of land. Kapa‘a Homesteads first issued grants in 1922. In Kapa‘a there are at least 169 land grants (waihona.com). Of the Homesteads the first series were the farthest inland, but the second, third, and fourt series of homestead lands moved successively towar the shore. The last grant obtained by Waihona Aina Corp. is in 1922, so these lands were very popular early in the 20th century.

4.6.2 Ahukini Terminal & Railway Company

The Ahukini Terminal & Railway Company (AT&R) was formed in 1920 to establish a railroad to connect Anahola, Keālia, and Kapa‘a to Ahukini Landing and “provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet” (Condé and Best 1973:185). The company was responsible for extending the railroad line from Makee Landing, which was no longer in use, to Ahukini Landing, and for constructing the original Waika‘ea Railroad Bridge and the Mō‘īkeha Makai Railroad Bridge (Figure 15 through Figure 18). The Ahukini Termianal and Railway Co. purchased the land 39.38 acres through Anahola, Kapaa and Wailua at auction in 1920 (Grant 7563).

In 1934, the Lihue Plantation Company absorbed the AT&R and Makee Sugar Company (Condé and Best 1973:167). The railway and rolling stock formerly owned by Makee Sugar Company became the Makee Division of the Lihue Plantation. At this time, in addition to hauling sugarcane, the railroad was also used to haul plantation freight, including “fertilizer, etc. . . . canned pineapple from Hawaiian Canneries to Ahukini and Nawiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd.” (Hawaiian Territorial Planning Board 1940:11). Former plantation workers and *kama‘āina* growing up in Kapa‘a remember when the cannery sent their waste to the pineapple dump, a concrete pier just north of Kumukumu Stream by railroad. The structure is built over the water where the rail cars would dump the pineapple waste. The current carried the waste to Kapa‘a, where the waste attracted fish and sharks (Bushnell et al. 2003).

Lihue Plantation was the last plantation in Hawai‘i to convert from railroad transport to trucking. “By 1957 the company was salvaging a part of their plantation railroad, which was being supplanted by roads laid out for the most part on or close to the old rail bed” (Condé and Best 1973:167). By 1959, the plantation had completely converted to trucking.

4.6.3 The Pineapple Industry in Kapa‘a

The pineapple industry, following successful harvests on the island of O‘ahu, was subsequently expanded to the neighbor islands: “The pineapple plantation concept quickly spread to Kauai and Maui, perhaps because the already well-established sugar industry provided the near-ideal plantation model for those to whom it was not initially obvious” (Bartholomew et al. 2012:1392).

The early twentieth century witnessed the emergence of four companies within Hawai‘i that would hold a monopoly on the pineapple industry well into the 1960s; these four companies were Hawaiian Pineapple Company founded by James Dole, Libby McNeil & Libby, “a major continental U.S. canner based in Chicago that became established in Hawaii in 1910,” the California Fruit Canners Association, which acquired a Hawaiian pineapple canning company in 1911, and Maui Pineapple Company headed by Alexander & Baldwin (Bartholomew et al. 2012:1392; Hawkins 2011).

According to Bartholomew et al. (2012): “The first pineapple company on the island of Kauai was established in 1906. Over the years several additional companies were organized there, some by citizens of Japanese ancestry (1392).”

Additionally, firsthand accounts of “old Kaua‘i” include descriptions of pineapple fields privately owned and operated by residents of Kapa‘a Ahupua‘a. Rita De Silva, in an editorial for *The Garden Island* newspaper, described the landscape of the *mauka* portions of Kapa‘a Ahupua‘a: “Pineapple fields were planted around Kapahi by private owners (some [Hawaiian] Fruit Packers’ employees who sold the fruit back to the cannery, which also owned fields in Kapahi” (De Silva 2016).

Hawaiian Fruit Packers, founded in 1937 through the “reorganization of a company initially started by a group of ethnic Japanese growers,” was the only Kaua‘i cannery (located in Kapa‘a on Kawaihau Road) to continue operations well into the 1960s (Bartholomew et al. 2012:1392; De Silva 2016). Stokeley-Van Camp (representing the merged Van Camp Packing Company and Stokely canned tomato company) bought stock in the company in 1939 and became the exclusive distributor for Hawaiian Fruit Packers’ pineapple production (Auchter 1951; Bartholomew et al. 2012:1392).

Figure 15. Waika‘ea Bridge, pedestrian bridge built over railroad bridge, view to southwest (CSH 2002)

Figure 16. Close-up of Waika‘ea Bridge, pedestrian bridge built over railroad bridge, view to northeast (CSH 2002)

Figure 17. Mō‘īkeha Makai Railroad Bridge, view to northeast (CSH 2002)

Figure 18. Railroad remnant built by the Ahukini Terminal & Railway Company located in Kapa‘a just north of the Kapa‘a Public Library, view to northeast (Railway Modelling 2014)

4.6.4 Hawaiian Canneries Company, Ltd.

In 1913, Hawaiian Canneries Company, Ltd. opened in Kapa‘a at the site now occupied by Pono Kai Resort, just north of Waika‘ea Canal (Cook 1999:56). A resident of Kapa‘a described how the town “came alive” after the cannery opened (Fernandez 2009:48). Following the completion of their plantation contracts, the Japanese plantation workers moved into town and “opened mom and pop grocery stores” (Fernandez 2009):

> Portuguese opened dairy farms in the hinterland or repair shops in Kapa‘a. Former plantation laborers became farmers, raising pineapple and other crops for sale. Service businesses started: the slop-gatherer who came to homes to take the garbageas feed for his pigs, the fish monger selling fish on their street, the cattle rancher who slaughtered cows and provided fresh meat to the market, the traveling wagon man hawking fresh fruits and vegetables. [Fernandez 2009:48]

Kapa‘a became “an integrated multi-racial town, containing an extraordinary mix of people living and working together in harmony” all due to the new cannery (Fernandez 2009:48). In 1923, Hawaiian Canneries Company, Ltd. purchased the approximately 8.75 acres of land they were leasing through the Hawaiian Organic Act (Hawai‘i Bureau of Conveyances, Grant 8248). At that time the cannery only contained four structures but by 1956, 1.5 million cases of pineapple were being packed. By 1960, 3,400 acres were in pineapple and the cannery employed 250 full-time and 1,000 seasonal workers (*Honolulu Advertiser*, 20 March 1960) (Figure 19 and Figure 20). In 1962, Hawaiian Canneries went out of business due to competition from canneries in other countries.

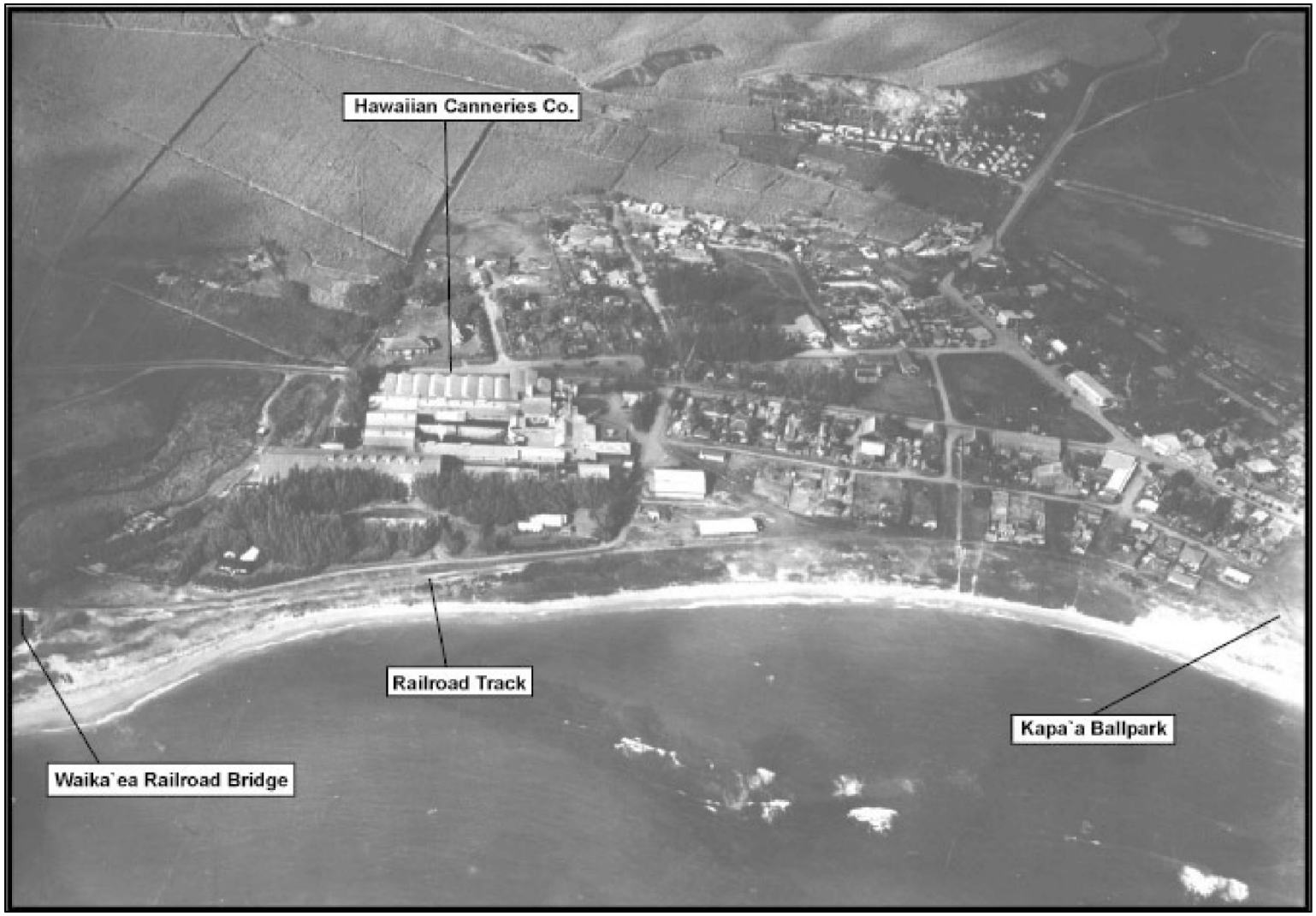

Figure 19. “Aerial View of Kapa‘a, Kauai, Hawaii, Looking Landward” ca. 1933 (figure taken from Bushnell et al. 2003)

Figure 20. Kaua‘i women working in the pineapple fields of Kapa‘a (date known) (*Garden Island* 1 December 2010)

Severe floods in Kapa‘a in 1940 led to the dredging and construction of the Waika‘ea and Mō‘īkeha Canals sometime in the 1940s (Hawaiian Territorial Planning Board 1940:7). The construction of Waika‘ea Canal, approximately 275 m (902.2 ft) south of the study area, had been proposed as early as 1923 (Bureau of Land Conveyances, Grant 8248). A 1940 Master Plan for Kapa‘a requested the Territorial Legislature set aside funds for the completion of a drainage canal and for filling *makai* and *mauka* of the canal (Hawaiian Territorial Planning Board 1940:7). In 1955, a report was published on proposed coral dredging for the reef fronting Kapa‘a Beach Park (*Garden Island Newspaper* 21 September 1955). The coral was to be used for building plantation roads. This dredging was later blamed for accelerated erosion along Kapa‘a Beach (*Garden Island* 30 October 1963). Today, there are several sea walls to check erosion along the Kapa‘a Beach Park. Old time residents claim the sandy beach in Kapa‘a was once much more extensive than it is now (Bushnell et al. 2003).

Residents of Keālia Town slowly dispersed after the incorporation of Makee Sugar Company into Lihue Plantation in the 1930s. Many of the plantation workers bought property of their own and moved out of plantation camps. The plantation camps that bordered Kūhiō Highway were finally disbanded in the 1980s. The Lihue Plantation began to phase out in the last part of the twentieth century. Kapa‘a Town suffered after the closing of the Kapa‘a Cannery, however, the growing tourist industry helped to ease the economic effects of the cannery’s closing.

4.6.5 Contemporary Land Use

The study area includes a portion of Route 56 (Kūhiō Highway) including the intersection of Mailihuna Road and Kapa‘a Stream Bridge. Portions of the Kapa‘a to Keālia Bike Path and the entry to St. Catherine’s Cemetery are also located within the study area. The Keālia Bike Path or Ke Ala Hele Makalae (East Kaua‘i’s Coastal Shared-Path System) includes an interpretive signage program denoting the cultural significance of the Kapa‘a and Keālia area; this program was awarded an Historic Hawai‘i Foundation Preservation Award:

> The path corridor signage program will educate visitors and residents alike of the rich history of Kaua‘i’s eastern shoreline including; significant historical and cultural sites, scenic landmarks as well as important coastal and river ecological habitats. Educational signage plaques are being installed on natural stone platforms and will include colorful graphics, photographs and written text describing interesting aspects and points of interest at each location. [PBR Hawaii 2016]

The land surrounding the study area is not significantly developed. The largest establishment near the bridge site is Kapa‘a High School soccer field, track, and baseball diamond, which are located approximately 300 m (984.3 ft) to the southeast. To the north and northwest of the study area the land is primarily utilized for agricultural and residential purposes. Contemporary land use within the study area is depicted in historic aerial photographs of the Kapa‘a Coast (Figure 21 and Figure 22).

Figure 21. 1950 Kapaa Coast aerial photograph (UH SOEST) depicting the study area surrounded by residential and agricultural land

Figure 22. 1975 Kapaa Coast aerial photograph (UH SOEST) depicting the study area surrounded by residential and agricultural land

4.7 Previous Archaeological Research

The locations of previous archaeological studies conducted within a 0.8-km (0.5-mile) radius of the survey area are shown in Figure 23 and listed in Table 3. Previously documented historic properties within a 0.8-km (0.5-mile) radius of the survey area are shown in Figure 24 and listed in Table 4. These studies and findings are discussed in the following paragraphs.

The first systematic archaeological survey of Kaua‘i was conducted by Bennett (1931), in which he discussed the terracing and irrigation ditches located along the Kapa‘a Stream. It should be noted that Bennett’s work was conducted after commercial sugarcane cultivation and other historic activities had destroyed or damaged many cultural resources. Also, most of the cultural resources documented by Bennett were relatively easy to access, conspicuous, and obvious.

Bennett discussed the irrigation ditches near Kapa‘a Stream as fairly large-sized banked structures with earthen walls. One ditch near Keālia homesteads was observed as being a deep cut (approximately 10 ft deep) into a low ridge to transport water across the ridge. Bennett also discusses the taro terraces within the small valleys in the foothills of Kapa‘a (Bennett 1931).

In 1991, CSH conducted a field inspection, surface collection, and assessment at the Keālia Sand Quarry site. Human remains were exposed due to the quarrying activities and designated State Inventory of Historic Places (SIHP) # 50-30-08-1851. All human remains observed were fragmented and disarticulated. During background research into the area where bones were observed, it was noted that two LCAs were located in the vicinity. It was concluded that the bones were most likely associated with the LCAs (Folk and Hammatt 1991). It was also documented that traditional Hawaiian midden and historic artifacts were observed in the vicinity of the burials.

In 1992, Kikuchi and Remoaldo (1992) completed Volume I of a survey of the cemeteries of Kaua‘i. A total of two cemeteries are located within the vicinity of the survey area. An historic cemetery (SIHP # -B001) is located west of the study area. A portion of St. Catherine’s Cemetery (SIHP # -B002) is located within the southwest portion of the study area.

In 1996, SHPD staff conducted a field inspection of an inadvertent burial reported at Keālia. The remains were lying in recently disturbed sand deposits and associated with the previously identified SIHP # -1851 (Jourdane and Collins 1996).

In 1997, CSH completed an archaeological inventory survey for the Kūhiō Highway widening and bypass options project. This project consisted of areas in the Wailua, South Olohena, North Olohena, Waipouli, and Kapa‘a Ahupua‘a. Although outside of the study area, SIHP # -B002 was mentioned but not further documented in the report (Hammatt et al. 1997:103–104).

In 1998, CSH completed an archaeological reconnaissance survey and assessment for a 6,690.6- acre portion of Keālia Ahupua‘a. The survey found that areas located within floodplains of Kapa‘a and Keālia streams were previously inhabited by traditional Hawaiians. Much of the area surveyed was former plantation land considered to be of little archaeological concern. The study also suggests the area known as Keālia Beach is likely void of archaeological sites associated with traditional Hawaiian activities due to sugarcane being planted up to the shoreline and the shoreline being modified for a cane haul road (Hammatt and Chiogioji 1998).

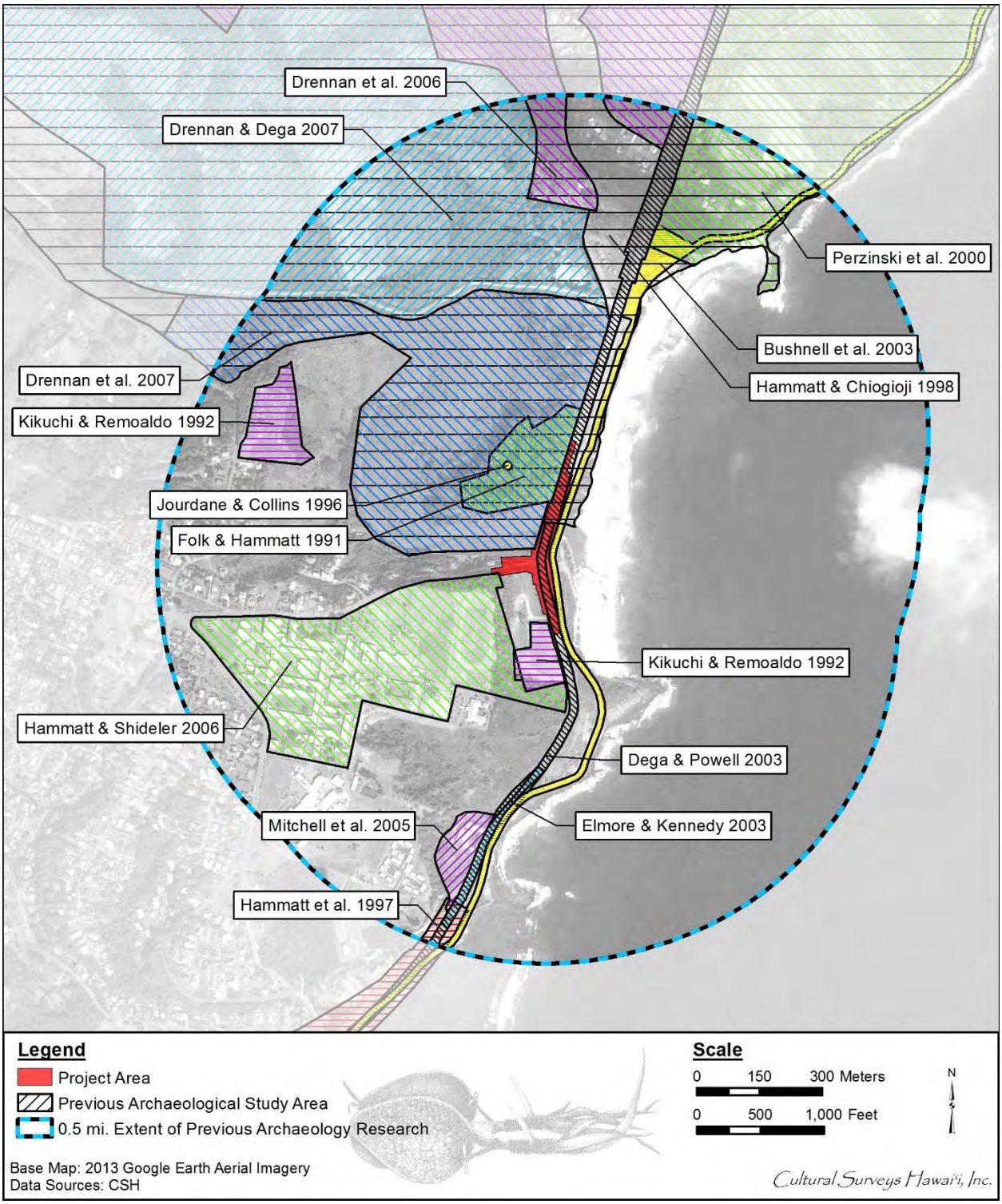

Figure 23. Aerial photograph showing previous archaeological studies within a 0.8-km (0.5-mile) radius of the survey area (Google Earth 2013)

Table 3. Previous Archaeological Studies within a 0.8-km (0.5-mile) Radius of the Survey Area

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Bennett 1931	Archaeology of Kaua‘i	Island-wide	Discusses the terracing and irrigation ditches located along the Kapa‘a Stream (not pictured on figures)
Folk and Hammatt 1991	Archaeological assessment	Bend of Kapa‘a River, just inland of Kūhiō Hwy	Burial finds (SIHP # -1851); noted presence of historic artifacts and traditional Hawaiian midden in vicinity; also noted extensive disturbance from sand mining
Kikuchi and Remoaldo 1992	Historic cemetery survey	Island-wide	Identified historic cemetery (-B001) and St. Catherine’s Cemetery (-B002) within the vicinity of the survey area
Jourdane and Collins 1996	Burial report	Bend of Kapa‘a River	Identified additional disarticulated human remains associated with SIHP # -1851
Hammatt et al. 1997	Archaeological inventory survey	Kūhiō Hwy in Wailua, South Olohena, North Olohena, Waipouli, and Kapa‘a Ahupua‘a	Further documented St. Catherine’s Cemetery (SIHP # -B002)
Hammatt and Chiogioji 1998	Archeological reconnaissance survey and assessment	6,690.9 acres within Keālia Ahupua‘a	No cultural resources identified within the vicinity of the survey area
Perzinski et al. 2000	Archaeological inventory survey	300-acre *makai* parcel at Keālia, TMK: [4] 4-7-004:006	Identified SIHP # -0789 within the vicinity of the survey area including Cane Haul Road (SIHP # -0789: Feature A), Keālia Landing (SIHP # -0789: Feature B), and a dynamite storage bunker (SIHP # -0789: Feature C)
Bushnell et al. 2003	Archaeological inventory survey	Proposed Kapa‘a–Keālia bike path, Kapa‘a and Keālia Ahupua‘a	Identified three new cultural resources within the vicinity of the survey area including a buried cultural layer with an associated human burial (SIHP # -2074), Old Kaua‘i Belt Highway bridge foundation (SIHP # -2075), and a possibly modern petroglyph (SIHP # -2076); identified a new sub-feature of SIHP # -0789: Feature A, Kapa‘a Stream Cane Haul Road Bridge (SIHP # -0789: Feature A, Sub-Feature 1)

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Dega and Powell 2003	Archaeological monitoring	Kūhiō Hwy from Moloa‘a through Hanamā‘ulu	No cultural resources identified within the vicinity of the survey area
Elmore and Kennedy 2003	Archaeological monitoring	In Kapa‘a and Anaholoa	No cultural resources identified within the vicinity of the survey area
O’Hare et al. 2003	Burial treatment plan	Keālia Ahupua‘a, TMK: [4] 4-7-004:001	Burial treatment plan for SIHP # -2074 (not included on Fig. 22)
Mitchell et al. 2005	Literature review, field inspection, and cultural evaluation	3.1-acre parcel in Kapa‘a Ahupua‘a, TMK: [4] 4-6-014:026	No cultural resources identified within the vicinity of the survey area
Drennan et al. 2006	Archaeological inventory survey, Phase I	Portion of 2,008-acre property in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	No cultural resources identified within the vicinity of the survey area
Hammatt and Shideler 2006	Field inspection	Kapa‘a High School	No cultural resources identified within the vicinity of the survey area
Drennan and Dega 2007	Archaeological inventory survey, Phase II	Portion of 2,008-acre property in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	Six new plantation era historic properties identified within the vicinity of the survey area including railroad rails and foundations (SIHP # -7015), sugarcane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations (SIHP # -7017), irrigation ditches, sluice gates, and a bridge (SIHP # -7018), a bridge, foundations, and irrigation pipes (SIHP # -7019), concrete foundations and a culvert (SIHP # -7020), and bridge/ transportation infrastructure, a culvert and drainage pipes (SIHP # -7021)

Reference	Type of Study	Location	Results (SIHP # 50-30-08 ****)
Drennan, et al. 2007	Archaeological inventory survey, Phase III	386 acres in Keālia Ahupua‘a, TMKs: [4] 4-7-003:002 (por.) and 004:001 (por.), part of Keālananai Development project	Six historic properties identified within the vicinity of the survey area including plantation era concrete staircase (SIHP # 7034), plantation era staircase (SIHP # -7035), plantation era concrete foundation, and brick and mortar structure (SIHP # -7037), human burials, burial pit outline and fire pit (SIHP # -7040), plantation era red brick and concrete wall/foundation (SIHP # -7041), and Keālia Historic Town Complex (SIHP # -7042)

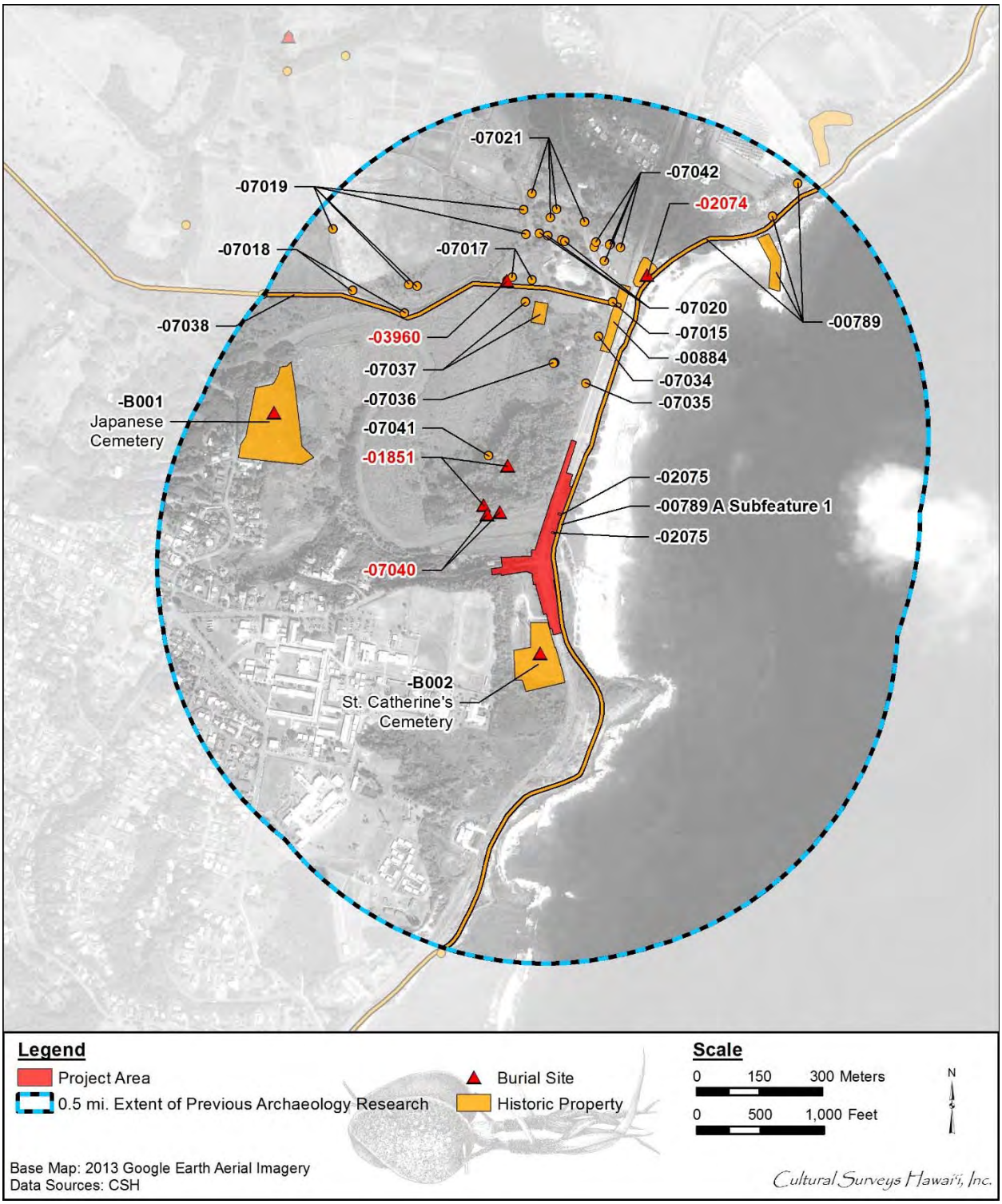

Figure 24. Aerial photograph showing previously identified archaeological sites within a 0.8-km (0.5-mile) radius of the survey area (Google Earth 2013)

Table 4. Previously Identified Archaeological Sites within a 0.8-km (0.5-mile) Radius of the Survey Area

SIHP # 50-30-08****	**Site Type/Name**	**Reference**
-B001	Historic cemetery	Kikuchi and Remoaldo 1992
-B002	St. Catherine’s Cemetery	Kikuchi and Remoaldo 1992
-0789a	Cane Haul Road	Perzinski et al. 2000
-0789b	Keālia Landing	Perzinski et al. 2000
-0884	Pre-Contact human remains	SHPD Communication
-1851	Dune site with human burials, historic artifacts and pre-Contact midden deposit	Jourdane and Collins 1996; Folk and Hammatt 1991
-2074	Buried cultural layer and associated human burial	Bushnell et al. 2003
-2075	Old Kaua‘i Belt Hwy bridge foundation	Bushnell et al. 2003
-7015	Railroad rails and foundation	Drennan and Dega 2007
-7017	Sugarcane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations	Drennan and Dega 2007
-7018	Irrigation ditches and sluice gates, and a plantation era bridge	Drennan and Dega 2007
-7019	Plantation era bridge, foundations, and irrigation pipes	Drennan and Dega 2007
-7020	Concrete foundations and culvert	Drennan and Dega 2007
-7021	Bridge/transportation infrastructure, a culvert, and drainage pipes	Drennan and Dega 2007
-7034	Concrete staircase	Drennan et al. 2007
-7035	Staircase	Drennan et al. 2007
-7036	Plantation era concrete block and basalt, mortar and brick structure	Drennan et al. 2007
-7037	Concrete foundation, and brick and mortar structure	Drennan et al. 2007
-7040	Human burials, a burial pit outline, and a fire pit	Drennan et al. 2007
-7041	Red brick and concrete wall/foundation	Drennan et al. 2007
-7042	Keālia historic town complex	Drennan et al. 2007

In 2000, CSH completed an archaeological inventory survey and subsurface testing of the approximately 300-acre Keālia *makai* parcel. A total of three cultural resources were identified: SIHP # -0789, plantation era infrastructure and structures; SIHP # -0790, World War II structure and remnants; and SIHP # -1899, burials. Only SIHP # -0789 is located within the vicinity of the survey area. The two features of SIHP # -0789 located within the vicinity of the survey area consist of the Cane Haul Road (SIHP # -0789: Feature A), which extends along the coast near the study area, and the Keālia Landing (SIHP # -0789: Feature B) (Perzinski et al. 2000).

In 2003, CSH conducted an archaeological inventory survey for the Kapa‘a–Keālia bike and pedestrian path. A portion of the study is located within the current project area since parts of the bike and pedestrian path are in the project area. A total of five newly identified sites (SIHP #s -2074 through -2078) and a new sub-feature of SIHP # -0789 (Feature A, Sub-Feature 1) were documented (Bushnell et al. 2003). Two historic properties identified in the 2003 project were identified within the current project area. SIHP # -0789: Feature A, Sub-Feature 1 is identified as the *makai* Kapa‘a Stream Bridge for the Cane Haul Road. The second site consists of SIHP # -2075, the highway bridge foundation for the *mauka* Kapa‘a Stream Bridge. One additional historic property was identified within the vicinity of the project area. This consists of a buried cultural layer and associated human burial (SIHP # -2074). Subsurface testing was conducted just north of the current project area. CSH completed a burial treatment plan for SIHP # -2074. The remains were discovered during the subsurface testing along the coast where restroom facilities were to be built and a burial treatment plan was recommended for SIHP # -2074 (O’Hare et al. 2003).

In 2003, Scientific Consultant Services (SCS) completed archaeological monitoring during Phase I of the Kaua‘i Rural Fiber-optic Duct Lines project. A portion of the study is located within the current study area (Segment 16). Segment 16’s trenching ran parallel to the coast and across the flood plain. Within this segment, only a single location yielded historic subsurface cultural materials, which consisted of an old railroad gravel bed (Dega and Powell 2003:71–73). It is unclear exactly where the profile showing the old railroad gravel bed was drawn. No significant historic properties were identified within the vicinity of the survey area.

In 2003, SCS conducted archaeological monitoring for the Kūhiō Highway drainage improvements for 250 m (820.2 ft) in Kapa‘a and at a single location in Anaholoa. No cultural resources were identified within the vicinity of the survey area (Elmore and Kennedy 2003).

In 2005, CSH conducted a literature review, field inspection, and cultural evaluation in a 3.1-acre parcel in Kapa‘a Ahupua‘a. The study documented two filled lagoons and found the subsurface sediments were heavily disturbed by construction activities. No cultural resources were identified within the vicinity of the survey area (Mitchell et al. 2005).

In 2006, CSH conducted a brief field inspection at Kapa‘a High School for the installation of new water lines. The study found low potential for cultural resources within the Kapa‘a High School property due to the extensive grading. The study also observed a baseball field, large track, and undeveloped area serving as a large buffer between the St. Catherine’s Cemetery (SIHP # -B002) and the high school’s structures (Hammatt and Shideler 2006).

In 2007, SCS conducted four phases of an archaeological inventory survey in the Keālia Ahupua‘a. Phase I (Drennan et al. 2006) yielded no cultural resources. Phase II (Drennan and Dega 2007) and Phase III (Drennan et al. 2007) extend within the vicinity of the survey area. During Phase II, six new plantation era historic properties were identified near the survey area. These

consist of railroad rails and foundations (SIHP # -7015), sugarcane plantation infrastructure including a metal tank, structural supports, cart tracks, and foundations (SIHP # -7017), irrigation ditches, sluice gates, and a bridge (SIHP # -7018), a bridge, foundations, and irrigation pipes (SIHP # -7019), concrete foundations and a culvert (SIHP # -7020), and bridge infrastructure, a culvert, and drainage pipes (SIHP # -7021) (Drennan and Dega 2007). During Phase III, six historic properties identified within the vicinity of the survey area including a plantation era concrete staircase (SIHP # -7034), a plantation era staircase (SIHP # -7035), a plantation era concrete block and basalt, mortar and brick structure (SIHP # -7036), a plantation era foundation, and brick and mortar structure (SIHP # -7037), human burials, a burial pit outline and a fire pit (SIHP # -7040), a plantation era red brick and concrete wall/foundation (SIHP # -7041), and the Keālia Historic Town Complex (SIHP # -7042) (Drennan et al. 2007).

Section 5 Community Consultation

5.1 Introduction

Throughout the course of this assessment, an effort was made to contact and consult with Native Hawaiian Organizations (NHO), agencies, and community members including descendants of the area, in order to identify individuals with cultural expertise and/or knowledge of the *ahupua‘a* of Kapa‘a and Keālia. CSH initiated its outreach effort in August 2015 through letters, email, telephone calls, and in-person contact. CSH completed the community consultation in June 2016.

5.2 Community Contact Letter

In the majority of cases, a letter (Figure 25) along with a map and an aerial photograph of the project were mailed with the following text:

> At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a cultural impact assessment (CIA) for the Kapa‘a Stream Bridge, Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku, Kaua‘i Island, TMKs:[4] 4-6-014: 024 por., 033 por., 090 por., 092 por., 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. The project area is located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapa‘a Stream crossing. The project area is depicted on a portion of the 1996 Kapa‘a USGS topographic quadrangle and a 2013 aerial photograph (see attachments) and covers a total area of approximately 4.09 acres.
>
> The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.
>
> The purpose of the CIA is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about this area. The research and interviews assist us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* and guidance regarding the following aspects of our study:
>
> - **General history and present and past land use of the project area.**
> - **Knowledge of cultural sites- for example, historic sites, archaeological sites, and burials.**
> - **Knowledge of traditional gathering practices in the project area, both past and ongoing.**

- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and k*ama‘āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua‘a* lands.**
- **Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.**

In most cases, two or three attempts were made to contact individuals, organizations, and agencies.

In March 2016, CSH was contacted by CH2M HILL, acting on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), regarding a change to the project area. The original project area included approximately 4.09 acres; the new project area, however, was enlarged to approximately 4.9 acres; this represents a total change of approximately .81 acre to the total project area. The project area remains located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapa‘a Stream crossing within Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku, Kaua‘i Island. All individuals who had participated in CSH’s *Kama‘āina* Interviews (Section 5.4) were immediately contacted by phone regarding this change. Letters along with an aerial photographs and TMK maps of both the old and the new project area were mailed with the following text (Figure 26):

> In recent months, Cultural Surveys Hawai‘i (CSH) at the request of CH2M HILL, and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD) has reached out to you regarding a cultural impact assessment (CIA) for the Kapa‘a Stream Bridge, Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku, Kaua‘i Island, TMKs:[4] 4-6-014: 024 por., 033 por., 090 por., 092 por., 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. We would once again like to thank you for all your assistance and your valuable *mana‘o* on this project. However, in recent weeks, CSH has been notified regarding a change to the project area. This change to the project area is depicted in the attached figures (please refer to Figure 1 and Figure 2 noting “Original Project Area” and Figure 3 and Figure 4 noting “New Project Area as of May 6, 2016” to observe the changes to the project area). The original project area included approximately 4.09 acres, the new project area, however, includes approximately 4.9 acres; this represents a total change of approximately .81 acre to the total project area. We would like to inform you of these changes, and kindly ask again for your *kokua* and guidance in this matter. Please do not hesitate to contact us by telephone or email if your *mana‘o* has changed or been affected by the changes to the project area.
>
> The project area remains located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapa‘a Stream crossing. The new project area is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle and a 2013 aerial photograph (see attachments labeled “New Project Area as of May 6, 2016”).

Cultural Surveys Hawai‘i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

P.O. Box 1114 Kailua, Hawai‘i 96734 Ph. [illegible] Fax [illegible]

Job Code: KAPAA 15 mliborio@culturalsurveys.com amitchell@culturalsurveys.com www.culturalsurveys.com

July 13, 2015

Aloha mai e kāua,

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a cultural impact assessment (CIA) for the Kapa‘a Stream Bridge, Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku, Kaua‘i Island. Please see accompanying USGS, Aerial and TMK maps. TMKs:[4] 4-6-014: 024 por., 033 por., 090 por., 092 por., 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. The study area is located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapa‘a Stream crossing. The study area is depicted on a portion of the 1996 Kapa‘a USGS topographic quadrangle and a 2013 aerial photograph (see attachments) and covers an area of approximately 8.6 acres.

The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.

The purpose of the CIA is to gather information about the study area and its surroundings through research and interviews with individuals that are knowledgeable about this area. The research and interviews assist us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* and guidance regarding the following aspects of our study:

- **General history and present and past land use of the project area.**
- **Knowledge of cultural sites- for example, historic sites, archaeological sites, and burials.**
- **Knowledge of traditional gathering practices in the project area, both past and ongoing.**
- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kūpuna* or elders and *kama‘āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua‘a* lands.**
- **Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.**

We invite you to contact us at (808) 262-9972 or (e-mail: mliborio@culturalsurveys.com) or amitchell@culturalsurveys.com) if you have any information you would like to share.

Mahalo nui loa,

Cultural Surveys Hawai‘i Inc.
Archaeological and Cultural Impact Studies
P.O. Box 1114
Kailua, Hawai‘i 96734 Ph.: (808) 262-9972

Figure 25. Community consultation letter

Cultural Surveys Hawai‘i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

P.O. Box 1114 Kailua, Hawai‘i 96734 Ph: (808) 262-9972 Fax: (808) 262-4950
Job code: KAPAA 15 nishihara@culturalsurveys.com amitchell@culturalsurveys.com www.culturalsurveys.com

May 2016

Aloha mai kāua,

In recent months, Cultural Surveys Hawai‘i (CSH) at the request of CH2M HILL, and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD) has reached out to you regarding a cultural impact assessment (CIA) for the Kapa‘a Stream Bridge, Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku, Kaua‘i Island, TMKs:[4] 4-6-014: 024 por., 033 por., 090 por., 092 por., 4-7-003:001 por., and 4-7-008:042 Kūhiō Highway Right-of-Way. We would once again like to thank you for all your assistance and your valuable *mana‘o* on this project. However, in recent weeks, CSH has been notified regarding a change to the project area. This change to the project area is depicted in the attached figures (please refer to Figure 1 and Figure 2 noting "Original Project Area" and Figure 3 and Figure 4 noting "New Project Area as of May 6, 2016" to observe the changes to the project area). The original project area included approximately 4.09 acres, the new project area, however, includes approximately 4.9 acres; this represents a total change of approximately .81 acre to the total project area. We would like to inform you of these changes, and kindly ask again for your *kokua* and guidance in this matter. Please do not hesitate to contact us by telephone or email if your *mana‘o* has changed or been affected by the changes to the project area.

The project area remains located near mile post 10 on Route 56 (Kūhiō Highway), from the Mailihuna Road intersection to the Kapa‘a Stream crossing. The new project area is depicted on a portion of the 1996 Kapaa U.S. Geological Survey (USGS) topographic quadrangle and a 2013 aerial photograph (see attachments labeled "New Project Area as of May 6, 2016").

The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.

Once again, if these changes have in any way changed your *mana‘o*, please do not hesitate to contact Brittany Beauchan or Aulii Mitchell at (808) 262-9972 or (e-mail: bbeauchan@culturalsurveys.com) or (amitchell@culturalsurveys.com).

Mahalo nui loa,

Cultural Surveys Hawai‘i Inc.
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Figure 26. Community consultation letter regarding change to project area

The purpose of the project is to replace the existing deficient Kapa‘a Stream Bridge to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. The project also proposes to improve the intersection at Kūhiō Highway and Mailihuna Road, which includes roadway widening, lighting, signing, pavement markings, drainage, traffic signal installation, and other improvements.

5.3 Community Contact Table

Below Table 5 lists names, affiliations, dates of contact, and comments from NHOs, individuals, organizations, and agencies contacted for this project. Results are presented below in alphabetical order.

Table 5. Results of Community Consultation

Community Member	Affiliation	Comments
‘Aha Pūnana Leo o Kaua‘i	Hawaiian Language School	Letter and figures sent via U.S. Postal Service (USPS) 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Aiu, Danita	Chairperson, Kaua‘i Historic Preservation Review Commission (KHPRC)	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Ako, Uncle Valentine	*Kupuna* (elder)	Letters and figures sent via USPS 11 August 2015 Mr. Valentine Ako called CSH regarding the Kapa‘a Bridge on 19 August 2015; he said, *on the north side of the bridge, you may find burials on both sides; On the south side, you may find burials on the Makai side, but should have no problems on the Mauka side.* Letter and figures regarding change to project area sent via USPS 6 May 2016 Mr. Valentine Ako called CSH regarding the change in the project area for Kapa‘a Bridge on 11 May 2016; he left a message stating, *There may be graves on the mauka and north sides of the bridge…if iwi were exhumed, do not relocate them in another ahupua‘a.*

Community Member	Affiliation	Comments
Kauai Island Hawaiian Civic Club	Association of Hawaiian Civic Clubs	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Ching, Milton	*Kama‘āina*	Letters and figures sent via USPS 11 August 2015 CSH received an email from Nancy McMahon on behalf of Milton Ching on 28 August 2015; she provided the following information to CSH: *Milton Ching is a cultural descendant of the area. Mauka of the bridge on the Kealia side is where a Native Hawaiian village was. Several burials over the years have been found there. There is an extensive sand deposit next to the river there. AMFAC used to sand mine there for their roads and disturbed burials there. DLNR Aquatic Division buried a whale back there not far off the highway. Consult with Don Heacock on the exact location. I am sure the Kapaa Stream was a source of native fish at one time, but with the urban expansion, the stream might be too polluted today. There plantation railroad ran through this area too.* CSH called and spoke with Milton Ching on 25 September 2015. Milton provided his family history in and around the study area. His family members have mostly passed away so he spoke on their behalf. The transcription is provided in the following section. Letter and figures regarding change to project area sent via USPS 6 May 2016. CSH received an email from Nancy McMahon on behalf of Milton Ching on 17 May 2016; she provided the following information to CSH: *On behalf of the County of Kauai Department of Parks and Recreation, we*

Community Member	Affiliation	Comments
		have no concerns about the FHWA CFLHD project for the Kapa’a Stream Bridge, Kapa’a and Ke‘ālia Ahupua’a, Kaua‘i. The area of effect is in an area of previously disturbed grounds by the construction of the bridge itself and the Highway. *Thanks you for informing us of your work in the area and look forward to seeing the CIA.*
Chong, Herman, Jr.	Descendant of P. Chong	CSH sent a letter to Mr. Chong on December 4, 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Franklin, Carol	Descendant of Antone Arruda	CSH sent a letter to Ms. Franklin on December 4, 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Hoomanawanui, Kauanoe M.	Burial Site Specialist, SHPD (Hawai‘i and Kaua‘i)	Letters and figures sent via USPS 11 August 2015 CSH received an email correspondence from Kauanoe Hoomanawanui 14 October 2015 relaying the following: *I believe our newly appointed Cultural Historian assisted you with the CIA. Should you need anymore assistance please dont hesitate to contact me.* *Mahalo & Ahui Hou,* *Kauanoe M Hoomanawanui* Emailed letter and figures regarding change to project area 6 May 2016 CSH received an email correspondence from Kauanoe Hoomanawanui 6 May 2016 relaying the following: *Mahalo! I will check it out.*
Kekua, Kumu Kehaulani	Kauai Heritage Center/Ka‘ie‘ie Foundation	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016

Community Member	Affiliation	Comments
Kano, Yoshida “Dimples”	*Kupuna* and long-time resident	Aulii Mitchell followed up on the request of Aunty Beverly Muraoka to contact Mrs. Kano. Mr. Mitchell spoke with Mrs. Kano on December 3, 2015. Mrs. Kano share the following: *Thank you for calling me. Yes I know who Aunty Beverly is. I am sorry I cannot help you because although I have live there for many years, I do not know the history of culture of that area. I will try to see if I know who does. I will contact you if and when I do.*
Lovell-Obatake, Auntie Cheryl (Deceased)	Nawiliwili Watershed Council	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015
Muraoka, Auntie Beverly	*Kupuna*	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Responded via letter dated 14 September 2015; Ms. Muraoka believes *‘iwi* might be *beneath sand layers due to battles, village wars, etc. that occurred during pre-Christian contacts. Thus should these be unearthed, discovered or the like, please ensure all protocols are followed by the Kauai Burial Council and/or committees handling the proper relocation of such sacred ‘iwi*; she refers Yoshiko “Dimples” Kano; children of old-time residents such as Carol Franklin (daughter of Antone Arruda), P. Chong (grandson of Herman Chong, Jr.), and Pedring Ponce (grandson of Kenneth Ponce, Jr.); as well as Puanani Rogers and Aunty Frances Ohai See Appendix B for response letter
Oi, Tommy	Kaua‘i District Land Agent, State of Hawai‘i	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015

Community Member	Affiliation	Comments
		Letter and figures regarding change to project area sent via email and USPS 6 May 2016
Ponce, Kenneth	Retired Fireman Development	Interviewed and authorization form signed 17 December 2015 Letter and figures regarding change to project area sent via email and USPS 6 May 2016
Rodrigues, Hinano	Cultural Historian/Acting History and Culture Branch Chief, DLNR-State Historic Preservation Division-Maui	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Emailed letter and figures regarding change to project area 6 May 2016
Rogers, Puanani	Leader, Ho‘okipa Network	Interviewed and authorization form signed 17 December 2015 Draft transcription sent to Ms. Rogers for review and edits via email 31 December 2015 Letter and figures regarding change to project area sent via email and USPS 6 May 2016. CSH attempted a third time to reach out to Ms. Rogers via telephone on 20 June 2016 regarding change to project area. Ms. Rogers informed CSH of correct email address. CSH emailed letter and figures regarding change to project area on 20 June 2016. Ms. Rogers indicated that she will review these and notify CSH should she have additional comments.
Santos, Kaliko	Community Outreach Coordinator, OHA	Letters and figures sent via USPS 11 August 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Trugillo, William	Ka Leo o Kauai	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016

Community Member	Affiliation	Comments
Vidinha, Wayne Reverend	Ke Akua Mana Church	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016
Wichman, Randy	Executive Director, Kauai Historical Society	Letters and figures sent via USPS 11 August 2015 Second letter and figure sent via USPS 10 September 2015 Letter and figures regarding change to project area sent via USPS 6 May 2016

5.4 *Kama‘āina* Interviews

The authors and researchers of this report extend our deep appreciation to everyone who took time to speak and share their *mana‘o* and *‘ike* with CSH whether in interviews or brief consultations. We request that if these interviews are used in future documents, the words of contributors are reproduced accurately and in no way altered, and that if large excerpts from interviews are used, report preparers obtain the express written consent of the interviewee/s.

5.4.1 Kenneth Ponce

Mr. Kenneth Ponce participated in a “talk story” session with CSH on 17 December 2015 at the Kaua‘i Beach Resort in Līhu‘e, on the island of Kaua‘i. This discussion focuses on the cultural impact assessment (CIA) for the Kapa‘a Stream Bridge, Kapa‘a and Keālia Ahupua‘a, Kawaihau (Puna) Moku, Kaua‘i Island. The following is a summarization of the “talk story” session.

Mr. Kenneth Ponce was born and raised in Kapa‘a. He is the son of Mr. Antonio and Margaret Ponce and the grandson of Mr. Pedro & Cresencia Ponce early immigrants in the plantation era history of Kapa‘a Town and is of Japanese-Filipino ancestry. Kenneth is a retired fireman for the Kaua‘i Fire Department and now works in construction and housing development.

Mr. Ponce, now third generation in Kapa‘a spoke fondly of his life on the beautiful windward side of Kaua‘i where Ke‘ālia Beach along the present project area was his old stomping grounds. Today Mr. Ponce resides with his family in Kapahi.

He recalls that in the early years Kapa‘a was a thriving plantation town. Mr. Ponce’s father was born and raised in Kapa‘a and his mother Margaret was born in Kōloa and raised in Kilauea. After her marriage to Kenneth’s father she moved to Kapa‘a Town to begin their family. Mr. Ponce guided CSH to find the book, *Hana Hana, An Oral History Anthology of Hawai‘i’s Working People* which features his grandparents interviews of the early plantation years and life in Kapa‘a Town. CSH obtained a copy of the book, researching that Mr. Pedro Ponce and Mrs. Cresencia Ponce, a barber and sugar plantation worker came to Kaua‘i as laborers. It was soon that Kenneth’s

grandfather, Pedro Ponce realized that Kapa‘a Town needed a barber shop. Pedro Ponce learned to cut hair in the Philippines at the young age of eleven years old, so he seized the opportunity to create a better life for his family, and opened a barber shop in Kapa‘a Town during the plantation era, therefore Kenneth grew up knowing everyone in Kapa‘a Town. Kenneth held fond memories of his grandmother, Cresencia Ponce, known in Kapa‘a for her gift of healing and was a much respected religious woman. He shared of her abilities to use her gift in the healing of many people during her life time. Women especially came to her during their pregnancy when the baby was *huli* (head-up breech position) or when turned improperly in the *‘ōpū* (womb) she could right the child. Other times when women could not conceive they came to his grandmother and after she touched them they were able conceive children. His grandmother used and gathered plants for her practice that grew on and around their land.

Mr. Ponce’s memories of the early 1960s recall that the area just *mauka* of the Kapa‘a Stream Bridge was occupied by many houses, all making up the plantation camp, and in the uplands were sugar cane and pineapple fields, today it is all pasture lands and ironwood trees. In his youth, Kenneth worked in the private pineapple fields. He mentioned in those days all the old timers had twenty acre tracts of land that were purchased in the early 60s. These tracts were once located up Kawaihau Road where the old pineapple cannery once stood. Today, a cemetery stands *mauka* of the Kūhiō Highway. CSH also spoke about cultural events in the early years around the 1960s; Mr. Ponce recalls on the north side of the Kapa‘a Stream there was a hall where they once held events for the plantation workers, parties, baby *lū‘au* (celebratory feast), and many others. Sustainable practices included fishing near and around what is referred to as the Keālia Bridge, in his youth. Mr. Ponce did not mention any trails but remembered he followed a roadway down to his fishing area at that time. Mr. Ponce remembers he often accompanied his grandmother when she went to the stream to fish for *‘o‘opu* (freshwater goby), one of her favorite fish to eat. Other fish caught at that time was *pāpio* (bluefin trevally) and *ulua* (giant trevally) near the mouth of the river and near the Kapa‘a Stream Bridge area. His family also would go crabbing along the stream and people still go to these places today to fish and catch crab. Surfing was practiced north of the Kapa‘a Stream. When Mr. Ponce was growing up in the 60s, he recalls in those times it would be just him and a friend on the whole beach, because in those days everybody used to surf at Wailua Beach because that is where the famous Coco Palms Resort was in its heydays. All the *wahine* were there with all the tourists. Today, hundreds of people go to surf. Mr. Ponce did not recall any cultural sites within the project area and he stated that in his youth he had never heard of anyone finding burials.

The only concerns voiced by Mr. Ponce was for the people who commute back and forth, people drive really fast, and the work on the bridge will slow everything down until its completion. He feels good that the bridge will be worked on. It will help the flow of traffic.

5.4.2 Puanani Rogers

Cultural Surveys Hawai‘i conducted a “talk story” interview with Ms. Puanani Rogers on 17 December 2015 in Kapa‘a on the island of Kaua‘ i. Ms. Rogers was born on 8 September 1939 and raised in the *ahupua‘a* of Keālia in the district of Puna on the island of Kaua‘i. She is the *muliloa* or the last child of five. Her father was Mr. Anacleto Ribuca Batted, Sr. from the

Philippines and her mother, Eleanor Puanani White, is of the Kāne ‘Ohana from the island of Maui. Puanani has six children; she stated to CSH that she is also “grateful” to have sixteen *mo‘opuna* (grandchildren) and five greatgrandchildren. Puanani is the founder of the Ho‘okipa Network – Kaua‘i, a community network, and she also serves as the *po‘o* (head or director) of the Ahupua‘a Moku councils of the district of Puna, the island of Kaua‘i.

Ms. Rogers spoke eloquently about the areas in close proximity to the Kapa‘a Stream Bridge, Keālia Bridge project in which the area includes the Keālia Bike Path which is noted for the discovery of *iwi kūpuna* (ancestral bones) where markers were placed all around. These places she explained are right by the scenic overview in which around that area is a path, noting it is a beach path, paved and well made. Puanani shared that for the Hawaiian people, burials are often found in the sand. So those who do the work must be aware of burials near the sea. She added:

> When I was growing up there were many drownings sometimes with little children. We used to hear our parents, uncles and aunties always say somethings about the god guardian (*mo‘o*) and every so often somebody would drown in the river. Sometimes they were taken by the ocean but usually by the mouth of the river, that is *mo‘o* related.

It is at this moment, during CSH’s interview, a woman enters the room and greets Ms. Puanani Rogers as *‘Anakē* (aunt) in the language of Hawaiian. Her name is Ms. Anne Punohu and she expressed interest in CSH’s consultation with Puanani Rogers. Ms. Punohu explains that although she is not of Hawaiian ancestry, she has been *hānai* (adopted child) and tutored by the families of Hanalei Halele‘a and the Mahu‘iki Family. Ms. Punohu mentioned her *‘ūniki* (graduation exercise, as for *hula* or other ancient arts) was from *Kumu* (teacher) Puni Kama‘u. Her soft voice quickly shifted from Hawaiian to English as she began to share her knowledge about a fresh water pond in the vicinity of the area and a waterfall with the name of Wahine‘oma‘o‘ula, the same name of a *mo‘o wahine* or female guardian of the waterfall with red and green strands of hair that resembles *limu* (seaweed). Ms. Punohu added that there were many ancient battles in the area that may have the potential to *iwi kūpuna* to be encountered when the sand shifts.

Returning to conversation with Ms. Rogers, Puanani recounts many beautiful memories in her lifetime and recalls that not far from the area was a plantation camp occupied by workers of Filipino, Japanese and Portuguese ancestry. She also recounts a hall, it was in the camp and was the social center for the people there that is where they held their parties, they even had a Filipino Band with trumpets, sax and guitar, she used to hear the music from their house. All the people worked for the plantation because the sugar mill was right there where they lived. There was a whole plantation community that had their own company store that is still there. Ms. Rogers also spoke of a monument called the Spalding Monument, Mr. Spalding was the manager of the Plantation at that time.

Puanani remembered that back in those days there were people who foraged for food that lived on subsistence gathering of food. Reminiscing, she talked about how there were less restrictions in those days so everyone lived the old style, the old way of life. Everyone would go where ever they wanted to gather food, from *mauka* to *makai*. That is the kind of life it was. She told that even today people still fish, hunt, and many of them today grow their own food and she still prefers food from the *‘āina*. Discussing what kind of impact it may have on the community, Ms. Rogers shared:

> It will be a huge impact to access the river and the ocean when they start construction. It will also restrict traffic from either side of the bridge to people coming from the north or the south side of the island and also restrict the fishing by the river mouth and a very popular surfing place.

Ms. Rogers continued with the fact that when she was little, her mother used to warn them on how dangerous the beach was at that time. She mentioned that there was a strong under-tow so her mother would take them to the calmer waters at Kapa‘a Beach Park. By her early teens and 20s it became a popular beach and everyone was there and it was a surfing beach and safer. She felt better because she knew how to swim, so Ke‘ālia Beach has now evolved into one of those most popular beaches that is always crowded.

On the seashores of Keālia, Puanani spoke about the native Hawaiian plants that grow near the bridge area. These plants still remain and included the *hala* (*Pandanus odoratissimus*) or pandanus, along the shores thrive the *naupaka* (beach succulent; *Scaevola*) and the morning glory or the *pōhuehue* (*Ipomoea pe-caprae* subsp. *brasiliensis*). Ms. Rogers reminisces the practice of catching the Samoan crabs in the river and how the people use the bridge to drop their round nets or they would use boats to go up the river to fish and drop their crab nets. Other foods gathered from the river were the *‘o‘opu*, *āholehole* (flagtail; *Kuhlia sandvicensis*), *‘anae* (full grown mullet; *Mugil cephalus*) and further up the river in Keahapana were the shallower streams were used to gather the *‘ōpae* (general name for shrimp). A net was used to *hali hali* (fetch) underneath the buffalo grass to catch the shrimp in the cooler water.

As the interview continued, Ms. Rogers mentioned that the river is becoming overgrown and any trails once used by the fisherman would be covered. From her residence, up on a hill above Keālia, the family was able to sit at their dining room table and look out the picture window to see the view of the river. Ms. Rogers described how it was a beautiful view, but now the view has been obstructed by overgrowth along the banks of the river. Her thoughts brought to mind a few questions; she shared these questions with CSH:

> Do you know who maintains this river? Who is supposed to be clearing it? I feel although we are talking about the proposed bridge replacement, this is a good time to ask some questions like these.

Nearing the end of the “talk story” session, Puanani voiced her concerns about the future project and its possibilities to disrupt the flow of traffic. She continued to share that at one time there was the old railroad tracks, where a bike path is now located. Ms. Rogers articulated that there does need to be improvements because of the traffic being heavier than before. She points out that safety is the number one concern due to many traffic accidents at the Mailihuna Road intersection. She iterated a second concern regarding the importance of environmentally *pono* (good; righteous) project-related improvements. She closed with these words:

> I do think that there needs to be improvements because the traffic now is way more than it was when I was growing up. Safety of course is number one, environmentally *pono* is number two. This project may also affect our people and their practices. What are the cumulative effects that could cause harm or inconvenience must be considered as well. Also the sensitivities to the cultural aspects of any part of our *‘āina* in this area will be affected, because in the past our people’s concerns have been ignored and sometimes there seems to be no benefit

> to the people might come out of a project. How does it affect us? Sometimes yes, sometimes no, but that must be considered, ‘cause we are the ones that live here and breathe here and raise our children here.

Kupuna Puanani Rogers is a long-standing activist and supporter in the realm of indigenous rights for Native Hawaiians; her *aloha* (love) for the lands of Kapa‘a and Keālia has been made apparent throughout the years, largely in part to her connection to both *ahupua‘a*, in addition to her advocacy of addressing community economic and cultural challenges as *po‘o* of the Ho‘okipa Network (*Kaua‘i Directory Resources in Cultural Learning* 1997).

5.5 Summary of *Kama‘āina* Interviews

Based on the reviewed and approved interview summaries and transcriptions of Mr. Kenneth Ponce and Ms. Puanani Rogers, the following is a synthesis of findings within Kapa‘a and Keālia Ahupua‘a.

Mr. Kenneth Ponce was interviewed by CSH on 17 December 2015 at the Kaua‘i Beach Resort in Līhu‘e, on the island of Kaua‘i. Mr. Ponce, a *kama‘āina* of Kapa‘a, is a retired firefighter from the Kaua‘i Fire Department who now works in construction and housing development. As a third generation Kapa‘a resident, Mr. Ponce discussed with CSH his relationship to the *ahupua‘a* and provided descriptions of life in Kapa‘a when the town operated as a center for plantation-era activities. In particular, Mr. Ponce described to CSH the influence of his ancestors, Pedro and Crescencia Ponce. In his foreword, Mr. Chad Taniguchi identifies Pedro and Crescencia Ponce (and many other men and women), and shares how their actions and experiences within Kapa‘a Town “helped create the changes that saw Big Five control over Hawaii give way to multi-ethnic participation in a more democratic society” (Nishimoto et al. 1984). Mr. Ponce also recalled the historic plantation social hall, once located on the north side of Kapa‘a Stream. The hall played host to many plantation workers and their families and was utilized for numerous celebrations and *lū‘au*. Mr. Ponce’s descriptions of Kapa‘a as a thriving plantation town led to his suggestion that CSH obtain the book *Hana Hana: An Oral History Anthology of Hawai‘i’s Working People* (Nishimoto et al. 1984) in order to conduct additional research on Pedro and Crescencia Ponce, as well as Kapa‘a Town.

Within the oral history anthology, Nishimoto et al. (1984) identify Pedro Ponce as the “striker” and Crescencia Ponce as the “healer.” While both were Visayan immigrants from the Phillipines, it wasn’t until the “territory wide Filipino plantation strike of 1924” (Nishimoto et al. 1984:107) that the two were finally able to meet:

> At Kealia Plantation, Crescencia worked briefly as a laundress, then as a plantation laborer, stripping and bundling sugar cane leaves. She later joined her sister at the Kapaa strike camp where she became acquainted with Pedro […] Pedro and Crescencia were married at the end of the strike. Refusing to return to the plantation, Pedro opened a barbershop, working for fifty years until his retirement in 1976. During this time, Crescencia became known on Kauai as a *hilot* [healer], or folk doctor. Parents of six, the Ponces made their home in Kapaa [Nishimoto et al. 1984:107].

In particular, Mr. Kenneth Ponce shared with CSH stories of the healing gifts his grandmother had been endowed with. His grandmother was known throughout Kapa‘a as a very religious

woman who was especially skilled in matters relating to obstetrics; Mr. Ponce remarked that she often helped childless women conceive in addition to assisting women throughout the duration of their pregnanies. Mr. Ponce also remarked that as a *hilot* or healer, Crescencia often gathered *lā‘au* (plants) from her Kapa‘a land to utilize in her healing practices.

Mr. Ponce continued to describe vegetation within the *mauka* portions of Kapa‘a Ahupua‘a. According to Mr. Ponce, the area *mauka* of the Kapa‘a Stream Bridge was occupied by homes belonging to plantation camp workers. *Mauka* of the plantation camp homes, the landscape was primarily comprised of sugarcane and pineapple fields. Currently, the fallow sugarcane and pineapple fields have been converted to pasture land and/or contain ironwood trees (native to Australia). The presence of ironwood trees at this higher elevation indicates the trees were used for windbreaks. Such vegetation is reflective of the intensive land modifications that occurred largely due to the demands of the late nineteenth to early twentieth century sugar and pineapple industries. Mr. Ponce added that he had once worked in the pineapple fields as a young man. According to Mr. Ponce, “old timers” consisting of former plantation workers and private workers had acquired 20-acre tracts in the *mauka* portions of Kapahi and Kapa‘a Ahupua‘a, near Kawaihau Road and the former Hawaiian Fruit Packers pineapple cannery; by the 1960s, land use primarily consisted of private or agricultural land holdings. These 20-acre tracts were often cultivated with pineapple; some of the private owners of these tracts—“old timers”—were Hawaiian Fruit Packers’ employees who sold their fruit back to the cannery (De Silva 2016). Mr. Ponce also identified St. Catherine’s Cemetery *mauka* of Kūhiō Highway.

CSH inquired if Mr. Ponce was aware of any cultural practices occurring in the vicinity of the project area. Mr. Ponce recalled accompanying his grandmother, Crescencia Ponce, on fishing trips to Kapa‘a Stream. Their catch generally consisted of *‘o‘opu*, while *pāpio* and *ulua* were generally caught near the mouth of the stream, in the vicinity of the Kapa‘a Stream Bridge. Mr. Ponce detailed how his family would go crabbing along the stream. Mr. Ponce also discussed the cultural practice of *he‘e nalu* (surfing). As a young man, Mr. Ponce surfed the break just north of Kapa‘a Stream and south of Keālia Beach. Mr. Ponce, however, could not recall any cultural sites within the project area and stated that he had never heard of anyone finding burials in the vicinity of the project area. In terms of the project, Mr. Ponce expressed a concern regarding pedestrian safety and motor vehicle traffic during construction. Mr. Ponce expressed no further concerns regarding the project, and stated he believes bridge improvements will help alleviate motor vehicle traffic and congestion.

Ms. Puanani Rogers was interviewed by CSH on 17 December 2015 in Kapa‘a Town, on the island of Kaua‘ i. Ms. Rogers, a *kupuna* and *kupa ‘āi au* (native-born, long attached to a place) of Keālia, is recognized as the founder of the Ho‘okipa Network for Kaua‘i Island. As founder of the Ho‘okipa Network she has advocated addressing community economic and cultural challenges. In addition to her current responsibilities as *po‘o* (head) of the Ho‘okipa Network, Ms. Rogers also serves as the *po‘o* of the *Ahupua‘a Moku* council for Kauai’s Puna District. Ms. Rogers, the *muliloa* (youngest child) of Mr. Anacleto Ribuca Batted, Sr. of the Philippines and Ms. Eleanor Puanani White (a descendant of the Kāne ‘Ohana from the Island of Maui), revealed her connection to and knowledge of the *ahupua‘a* through descriptions of cultural sites in proximity to the Kapa‘a Stream Bridge and the “Keālia Bike Path” or Ke Ala Hele Makalae (East Kaua‘i’s Coastal Shared-Path System). In particular, Ms. Rogers discussed the discovery of *iwi kūpuna* in the vicinity of

the bike path. She also noted that the bike path corridor contains cultural markers and interpretive signs. These interpretive signs denote the cultural significance of the area:

> The path corridor signage program will educate visitors and residents alike of the rich history of Kaua‘i’s eastern shoreline including; significant historical and cultural sites, scenic landmarks as well as important coastal and river ecological habitats. Educational signage plaques are being installed on natural stone platforms and will include colorful graphics, photographs and written text describing interesting aspects and points of interest at each location. [PBR Hawaii 2016]

The “markers” or interpretive signage do not discuss burials in the area nor do they mark the locations of burials; however, Ms. Rogers referred to the “markers” as a kind of waypoint or landmark during her discussion with CSH regarding possible burial site locations in proximity to the “Keālia Bike Path” (Ke Ala Hele Makalae) and the Kapa‘a Stream Bridge area. She additionally noted that traditional Hawaiian burials are oftentimes found in natural sand material; currently, soils within the project area consist of Beaches (BS), Mokuleia fine sandy loam (Mr), Mokuleia clay loam (Mta), and Lihue silty clay (Foote et al. 1972; U.S. Department of Agriculture 2001). In particular, Ms. Rogers articulated to CSH that individuals involved with ground disturbance must be aware of the potential for an inadvertent discovery of human remains within coastal areas in addition to being aware of the protocol and procedures in the event of such a discovery.

CSH’s interview was briefly interrupted by Ms. Rogers’ *hale aikāne* (close friend); the woman identified herself as Ms. Anne Punohu, a *kama‘āina* who was *hānai* to the Halele‘a ‘Ohana of Hanalei, as well as the Mahu‘iki ‘Ohana, and has become knowledgeable in traditional Hawaiian arts and *mo‘olelo*. In particular, Ms. Punohu shared with CSH a *mo‘olelo* regarding a freshwater pond in the vicinity of the project area called Wahine‘oma‘o‘ula. According to Ms. Punohu, the pond is guarded by a *mo‘o wahine* of the same name. Ms. Punohu articulated the sacred nature of the *mo‘o* due to the deity’s connection to fresh water, the sacred *wai* (water). *Mo‘o* are defined as “Lizard, reptile of any kind, dragon, serpent; water spirit” (Pukui and Elbert 1986:253); these deities (such as the one described by Ms. Punohu) were generally associated with *mauka* areas, fresh water, and caves. The *mo‘o* may take either male or female form, although many freshwater streams and ponds are associated with *mo‘o wahine*. Ms. Rogers added her own *mo‘o* story, sharing that as a child growing up within Kapa‘a and Keālia, she was warned of a *mo‘o* that lived near the mouth of Kapa‘a Stream who was often responsible for the drownings of small children in the area. It has been noted that *mo‘o* residing near the ocean are sometimes classified as “minor *mo‘o*” (Vogeler and Hammatt 2012:60).

Ms. Rogers also shared with CSH the importance of the plantation infrastructure within Kapa‘a, and the contributions of the multi-ethnic plantation camp workers to the community at large. In particular, Ms. Rogers noted the ethnic backgrounds of the workers contracted by the plantations; these workers originated from Japan, the Philippines, and Portugal. Within Kapa‘a, during the plantation-era days, it was the “hall” (essentially the “social hall”) that served as a general gathering place for Kapa‘a’s diverse population. Ms. Rogers described the socials that often occurred at the hall, recounting how the lively music would echo through the night, even audible from her childhood home situated a distance away. She recalled how large and ubiquitous the sugar industry was in Kapa‘a and Keālia during the mid-twentieth century. Besides the aforementioned

hall, Ms. Rogers identified the plantation worker’s private residences, and stated that these homes were closely situated around various sugar mill operations. Ms Rogers highlighted that “these people all worked for the train and the plant because the mill was right around here. […] There was a whole plantation community, they had their own store, you know the company store, it is still there.” In recalling the simplicity of life during the mid-twentieth century, Ms. Rogers also recalled practicing a subsistence lifestyle. This lifestyle, identified by Ms. Rogers as an “old way of life,” required the gathering of natural resources from *mauka* to *makai*. However, she also pointed out to CSH that this lifestyle continues to some degree with residents continuing to fish, hunt, farm, and gather throughout Kapa‘a and Keālia Ahupua‘a.

In regards to fishing and gathering, Ms. Rogers discussed with CSH the varieties of plant and aquatic resources she has observed and gathered within both Kapa‘a and Keālia Ahupua‘a. Within the coastal portions of Keālia, Ms. Rogers identified traditional *lā‘au* including *hala*, *naupaka* (or *naupaka kahakai*), and *pōhuehue*. Ms. Rogers discussed the gathering of aquatic resources by describing fishing activities occurring near the stream and on the bridge. She mentioned that fisherman catch Samoan crabs, using the bridge to drop their nets or sailing boats up Kapa‘a Stream to fish and drop crab nets. Other aquatic resources gathered from the stream include *‘o‘opu*, *āholehole*, and *‘anae*. *‘Ōpae* (*kala‘ole*) were collected from shallow *mauka* streams of Keālia. In discussing stream resources and stream health, Ms. Rogers expressed a concern regarding the dense overgrowth of invasive vegetation surrounding the Kapa‘a Stream. She inquired if CSH was aware of who or what organization was responsible for maintaining the river, and clearing vegetation.

Ms. Rogers voiced additional concerns regarding the planned bridge improvements project and how the planned construction work may impact motor vehicle traffic. She added that historic remnants of the Ahukini Terminal & Railway Company tracks have been converted into a bike path. Additonally, she articulated that bridge improvements need to occur due to motor vehicle traffic being heavier than before. She points out that safety is the number one concern due to many traffic accidents at the Mailihuna Road intersection. She iterated a second concern regarding the importance of environmentally *pono* (good; righteous) project-related improvements. As a community advocate, Ms. Rogers also advised that the project may affect the local community and their cultural practices. She posited the following rhetorical questions to CSH:

> What are the cumulative effects that could cause harm or inconvenience[?] . . . Also the sensitivities to the cultural aspects of any part of our ‘āina in this area will be affected, because in the past our people’s concerns have been ignored and sometimes there seems to be no benefit to the people might come out of a project. How does it affect us? Sometimes yes, sometimes no, but that must be considered, ‘cause we are the ones that live here and breathe here and raise our children here.

Section 6 Traditional Cultural Practices

6.1 Gathering of Plant Resources

Māhele documentation indicates 67 cultivation *lo‘i* were claimed in the *kuleana*. In addition, references to uncultivated *lo‘i* and cultivated *lo‘i* not claimed were also documented. Among the claims were *‘auwai*, *kō‘ele*, and four *loko*. The Keālia and Keahapuna rivers were used as boundaries in several claims suggesting taro farming was central to Keālia Ahupua‘a. Records also indicate the rivers and streams were utilized to catch freshwater fish. *Kama‘āina* and cultural descendant Milton Ching recalls native fish in Kapa‘a Stream. However, due to urban expansion, the stream might be too polluted today for the native fish population to thrive.

Interviewee Puanani Rogers recalled that residents of the *ahupua‘a* had once lived a subsistence lifestyle; she noted that some residents continue this lifestyle, subsisting off the *‘āina*. She noted that residents of Kapa‘a and Keālia Ahupua‘a continue to fish, hunt, and cultivate the land. Ms. Rogers also noted the varieties of native Hawaiian plants growing in the vicinity of the project area. Native plants identified include *hala*, *naupaka* (*kahakai*), and *pōhuehue*. Traditionally, the leaves of the *hala* tree were utilized for household furnishings (Abbott 1992:71). *Naupaka* (*kahakai*) was often used for *lei* or *lā‘au lapa‘au*. *Pōhuehue* was traditionally utilized as cordage for various tasks such as fishing or net making (Abbott 1992:63), as well as for for *lei* or *lā‘au lapa‘au*. Ms. Rogers also detailed how nets were used to catch crabs, as well as *‘o‘opu*, *āholehole*,*‘anae*, and *‘ōpae* (*kala‘ole*). A net was used to *hali hali* underneath buffalo grass (*manienie-akiaki*) to catch the shrimp in the mountain streams. Interviewee Kenneth Ponce also remarked that in his youth he would visit Kapa‘a Stream with his grandmother, a *hilot*, and catch *‘o‘opu*, *pāpio* and *ulua* (the latter two varieties were often caught near the mouth of Kapa‘a Stream).

6.2 Burials

According to previous archaeological research, CSH conducted a field inspection, surface collection, and assessment at the Keālia Sand Quarry site in 1991 (Folk and Hamatt 1991). Human remains were exposed due to quarrying activities and designated as SIHP # -1851. Human remains were fragmented and disarticulated. Background research indicated the remains were most likely associated with two LCAs located in the vicinity. Traditional Hawaiian midden and historic artifacts were also found in the vicinity of the burials.

In 1996, SHPD conducted a field inspection of an inadvertent burial reported at Keālia. The remains were found in a recently disturbed sand deposit and associated with previously identified SIHP # -1851 (Jourdane and Collins 1996).

In 2000, CSH conducted an archaeological inventory survey and subsurface testing of a 300-acre parcel in Keālia Makai (Perzinski et al. 2000). Three cultural resources were identified during the survey including SIHP # -1899, burials (outside of 0.5-mile radius of project area as illustrated in Figure 24).

CSH conducted an archaeological inventory survey for the Kapa‘a-Keālia bike and pedestrian path in 2003 (O’Hare et al. 2003). A portion of the study area for the bike and pedestrian path are

in the current project area. Five sites were identified during the AIS, which included a burial cultural layer and associated human burial (SIHP # -2074).

In 2007, SCS conducted four phases of an AIS in Keālia Ahupua‘a. Phase III yielded six historic properties. Of those six properties, SIHP # -7040 consisted of human burials, a burial pit outline, and a fire pit (Drennan et al. 2007).

During the community consultation process, *kupuna* Valentine Ako mentioned a possibility of finding burials along the north, south, and *makai* sides of the bridge. He stated there should not be any issues with finding any burials on the *mauka* side of the project area. According to Mr. Milton Ching, the *mauka* side of the bridge is where a Native Hawaiian village once stood. He states that burials have been found on the *mauka* side of the bridge. In addition, a sand deposit is adjacent to the river. AMFAC would mine sand from the deposit for the construction of roads and often exposed burials. *Kupuna* Beverly Muraoka responded via letter stating that she believes *‘iwi* might be “beneath sand layers due to battles, village wars, etc. that occurred during pre-Christian contacts.” If *iwi* is unearthed during construction that “all protcols are followed by the Kauai Burial Council and/or committees handling the proper relocation of such sacred *iwi*.” Ms. Puanani Rogers also discussed the Keālia Bike Path, noted for the discovery of *iwi kūpuna* where markers were placed all around. Ms. Rogers explained that one may encounter burials in the vicinity of the scenic overview. Ms. Rogers also shared that traditional Hawaiian burials are often found in the sand, adding that those participating in ground disturbing activities must be aware of burials near the sea.

6.3 Cultural Sites

A total of 14 *heiau* were documented during the 1880s by Lahainaluna students who stopped in Kapa‘a and Keālia. The students collected stories from *kūpuna* of the area. The exact locations of the *heiau* are unknown. Two *heiau*, Kuahiahi and Kaluluomoikeha, correlate with *wahi pana* so general locations are somewhat known. Remaining *heiau* include Kumalae, Mailehuna, Makanalimu, Mano, Napuupaakai, Noemakalii, Nounou, Pahua, Piouka, Pueo, Puukoa, Una, and Waiehumalama.

According to Handy and Handy (1972:424) there is a banana grove at Ka‘ea. In the *ka‘ao* of Palila, there is also a banana grove called Ka‘ea in the Makaleha Mountains in Kapa‘a Mauka. This banana grove is said to be supernatural. A bunch consisted of only two bananas “on each about 4 inches around the middle” and “each about a foot or more in length” (Akina 1913). One of the bananas was tart, similar to a guava, while the other banana was tasteless.

6.4 Trails

Keālia Ahupua‘a had many traditional trails that led to Anahola. There were two principle routes to Anahola: a *makai* route and a *mauka* route. The exact location of the *makai* route is unknown although it is thought to run along the plateau lands somewhat removed from the coastline. The Old Government Road, also known as the “Mauka Road” crosses “the Kealia River above the Rice Plantation and passed near Mr. Spalding’s residence” (Hawaii State Archives, Letter: Z.S. Spalding, April 21, 1882).

In 1881, Z.S. Spalding, proprietor of the Makee Sugar Plantation, appealed to the Department of the Interior with a formal petition to have the *makai* road (in Keālia) officially closed stating

that local individuals were breaking through his fences to take short cuts between Keālia and Anahola (Hawaii State Archives, Letter: Z.S. Spalding, May 16, 1881).

When the Kaua‘i Belt Road was constructed in the first two decades of the 20th century, a portion of the old Government Road route was abandoned. The new route crossed the river at the *makai* end of Keālia Stream parallel to the ocean and the railroad track, and then turned *mauka* passing through Keālia Town to meet up with the "Old Government Road.

Ms. Rogers (in her interview) mentioned that the river is becoming overgrown and any trails once used by the fisherman would now be covered with vegetation.

Section 7 Summary and Recommendations

CSH undertook this CIA at the request of CH2M HILL and on behalf of the FHWA/CFLHD. The research broadly covered the entire *ahupua‘a* of Kapa‘a, including the current project area.

7.1 Results of Background Research

Background research for this study yielded the following results:

1. Kapa‘a literally translates to “the solid or the closing” (Pukui et al. 1974:86). Ke‘ālia means “the salt encrustation” (Pukui et al. 1974:102).
2. *Ka‘ao* places Hi‘iaka, the beloved sister of Pele the fire goddess, in the vicinity of the project area. Hi‘iaka and her companion, Wahine‘ōma‘o view Wai‘ale‘ale, Nounou Hill, and Kapa‘a. Their canoe lands on the beach of Kapa‘a where they jump ashore and Hi‘iaka chants (Ho‘oulumāhiehie 2008:167–168).
3. The earliest foreign accounts of life in Ke‘ālia appear in the 1830s when missionary censuses recorded a total population of 283 people. Approximately 264 adults and 18 children were accounted for in the *ahupua‘a* (land division extending from the mountain to the sea). The population in Ke‘ālia then declined from 283 to 143; the introduction of foreign diseases account for the decline. Kapa‘a’s population during this time was unknown.
4. Māhele documentation provides insight into habitation and agricultural patterns. Kapa‘a was designated as Crown Lands while Keālia was granted to the *ali‘i* (chief) Miriam Ke‘ahikuni Kekau‘onohi. Kekau‘onohi was the granddaughter of Kamehameha, one of Liholiho’s wives, and served as Kaua‘i governor from 1842 to 1844. Seventeen land claims were made in Keālia and 15 were awarded. Six claims were awarded in the vicinity of the project area. Approximately 67 cultivation *lo‘i* (irrigated terrace) were claimed within the *kuleana* (land claim). *‘Auwai* (ditch), *kō‘ele* (small land unit farmed by a tenant for the chief), and *loko* (ponds) were also referenced in land claims, which exemplifies the rich agriculture within the *ahupua‘a*.
5. The first large scale enterprise in Kapa‘a and Keālia was in 1877 with the Makee Sugar Plantation and the Hui Kawaihau (Dole 1916:8). The Hui was originally a choral society that began in Honolulu with membership including both Hawaiian and *haole*. It was Kalākaua’s thought that Hui members could join forces with Makee. Makee was given land to build a mill in Kapa‘a and agreed to grind cane grown by Hui members. A fire destroyed the Hui’s second crop of cane and Makee had an untimely death resulting in his lease passing onto his son-in-law. The mill was moved to Keālia and the smokestack and landing was still present into the 1900s. Railroad construction for the plantation began in the mid-1890s. The rail line was part of a 20-mile network of plantation railroad with some portable track leading into Keālia Valley.
6. The lowlands of Kapa‘a were used for rice farming, which occurred in the latter half of the 1800s. *Kuleana* owners leased or sold their parcels *mauka* of the swamp land to Chinese rice farmers.
7. Keālia Ahupua‘a had many traditional trails that led to Anahola with two principle routes: a *makai* route and a *mauka* route. The exact location of the *makai* route is unknown although it is thought to run along the plateau lands, somewhat removed from the coastline.

7.2 Results of Community Consultations

CSH attempted to contact NHOs, agencies, and community members. Below is a list of individuals who shared their *mana‘o* and *‘ike* about the project area and the Kapa‘a and Keālia Ahupua‘a.

1. Valentine Ako, *Kupuna*
2. Milton Ching, *Kama‘āina* and cultural descendant
3. Beverly Muraoka, *Kupuna*
4. Kenneth Ponce, Retired fireman
5. Puanani Rogers, Leader for the Ho‘okipa Network

7.3 Non-Cultural Community Concerns and Recommendations

Based on information gathered from the community consultation, participants voiced the following concerns not related to the cultural context.

1. Impacts of construction on traffic flow, pedestrians, and motorists—the community voiced no recommendations regarding these concerns, but expressed their support for bridge improvements due to their concerns regarding road traffic safety.

7.4 Impacts and Recommendations

Based on information gathered from the cultural and historic background, as well as through community consultations, the proposed project may potentially impact undetected *iwi kūpuna* (ancestral bones). CSH identifies potential impacts and makes the following preliminary recommendations.

1. Previous archaeology indicates several burials have been found in the vicinity (0.5-mile radius or less) of the project area (SIHP #s -1851, -7040, and -0884). Community consultation indiciated knowledge of *iwi kūpuna* in the vicinity of the project area. Based on these findings, there is a high possibility *iwi kūpuna* may be present within the project area and that land disturbing activities during construction may uncover presently undetected burials or other cultural finds. Should burials (or other cultural finds) be encountered during ground disturbance or via construction activities, all work should cease immediately and the appropriate agencies should be notified pursuant to applicable law, HRS §6E.

Section 8 References Cited

Abbott, Isabella Aiona

1992 *Lā‘au Hawaii: Traditional Hawaiian Use of Plants*. Bishop Museum Press, Honolulu.

Akina, Joseph

1913 I Ke hou i Ka Lulu-o-Moikeha i ka laula o kapaa. *Kuokoa* 2–9 May 1913. Bishop Museum Archives HEN Place Names, Kaua‘i, Honolulu.

Alexander, William Patterson

1991 A Tour of Kauai in 1849: Private Journal of William DeWitt Alexander. *The Kauai Papers*, Kauai Historical Society, Līhu‘e, Kaua‘i, Hawai‘i.

Anonymous

1987 Hawaiian Terms for Winds and Rains, Bishop Museum, Honolulu.

Auchter, E.C.

1951 *People, research, and social significance of the pineapple industry of Hawaii*. Pineapple Res. Inst. Hawaii, Honolulu.

Ava Konohiki

2015 Ancestral Visions of ‘Āina website. Available online at http://www.avakonohiki.org/.

Bartholomew, Duane P., Richard A. Hawkins, and Johnny A. Lopez

2012 Hawaii Pineapple: The Rice and Fall of an Industry. *HortScience* 47 (10):1390–1398.

Beckwith, Martha

1970 *Hawaiian Mythology*. University of Hawaii Press, Honolulu.

Bennett, Wendell C.

1931 *The Archaeology of Kaua‘i*. Bishop Museum Bulletin 80. Bernice Pauahi Bishop Museum, Honolulu.

Bushnell, K.W., David W. Shideler, and Hallett H. Hammatt

2003 *Cultural Impact Assessment for the Proposed Kapa‘a-Keālia Bike and Pedestrian Path, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i Island, Hawai‘i (TMK: 4-5, 4-6-14, 4-7-03 & 04), Volume I and II*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Bushnell, K.W., Melanie Mann, Douglas Borthwick, Tony Bush, Todd Tulchin, David W. Shideler, and Hallett H. Hammatt

2003 *Archaeological Inventory Survey for the Proposed Kapa‘a-Keālia Bike and Pedestrian Path, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i Island, Hawai‘i (TMK: 4-5, 4-6-14, 4-7-03 & 04).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Chinen, Jon J.

1958 *The Great Māhele, Hawaii’s Land Division of 1848.* University of Hawaii Press, Honolulu.

Clark, John R.K.
1990 *Beaches of Kaua‘i and Ni‘ihau*, University of Hawaii Press, Honolulu.

Commissioner of Public Lands. Hawai‘i (Territory).
1929 *Indices of Awards made by the Board of Commissions to Quiet land Titles in the Hawaiian Islands.* Hawai‘i State Archives, Honolulu.

Condé, Jesse C. and Gerald M. Best
1973 *Sugar Trains, Narrow Gauge Rails of Hawaii*. Glenwood Publishers, Felton, California.

Cook, Chris
1999 *Kaua‘i, the Garden Island: A Pictorial History of the Commerce and Work of the People.* Donning Company, Virginia Beach, Virginia.

Coulter, John Wesley
1931 *Population and Utilization of Land and Sea in Hawaii, 1853.* Bishop Museum Bulletin 88. Bernice Pauahi Bishop Museum, Honolulu.

Damon, Ethel M.
1931 *Koamalu*. 2 Vols. Privately printed at the Honolulu Star-Bulletin Press, Honolulu.

Dega, Michael and James Powell
2003 *Archaeological Monitoring During Phase I of the Kaua‘i Rural Fiber Optic Duct Lines Project, Kaua‘i Island.* Hawai‘i. Scientific Consulting Services, Inc., Honolulu.

De Silva, Rita
2016 The Kauai of old will always be treasured. *Garden Island*. Electronic document, http://thegardenisland.com/lifestyles/opinion/the-kauai-of-old-will-always-be-treasured/article_00963018-c192-5ccb-ac22-dc76b856a4f1.html (accessed 4 August 2016).

Drennan, Trisha M. and Michael Dega
2007 *An Archaeological Inventory Survey Report Phase II of a Portion of 2,008 Acres in Keālia, Keālia Ahupua‘a, Kawaihau District, Island of Kaua‘i, Hawai‘i, [TMK: (4) 4-7-003:002 (por.) AND 4-7-004:001 (por.)]*. Scientific Consultant Services, Inc., Honolulu.

Drennan, T., Cathleen Dagher, and Robert L. Spear
2006 *An Archaeological Inventory Survey Report Phase I of a portion of 2,008 Acres in Kealia, Kealia Ahupua‘a, Kawaihau District, Island of Kaua ‘i, Hawai‘i [TMK: (4) 4-7-003:002 (por.) and 4-7-004:001 (por.)]*. Scientific Consultant Services, Inc., Honolulu.

Drennan, Trisha M., Guerin Tome, Shayna Cordle, and Michael Dega
2007 *An Archaeological Inventory Survey Report Phase III of a Portion of 2,008 Acres in Keālia, Keālia Ahupua‘a, Kawaihau District, Island of Kaua‘i, Hawai‘i, [TMK: (4) 4-7-003:002 (por.) AND 4-7-004:001 (por.)]*. Scientific Consultant Services, Inc., Honolulu.

Dole, Charles S.

1916 The Hui Kawaihau. Paper read at the November meeting of the Kauai Historical Society on 16 November 1916. Līhu‘e, Kaua‘i, Hawai‘i.

Donohugh, Donald

2001 *The Story of Kōloa, A Kauai Plantation Town*. Mutual Publishing, Honolulu.

Elmore, Michelle and Joseph Kennedy

2003 *An Archaeological Monitoring Report for the Proposed Kuhio Highway Drainage Improvements Project at Kapa‘a and Anahola (Project # 56AC-01-01) Located in Kawaihau District, Island of Kaua‘i*. Archaeological Consultants of the Pacific, Inc., Hale‘iwa, Hawai‘i.

Fernandez, Bill

2009 *Rainbows Over Kapa‘a*. Central Pacific Media, Hawai‘i.

Folk, William H. and Hallett H. Hammatt

1991 *Field Inspection, Surface Collection and Assessment at Keālia Sand Quarry Site*. Letter report on file at Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawai‘i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

Fornander, Abraham

1916-1919 *Fornander Collection of Hawaiian Antiquities and Folk-Lore*. Thomas G. Thrum, translator and editor. Memoirs of the Bernice Pauahi Bishop Museum. Bernice Pauahi Bishop Museum, Honolulu.

Garden Island

1955 Geologists Says Kapaa Coral Removal No Threat to Town. *Garden Island* 21 September.

1963 Kapaa Blames Federal Role As Erosion Continues. Says Barrier on Reef is Required. *Garden Island* 30 October.

1983 Article. *Garden Island* April.

2010 Article. *Garden Island*. Online at www.gardenisland.com.

Giambelluca, T., M. Nullet, and T. Schroeder

1986 *Rainfall Atlas of Hawaii Report R76*. State of Hawai‘i, Department of Land and Natural Resources, Division of Water and Land Development, Honolulu.

Google Earth

2013 Aerial photographs of Hawai‘i. Google Inc., Mountain View, California. Available online at www.google.com/earth.html.

Hammatt, Hallett H., Rodney Chiogioji, Gerald K. Ida, Victoria S. Creed, and Jerome V. Ward

1997 *An Archaeological Inventory Survey for the Kūhiō Highway Widening and Bypass Options within the Ahupua‘a of Wailua, South Olohena, North Olohena, Waipouli*

& Kapa‘a, Island of Kaua‘i, with Appendix on Palynology. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hammatt, Hallett H. and David W. Shideler

2006 *Archaeological Literature Review and Field Check Study of Eight DOE Schools, Island of Kaua‘i Hawai‘i Inter-Island DOE Cesspool Project.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Hammatt, Hallett H. and Rodney Chiogioji

1998 *Archaeological Reconnaissance Survey and Assessment of the Lands of Keālia Ahupua‘a (6,690.9 Acres), Kawaihau District, Kaua‘i Island TMK 4-6-08:07, 4-7-01:01, 4-7-02:03, 47-02:05, 4-7-03:02, 4-7-04:01, 4-7-04:06.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Handy, E.S. Craighill and Elizabeth G. Handy

1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum Bulletin 233. Bernice Pauahi Bishop Museum, Honolulu.

Hawai‘i Bureau of Conveyances

1846- Hawai‘i. Bureau of Conveyances, Book 59:1-2. Department of Land and Natural Resources, Honolulu.

Hawai‘i State Archives

1837 Interior Department, Land, Incoming Letter. August. Hawai‘i State Archives, Honolulu.

1879 Interior Department, Land, Incoming Letter. Hawai‘i State Archives, Honolulu.

1881 Interior Department, Letterbook, Letter from Z.S. Spalding. Hawai‘i State Archives, Honolulu.

1882 Interior Department, Letterbook, Vol. 20. Letter from Spalding to the Honorable Jacob Hardy, Circuit Judge–Fourth Circuit Kauai. Hawai‘i State Archives, Honolulu.

Hawaii State Survey

1854 Hawaiian Islands [map]. Registered Map 141. Kumukumu, Kauai. W.H. Pease, Sur. Scale 10 chains=1”. Hawai‘i State Archives, Honolulu.

Hawai‘i TMK Service

Tax Map Key [4] 4-6-014, 4-7-003. Hawai‘i TMK Service, Honolulu.

Hawaiian Ethnological Notes (HEN)

1885 *Papers by Lahainaluna Students After Interviews with Old Residents of Kauai.* Hawaiian Ethnological Notes, Vol. 1, Lahainaluna Students Papers, HEN I:214 “Heiaus of Kealia and Kapaa” and “Well Known Things [or Places]”; HEN I: 215 “Famous Things mentioned by Two Men”; HEN I: 216 “Heiaus from Kapaa to Kealia” and “Things for which Kapaa was Known.” Bishop Museum Archives, Honolulu.

Hawaiian Territorial Planning Board

1940 *Master Plan of the Town of Kapaa*. In collaboration with Kauai County Board of Supervisors, Publication No. 8. Advertiser Publishing Company, Honolulu.

Honolulu Advertiser

1960 Kauai Tries to See into Future. *Honolulu Advertiser* 20 March.

Ho‘oulumāhiehie

2008a *Ka Mo‘olelo O Hi‘iakaikapoliopele*. Awaiaulu Press, Honolulu.

2008b *The Epic Tale Of Hi‘iakaikapoliopele*. Puakea Nogelmeier, translator. Awaiaulu Press, Honolulu.

Joesting, Edward

1984 *Kauai, The Separate Kingdom*. University of Hawaii Press and Kauai Museum Association, Ltd., Honolulu.

Jourdane, Elaine and Sarah Collins

1996 *Field Inspection of Inadvertent Burial Reported at Keālia, Kaua‘i, State Site # 50-30-08-1851*. State Historic Preservation Division, Department of Land and Natural Resources, Honolulu.

Juvik, Sonia P. and James O. Juvik (editors), Thomas R. Paradise (chief cartographer)

1998 *Atlas of Hawai‘i*. Third edition. University of Hawai‘i Press, Honolulu.

Kalākaua, David

1888 *The Legends and Myths of Hawaii*. R.M. Dagget, editor. Charles L. Webster and Company, New York.

Kamakau, Samuel Manaiakalani

1976 *The Works of the People of Old, Na Hana a ka Po‘e Kahiko*, Bishop Museum Special Publication No. 61. Bishop Museum Press, Honolulu.

1992 *Ruling Chiefs of Hawai‘i.* Revised edition. Kamehameha Schools Press, Honolulu.

Kame‘eleihiwa, Lilikala

1992 *Native Land and Foreign Desires. Pehea La E Pono Ai?* Bishop Museum Press, Honolulu.

Kapa‘a Elementary School

1933 *Kapa‘a School 1883-1933: A "Century of Knowledge.*" Kapa‘a Elementary, Kapa‘a, Kaua‘i.

Kaua‘i Historical Society

1885 Lahainaluna Student's Composition No. 17: Heiaus and Fishing Grounds [of Koloa, Kauai] (Translation by Mary Pukui), HEN Vol. 1, Bishop Museum, Honolulu.

Kikuchi, William K. and Susan Remoaldo

1992 *Cemeteries of Kaua‘i,* Volume 1. Kaua‘i Community College and University of Hawai‘i, Puhi, Kaua‘i, Hawai‘i.

King, Robert D.

1935 Districts in the Hawaiian Islands. In *A Gazetteer of the Territory of Hawaii*, compiled by John Wesley Coulter. University of Hawaii Research Publications, No. 11. University of Hawai‘i, Honolulu.

Lai, Violet L., assisted by Kum Pui Lai

1985 *He Was a Ram, Wong Aloiau of Hawaii*. Published for the Hawaii Chinese History Center and the Wong Aloiau Association by University of Hawaii Press, Honolulu.

Landgraf, Anne Kapulani

1994 *Nā Wahi Pana ‘o Ko‘olau Poko*. University of Hawai‘i Press, Honolulu.

Lydgate, John M.

1991 William E. Rowell’s Reminiscences of Waimea. In *The Kauai Papers*. Kauai Historical Society, Līhu‘e, Hawai‘i.

Mitchell, Aulii, Todd Tulchin, and Hallett H. Hammatt

2005 *Archaeological Literature Review, Field Inspection, and Cultural Impact Evaluation of a 3.1-acre Area Kapa‘a Ahupua‘a, Kawaihau District, Kaua‘i Island TMK: [4] 4-6-014: 026.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Nakuina, Moses K.

1990 *The wind Gourd of La‘amaoma*, Esther T. Mookini and Sarah Nakoa, translators. Kalamakū Press, Honolulu.

1992 *The Wind Gourd of La‘amaomao*. Second edition. Esther T. Mookini and Sarah Nākoa, translators. Kalamakū Press, Honolulu.

Office of Hawaiian Affairs

2014 *Papakilo Database.* Office of Hawaiian Affairs cultural and historical database. Electronic document, http://papakilodatabase.com/main/index.php.

O’Hare, Constance R., David W. Shideler, and Hallett H. Hammatt

2003 *Burial Treatment Plan For Site 50-30-08-2074 Keālia Ahupua‘a, Kawaihau District, Kaua‘i Island, Hawai‘i (TMK 4-7-03:1 Portion).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

PBR Hawaii

2016 Puna Moku Coastal Trail Heritage Signage. *PBR Hawaii*. Available online at http://pbrhawaii.com/?project=kapaa-kealia-bikeway&cat=9 (accessed 1 August 2016).

Perzinski, David, Matt McDermott, and Hallett H. Hammatt

2000 *Archaeological Inventory Survey and Sub-Surface Testing of the Approximately 300 Acre Keālia Makai Parcel, Keālia Ahupua‘a, Kawaihau District, Kaua‘i Island (TMK 4-7-04:6).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Pukui, Mary Kawena

1983 *‘Ōlelo No‘eau: Hawaiian Proverbs and Poetical Sayings*. Bishop Museum Special Publication No.71. Bishop Museum Press, Honolulu.

Pukui, Mary K., Samuel H. Elbert, and Esther Mookini

1974 *Place Names of Hawaii.* University of Hawaii Press, Honolulu.

Railway Modelling

2014 Railway modelling website. Online at www.rmweb.co.uk.

Rice, William Hyde

1923 *Hawaiian Legends*. Bishop Museum Bulletin 3. Bernice Pauahi Bishop Museum, Honolulu.

Schmitt, Robert C.

1969 The Population of Northern Kauai in 1847. In *Hawaii Historical Review, Selected Readings*, 1969, edited by Richard A. Greer, Hawaiian Historical Society, Honolulu.

1973 The Missionary Censuses of Hawaii. *Pacific Anthropological Records* 20. Honolulu.

Thrum, Thomas G.

1923 *More Hawaiian Folk Tales*. A.C. McClurg & Company, Chicago.

UH SOEST

1950 UH SOEST Kapaa Coast aerial photograph. University of Hawai‘i at Mānoa School of Ocean and Earth Science and Technology–Coastal Geology Group. Online at http://soest.hawaii.edu/

1975 UH SOEST Kapaa Coast aerial photograph. University of Hawai‘i at Mānoa School of Ocean and Earth Science and Technology–Coastal Geology Group. Online at http://soest.hawaii.edu/

Ulukau

2014 *Māhele Database*. Hawaiian Electronic Library, http://ulukau.org/cgi-bin/vicki?l=en..

U.S. Department of Agriculture

2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas. http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/ (accessed March 2005).

USGS (U.S. Geological Survey)

1910 Kapaa USGS Survey 7.5-Minute Series Topographic Quadrangle. USGS Information Services, Denver, Colorado.

1996 Kapaa USGS Survey 7.5-Minute Series Topographic Quadrangle. USGS Information Services, Denver, Colorado.

Vogeler, Kūhiō and Hallett H. Hammatt

2012 *Cultural Impact Assessment (CIA) for the Kaua‘i County Kalāheo Water System Improvements Project, Kalāheo and Wahiawa Ahupua‘a, Koloa District, Kaua‘i Island, Tax map Key (TMK): [4] 2-4-003:007, 2-4-003:999 por., 2-4-004:039, 2-4-004:049, 2-4-004:999 por., 2-4-005:999 por., 2-4-006:999 por., 2-4-009:003*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i

Waihona ‘Aina

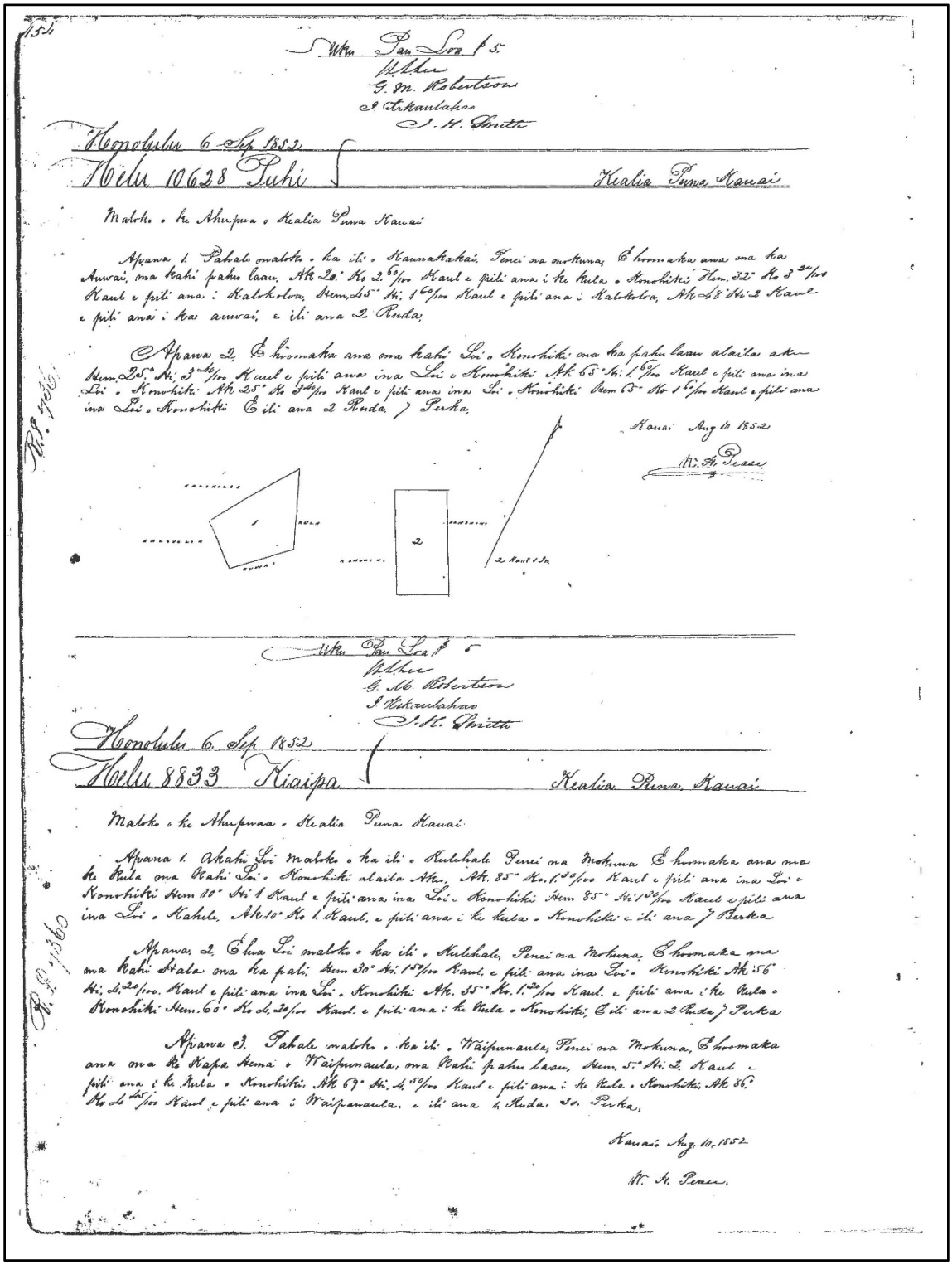
2000 *The Māhele Database*. Electronic document, http://waihona.com (accessed 10 April 2014).

Wichman, Frederick B.

1998 *Kaua‘i Ancient Place Names and Their Stories*. University of Hawai‘i Press: Honolulu.

Wichman, Frederick B.
1991 *Polihale and other Kaua‘i legends*, Bamboo Ridge Press, Honolulu.

Appendix A Land Commission Awards



Utku Pau Loa 5.
Utku
G. M. Robertson
J. Kekaulahao
C. H. Smith

Honolulu 6 Sep 1852

Helu 10628 Puhi — Kealia Puna Kauai

Maloko o ke Ahupua o Kealia Puna Kauai

Apana 1. Pahale maloko o ka ili o Kaunakakai, Penei na mokuna, E hoomaka ana ma ka Auwai, ma kahi pahu laau, Ak 20° Ko 2.60/100 Kaul e pili ana i ke kula o Konohiki Hem. 32° Ko 3.20/100 Kaul e pili ana: Kalokolou, Hem. 55° Ki. 1.60/100 Kaul e pili ana i Kalokolou, Ak 48 Ki 2 Kaul e pili ana i ka auwai, e ili ana i Ruda.

Apana 2. E hoomaka ana ma kahi Loi o Konohiki ma ka pahu laau alaila aku Hem. 25° Ki. 3.40/100 Kaul e pili ana ina Loi o Konohiki Ak 65° Ki. 1.60/100 Kaul e pili ana ina Loi o Konohiki Ak 25° Ko 3.40/100 Kaul e pili ana ina Loi o Konohiki Hem 5° Ko 1.60/100 Kaul e pili ana ina Loi o Konohiki E ili ana i Ruda, Perka.

Kauai Aug 10 1852
W. A. Pease

Utku Pau Loa 5
Utku
G. M. Robertson
J. Kekaulahao
C. H. Smith

Honolulu 6. Sep 1852

Helu 8833 Kiaipa — Kealia Puna, Kauai

Maloko o ke Ahupuaa o Kealia Puna Kauai

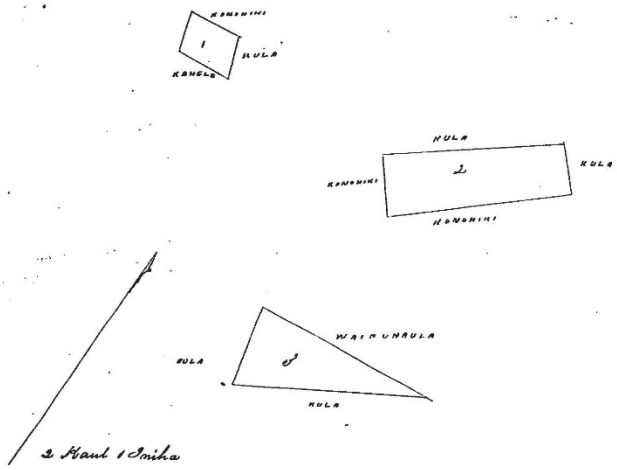
Apana 1. Akahi Loi maloko o ka ili o Kulehale Penei na Mokuna E hoomaka ana ma ke Kula ma Kahi Loi o Konohiki alaila Aku, Ak. 85° Ko. 1.50/100 Kaul e pili ana ina Loi o Konohiki Hem 10° Ki. 1 Kaul e pili ana ina Loi o Konohiki Hem 85° Ki. 1.50/100 Kaul e pili ana ina Loi o Kahule, Ak 10° Ko 1 Kaul e pili ana i ke kula o Konohiki e ili ana i Ruda Perka

Apana 2. E hua Loi maloko o ka ili o Kulehale, Penei na Mokuna, E hoomaka ana ma Kahi Hala ma ka pali Hem 30° Ki. 1.50/100 Kaul e pili ana ina Loi o Konohiki Ak 56 Ki. 2.20/100 Kaul e pili ana ina Loi o Konohiki Ak. 35° Ko. 1.20/100 Kaul e pili ana i ke Kula o Konohiki Hem. 60° Ko 2.20/100 Kaul e pili ana i ke Kula o Konohiki; E ili ana i Ruda Perka

Apana 3. Pahale maloko o ka ili o Waipunaula, Penei na Mokuna, E hoomaka ana ma ke Kapa Kema o Waipunaula, ma Kahi pahu laau, Hem. 5° Ki. 2 Kaul e pili ana i ke Kula o Konohiki Ak 67° Ki. 2.50/100 Kaul e pili ana i ke Kula o Konohiki Ak 86° Ko 2.40/100 Kaul e pili ana i Waipunaula, e ili ana i Ruda. So. Perka.

Kauai Aug. 10, 1852
W. A. Pease

155.



Uku Pau Loa 5
Witness
J. M. Robertson
J. Kokauohaas
J. K. Pratt

Honolulu 6 Sept 1852

Helu 10907 Naumiumi Kealia Puna Kauai

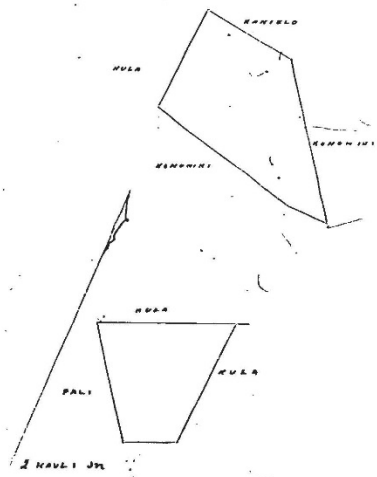
Maloko o ke Ahupuaa o Kealia, Puna Kauai

Apana 1. Eluu Loi maloko o ka ili o Aanaipuhu. Penei ona Mokuna, E hoomaka ana ma ke kihi Hk. Ki. o kahi Loi o Konohiki "Kaniela" Ka inoa, Hem. 75° Hi. 2 20/100 Kaul e pili ana i ka Loi o "Kaniela" Hu. 30° Hi. 4, Kaul e pili ana ina Loi o Konohiki, Ak. 85° Ko 1 Kaul e pili ana ina Loi o Konohiki, Ak. 70° Ko 3 7/100 Kaul e pili ana ina Loi o Konohiki, Ak. 5° Hi. 2, 70/100 Kaul e pili ana i ke Kula o Konohiki, E Ki ana 1. Eha.

Apana 2. Pahale one Kula, maloko o ka ili o Akiiana, Penei ona Mokuna, E hoomaka ana ma Ka pali; ma Kahi pohaku, alaila aku. Hem. 30° Hi. 3 Kaul e pili ana i ka pali; Ak. 70° Hi. 1 1/100 Kaul e pili ana i ka pali; Ak. 60. Hi. 2 Kaul. e pili ana i ke Kula o Konohiki; Ak. 30° Ko 2 3/100 Kaul e pili ana i ke Kula o Konohiki, Hem. 72° Ko 3 10/100 Kaul e pili ana i ke Kula o Konohiki. E ili ana 3 Kuda 1 Poka

Kauai, Aug. 10. 1852

W. H. Rase



153

Helu 10906 Umiumi — Kealia Kauai

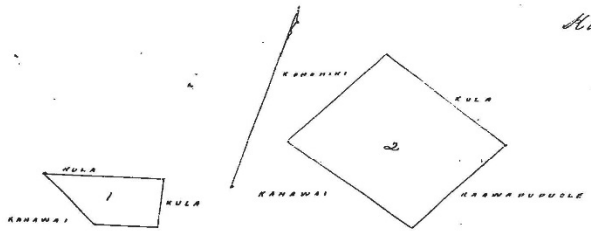
Maloko o Kealia Ahupuaa Puna Kauai.

1 Pahale, penei ova mokuna, E hormaka ana ma ke Kahawai o Kealia ma Ke Kapa Akau ma Kahi pahu laau, alaila Ak. 5° Ko 1.20/100 Kaul e pili ana i ke Kula o Komohiki Hem. 86° Ko 2.80/100 Kaul e pili ana i ke Kula o Komohiki Hem. 56° Hi 1.30/100 Kaul e pili ana i ke Kahawai o Kealia Ak 80° Hi 1.50/100 Kaul e pili ana i ke Kahawai o Kealia e ili ana 1 Ruda.

2. Aina Kalo me Kula E hormaka ana ma ke Kahawai Kiki Hema Kom. o na Loi o Kaawapupuole, alaila aku, Ak. 35° Hi 3 Kaul e pili ana ina Loi o Kaawapupuole, Ak. 62° Ko 3.00/100 Kaul e pili ana i ke Kula o Komohiki Hem 35° Ko 3.20/100 Kaul e pili ana ina Loi o Komohiki Ke 65° Hi 3.00/100 Kaul e pili ana i ke Kahawai, E ili ana 1 Eka 15 Perka

Kauai, Aug 10, 1852

W. H. Pease



2 Kaul 1 Jn

Uku Pau Loa $6

Mahee
G. M. Robertson
J Kekaulakao
J. K. Smith

Honolulu 6 Sep. 1852

Helu 8842 Kaawapupuole — Kealia Puna Kauai

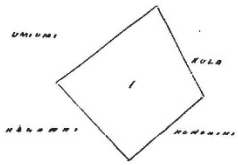
Maloko o Ke Ahupuaa o Kealia, Puna, Kauai.

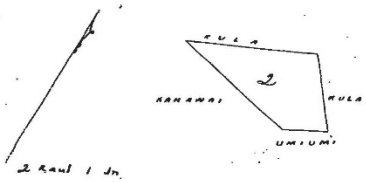
Apana 1. E lima Loi me Kula maloko o Ka ili o Makapono. Penei ova Mokuna, E hormaka ana ma ke Kahawai o Kealia ma ke Kapa Hikina ma Kahi Kau. Ak. 52. Hi. 2.20/100 Kaul e pili ana ina Loi o Komohiki Ak. 40° Ko 2.50/100 Kaul e pili ana i ke Kula Komohiki Hem 35° Ko 3 Kaul e pili ana ina Loi o Umiumi Hem. 58° Hi. 2.55/100 Kaul e pili ana i ke Kahawai, e ili ana 2. Ruda, 2 Eka, Perka,

Apana 2. Pahale maloko o Ka ili o Kawaha, Penei ova Mokuna, E hormaka ana ma ke Kahawai ma ke Kapa Hema ma Kahi pahu Ak. 80° Hi. 1 Kaul e pili ana ina Loi o Umiumi Ak. 20° Ko. 2 Kaul e pili ana i ke Kula o Komohiki Hem. 80° Ko. 3.20/100 Kaul e pili ana i ke Kula o Komohiki Hem. 60° Hi. 3.20/100 Kaul e pili ana i ke Kahawai, E ili ana 1 Ruda 25 Perka

Kauai Aug 10. 1852

W. H. Pease.





2 Kaul 1 Jn.

152

Uku Pau Loa p 5.
Wilkes
G. M. Robertson
J. Kekaulahao
J. H. Smith

Honolulu 6 Sep 1852

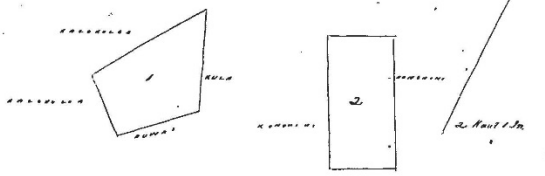
Helu 10628 Puhi — Kealia Puna Kauai

Maloko o ke Ahupuaa o Kealia Puna Kauai

Apana 1. Pahale maloko o ka ili o Kaunakakai, Penei ona mokuna, E hoomaka ana ma ka Auwai, ma kahi pahu laau, Ak 20° Ko 2.6/100 Kaul e pili ana i ke kula o Konohiki Hem. 52° Ko 3.24/100 Kaul e pili ana i Kalokolua, Hem. 55° Ki. 1.60/100 Kaul e pili ana i Kalokolua, Ak 18° Ki 2 Kaul e pili ana i ka auwai, e ili ana 2 Ruda.

Apana 2. E hoomaka ana ma kahi Loi o Konohiki ma ka pahu laau alaila aku Hem. 25° Ki. 3.50/100 Kaul e pili ana ina Loi o Konohiki Ak 65° Ki. 1.60/100 Kaul e pili ana ina Loi o Konohiki Ak 25° Ko 3.40/100 Kaul e pili ana ina Loi o Konohiki Hem 5° Ko 1.60/100 Kaul e pili ana ina Loi o Konohiki E ili ana 2 Ruda 7 Perka.

Kauai Aug 10 1852
W. H. Pease



Uku Pau Loa p 5
Wilkes
G. M. Robertson
J. Kekaulahao
J. H. Smith

Honolulu 6. Sep 1852

Helu 8833 Kiaipa — Kealia Puna Kauai

Maloko o ke Ahupuaa o Kealia Puna Kauai

Apana 1. Akahi Loi maloko o ka ili o Kulehale Penei na mokuna E hoomaka ana ma ke kula ma kahi Loi o Konohiki alaila Aku, Ak. 85° Ko. 1.50/100 Kaul e pili ana ina Loi o Konohiki Hem 10° Ki 1 Kaul e pili ana ina Loi o Konohiki Hem 85° Ki 1.50/100 Kaul e pili ana ina Loi o Kahele, Ak 10° Ko 1. Kaul. e pili ana i ke kula o Konohiki e ili ana 7 Perka

Apana 2. E lua Loi maloko o ka ili o Kulehale, Penei ona Mokuna E hoomaka ana ma kahi Hala ma ka pali Hem 30° Ki 1.50/100 Kaul. e pili ana ina Loi o Konohiki Ak 56° Ki. 1.20/100. Kaul e pili ana ina Loi o Konohiki Ak. 55° Ko. 1.20/100 Kaul. e pili ana i ke kula o Konohiki Hem. 60° Ko 1.20/100 Kaul. e pili ana i ke kula o Konohiki, E ili ana 2 Ruda 7 Perka

Apana 3. Pahale maloko o ka ili o Waipunaula, Penei ona Mokuna, E hoomaka ana ma ke Kapa Hema o Waipunaula, ma Kahi pahu laau, Hem. 5° Ki. 2. Kaul e pili ana i ke kula o Konohiki, Ak 69° Ki. 1.50/100 Kaul e pili ana i ke kula o Konohiki, Ak 86° Ko 1.45/100 Kaul e pili ana i Waipunaula, e ili ana 4 Ruda. 30. Perka,

Kauai Aug. 10, 1852

W. H. Pease.

153

Helu 10906 Umiumi Kealia Kauai

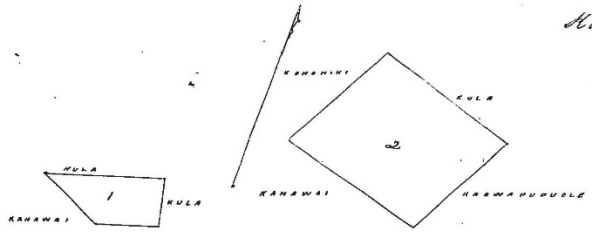
Maloko o Kealia Ahupuaa Puna Kauai.

1 Pahale, pinei ma mokuna. Ehumaka ana ma ke Kahawai o Kealia ma Ke Kapa Akau ma Kihi pahu Laau, alaila Ak. 5° Ko 1.20/100 Kaul e pili ana i ke Kula o Komohiki Hem. 86° Ko 2.80/100 Kaul e pili ana i ke Kula o Komohiki Hem. 56° Hi 1.70/100 Kaul e pili ana i ke Kahawai o Kealia Ak 80° Hi. 1.50/100 Kaul e pili ana i ke Kahawai o Kealia e ili ana 1 Ruda.

2, Aina Kalo me Kula Ehumaka ana ma ke Kahawai Kihi Hema Kom. o na Loi o Kaawapupuole, alaila aku, Ak. 35° Hi. 3 Kaul. e pili ana ina Loi o Kaawapupuole, Ak. 62° Ko 3.60/100 Kaul e pili ana i ke Kula o Komohiki Hem 35° Ko 3.20/100 Kaul. e pili ana ina Loi o Komohiki He 65° Hi 3.60/100 Kaul e pili ana i ke Kahawai, Eili ana 1 Eka 15 Perka

Kauai, Aug 10, 1852

W. H. Pease



2 Kaul 1 Jn

Uku Pau Dea $ 6

Witness
G. M. Robertson
J Kekaulakai
J. K. Smith

Honolulu 6 Sep 1852

Helu 8842 Kaawapupuole Kealia Puna Kauai

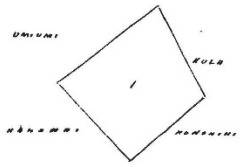
Maloko o Ke Ahupuaa o Kealia Puna Kauai

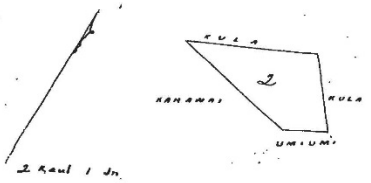
Apana 1. Elima Loi me Kula maloko o Ka ili o Makapuno. Pinei ma Mokuna. Ehumaka ana ma ke Kahawai o Kealia ma ke Kapa Kitina ma Kahi Kau. Ak. 52° Hi. 2.20/100 Kaul e pili ana ina Loi o Komohiki Ak. 60° Ko 2.50/100 Kaul e pili ana i ke Kula Komohiki Hem 35° Ko 3 Kaul e pili ana ina Loi o Umiumi Hem. 58° Hi. 2.55/100 Kaul. e pili ana i ke Kahawai, e ili ana 2, Ruda, 20, Perka,

Apana 2. Pahale maloko o Ka ili o Kawaha, Pinei ma Mokuna. Ehumaka ana ma ke Kahawai ma Ke Kapa Hema Ma Kahi pahu Ak. 80° Hi. 1 Kaul. e pili ana ina Loi o Umiumi Ak. 20° Ko. 2 Kaul. e pili ana i ke Kula o Komohiki Hem. 80° Ko. 3.30/100 Kaul e pili ana i ke Kula o Komohiki Hem. 60° Hi. 3.20/100 Kaul e pili ana i ke Kahawai, Eili ana 1 Ruda 25 Perka

Kauai Aug 10. 1852

W. H. Pease.





2 Kaul 1 Jn.

Appendix B Letter from Beverly Muraoka

BEVERLY H. S. L. A. MURAOKA
1111 Puuopae Road
Kapaa, Kauai, Hawaii 96746

September 14, 2015

Cultural Surveys Hawaii Inc.
Archaeological and Cultural Impact Studies
P. O. Box 1114
Kailua, Hawaii 96734

Re. Job Code: KAPAA 15

Gentlemen:

I apologize for this delayed response on your letter dated August 12, 2015 since I have just returned from the Mainland for family celebrations.

While I do not have any firm commentaries as to the site in discussion, just know that I strongly believe whenever a project takes place near or proximity to the ocean, in this case I know it to be "Kealia Beach" there may be 'iwi beneath sand layers due to battles, village wars, etc. that occurred during pre-Christian contacts. Thus, should these be unearthed, discovered or the like, please ensure all protocols are followed by the Kauai Burial Council and/or committees handling the proper relocation of such sacred 'iwi.

Other than that, I may suggest that you contact a Yoshiko "Dimples" Kano who was a longtime resident in the upper Kealia area who has relocated to the Wailua Houselots Subdivision. I regret not knowing her exact relocation.

Unfortunately, the old-time residents that lived along the mauka side of Kuhio Highway of the Project Area are now deceased and their children may know more. Such names are Antone Arruda, (daughter Carol Franklin)P. Chong(grandson Herman Chong, Jr.) and Pedring Ponce(grandson Kenneth Ponce, Jr.) I cannot assist in further contacts, however, this may guide you in your quest to find them. Lastly, Puanani(Nani) Rogers, a strong activist, may give you more info as she may represent both herself and a 98-year Aunty(Frances Okai in knowledge regarding Mailihuna Rd.) Good luck!

Sincerely,

Beverly H. S. L. A. Muraoka

Beverly H. S. L. A. Muraoka
Kumu Hula, Retired
Healani's Hula Halau & Music Academy
Kapaa, Kauai, Hawaii

Appendix C Kenneth Ponce Transcription

Cultural Impact Assessment, Kapa‘a Stream Bridge Project: Cultural Surveys Hawai‘i (CSH) interview with Kenneth Ponce (KP), *kama‘āina*, retired firefighter for Kaua‘i Fire Department, on 17 December 2015 at the Kaua‘i Beach Resort in Līhu‘e:

CSH: Aulii Mitchell

CSH: *Aloha kakahiaka*, good morning, and this is an interview with Kenneth Ponce?

KP: Ponce

CSH: Here in ah the island of Kaua‘i. Cultural Surveys Hawai‘i, so I am going to start with your name.

KP: Uh my name is Kenneth Ponce.

CSH: Ok and where were you born?

KP: I was born here in um Wilcox Hospital, Līhu‘e, Kaua‘i.

CSH: Ok so where did you grow up?

KP: Where did I grow up? I grew up um here in Kapa‘a. I have been here all my life.

CSH: Ok so how was it growing up?

KP: Um it was very beautiful because um we were on the Windward side and um during my younger days Keālia beach was our stomping grounds ‘cause I just walked down from the hill. I live right up Mailehuna Road.

CSH: Where is that? Let’s mark it on here.

KP: Mailehuna Road is right up, I think, this is the road right here.

CSH: Oh so close!

KP: Yea! I live right up here next to the school.

CSH: Right yea, where did you grow up? What area?

KP: Um I grew up on um Kolohala road, its right off of Mailehune.

CSH: Up here.

KP: Yea it’s um

CSH: Kolehala?

KP: Kolohala Road

CSH: KOLO-hala ai

KP: 4762 Kolohala Road

CSH: Kolohala Road... ok.

KP: Mmhmm

CSH: Ok I gon put "hale" Ok great... great

KP: Yea, I live right across from Kapa‘a High School.

CSH: Oh ok

KP: Yea

CSH: And that’s where you went school?

KP: That’s where I went to school.

CSH: Ok

KP: So... yea

CSH: Yea so who, um, who were your parents?

KP: My parents were um (clears throat) Antonio and Margaret Ponce.

CSH: Ok and um? Were they um? Where were they, where were they from?

KP: My dad was born and raised in Kapa‘a.

CSH: Ah ok and mama?

KP: My mother was uh born in Kōloa and she was raised in Kīlauea.

CSH: Ok...

KP: And when she married my dad she moved to Kapa‘a.

CSH: Ah ok so what is your ancestry?

KP: My ancestry is that I am Japanese-Filipino.

CSH: Ok so did you have family coming here in the early years?

KP: Yes

CSH: Through immigration?

KP: Yes

CSH: And through working in the fields?

KP: Yes um there is a book that um the University of Hawaii um (clears throat) put out back in the 70's or 80's and one of the chapters were about my grandparents, my Filipino grandparents!

CSH: Oh wow

KP: It was called "Pa Hana", "Pa Hana Years" I believe...

CSH: I know that, I know that book.

KP: If you look at one of the chapters my uh his name was Pedro Ponce and um uh Cresencia Ponce. There in one of the chapters he was uh (clears throat) he was uh, he came here as a laborer and opened up his own barber shop...

CSH: Ah

KP: And um he made his this is how he made his living through um cutting hair. But he was um he used to work um as um a uh um irrigation um in the irrigation for the um um plantation, sugar plantation.

CSH: Oh wow

KP: And then uh back in the Philippines he was cutting hair when he was eleven years old or whatever.

CSH: Oh my gosh yea. So he brought the trade with him?

KP: Yea and then his eyes opened when he was, when he came here he he he wanted a better life so he opened up uh

CSH: He realized the opportunity.

KP: Yea he realized that they needed uh a barber so he was one of the barbers in Kapa‘a Town. So I knew I knew almost everybody in Kapa‘a Town.

CSH: Uh huh, amazing.

KP: Yea my grandmother was a healer. If you, if you read, if you go in the book my grandmother was uh healer...

CSH: Yea

KP: And she never took any um

CSH: And where was she from?

KP: She was from the Philippines. He was from Cebu and she was from Buho I believe um and she was taught healing uh uh um at a very young age. She healed a lot of people here.

CSH: Oh right

KP: She could she could um people would uh um babies that was um what do you call that when they?

CSH: When they *huli*.

KP: When they *huli*!

KP: She could, she could, she could, she could, she could right the baby.

CSH: Oh right

KP: People that couldn't conceive they would come to her and they could conceive after she touched them.

CSH: Wow amazing.

KP: She was very, she was very um she was very um she was a healer but she was also really religious.

CSH: Right religious, like *tūtū* (grandmother) kine yea?

KP: We were um Roman Catholic.

CSH: Yea my *tūtū* was Catholic, we Catholic.

KP: Yea they brought the religion over with them so I am a practicing Roman Catholic. Yea I was in a very, I am trying to be a better one.

CSH: Yea it takes time.

KP: Yea

CSH: I can always say I am a surviving Catholic.

KP: So

CSH: Yea go ahead

KP: So my grandfather and then the reason why we are connected to this land here that this project is occuring in the future. My grandparents own land up here and um.

CSH: They own land over here?

KP: They own land where I grew up. They gave the land to my parents and um.

CSH: Up Kolohala?

KP: Up Kolohala Road

CSH: Right

KP: And um one time and that area is called Lee Wing Track. This old Chinese man used to I guess used to own tracts of land he owned land all in this area to the Kapa‘a Stream and my grandfather could have bought all this land for two thousand dollars.

CSH: Oh my god.

KP: All this land from here on. He had the money and my grandmother was so scared she said no. But he bought land up here uh tracts of land. So he bought tracts of land here and he could have bought the whole track of property.

CSH: Ok so where all Kapa‘a homestead is he purchased or?

KP: Well in the back of Kapa‘a School on Mailehuna road.

CSH: That’s over here yea?

KP: Um

CSH: We talking about Kolohana where you grew up?

KP: Oh yea this is Kolohana Road! Yea right here!

CSH: Right, this is Hauaala.

KP: No wait this is... This is Kapa‘a Stream.

CSH: This is Kapa‘a Stream so where is Kolohala Road where you grew up?

KP: Well this is Kawaihau um wait this is Kawaihau. I am trying to get my bearings.

CSH: That’s ok go take your time.

KP: Wait this is...

CSH: This is Kapa‘a new park, Town Park, the canal Moikea.

KP: Yea

CSH: Cemetery here and cemetery here so two cemeteries.

KP: Ok so this is?

CSH: Kapa‘a Homestead is extended all the way down here.

KP: Yea see this is Kawaihau Road

CSH: Mmhmm

KP: So Kawaihau Road goes like this and I think this is Kawaihau Road cause this is the main highway.

CSH: Mmhmm

KP: So I believe this is Kawaihau Road, yea this is Kawaihau Road.

CSH: Yea right it is. Ok.

KP: What’s this road? See they don't have these roads listed.

CSH: Yea they don't.

KP: Yea you see I think this is Kawaihau Road.

CSH: Ok so where in the right area yea? Kolohala here?

KP: Yea, yea

CSH: Over here where you grew up?

KP: Yea so I grew up someplace in this area. You see I don't know what this is? But this must be Kapa‘a school area so I grew up someplace around here.

CSH: Ok so what I will do I will look for this name of the road so I can superimpose it on the map. So I can get you a map like this. Do you want a map like this?

KP: Yea that would be good. That will be good for my children.

CSH: The whole thing would be good for your children yea. So um *tūtū* may have purchased lands back here?

KP: Yes back here.

CSH: Right, ok great.

KP: Back here I think?

CSH: So were those lands left to you folks?

KP: Uh... yes.

CSH: They were and are they still your lands today?

KP: Not mine but my brothers.

CSH: Your brother’s lands there ok ok. Good, so can I just go back to mama for a minute?

KP: Sure

CSH: To her healing. Cause a lot of the study is what resources where before time. Did she, like our *lapa‘au* (healing) people, did she use the resources around her to use as medicines.

KP: Yes

CSH: Like plants and what kind of these? Do you remember?

KP: Um? It was mostly on the land that she grew.

CSH: Ok right.

KP: It was on her land that she grew? I would remember going out and harvesting. Outside of her land she might have um not too sure.

CSH: Ok right. Ok what was um we got papa's was cut hair right?

KP: Yes

CSH: And mama was a healer. Oh grandma was-

KP: My grandma was a healer.

CSH: Your mother was a healer too?

KP: No

CSH: What did your mother do?

KP: My mother was a house wife also.

CSH: Oh ok like my mama. And papa worked as the cutting hair or *tūtū* man worked, grandpa worked.

KP: Yea my grandfather.

CSH: Right, and what does your papa do?

KP: My dad worked for um he worked, actually he retired from here Kaua‘i Beach Resort Hotel. He was one of the main supervisors here he worked at the old Kaua‘i Surf for a long time.

CSH: And so your occupation? Are you retired?

KP: I am a retired firefighter for the Kaua‘i Fire Department.

CSH: In Kapa‘a?

KP: I worked all over, I worked in Kapaa and I retired from Kōloa fire station.

CSH: Ok *maika‘i* (good). So we got the area of your residence. Where do you live today? Same place?

KP: I live in Kapa‘a area.

CSH: Where is that? Where do you live today?

KP: Right here, I live Kaehulua Road. I live up in this area right here.

CSH: Ok I will just put residence.

KP: I became a developer.

CSH: Oh ok

KP: I developed almost sixteen acres up in the area.

CSH: In what? What kine development?

KP: Um housing development.

CSH: Ok so in construction?

KP: Yea

CSH: Ok. Do you have your own company?

KP: No I don't.

CSH: Ok

KP: I subdivided five parcels, it was almost sixteen acres and I brought in all the infrastructure, waterline, all the utilities, the electrical phone lines, and all the cable tv lines. I did all that.

CSH: Wow, so how long have you lived here of Kaehulua Road?

KP: I have been living there since... about five years now.

CSH: Ok so can you talk about the general history of the area? Past or present kine of land use when you were young?

KP: Well when I was young all this area here was all houses. It’s not houses anymore.

CSH: By the bridge area was houses?

KP: Well right here they were all houses and stuff. There was a movie theater right here. There was a store right here. There is an existing post office right now.

CSH: I think the theater is still there yea? Or the building?

KP: What? The movie theater?

CSH: Yea?

KP: No it’s gone. Yea.

CSH: Ok so all this was housing yea?

KP: All this was houses, there is no longer houses.

CSH: It’s all business now yea?

KP: No it’s all pasture land.

CSH: All pasture land? Oh right you going out I keep forgetting.

KP: It’s all... what do you call those pine trees?

CSH: Ironwood?

KP: Ironwood!

CSH: So when you were young there used to be houses here? Were they plantation style or?

KP: Yea they were all for the plantation.

CSH: Plantations, oh ok.

KP: Yea they were all plantations.

CSH: So what land use was there, at that time, when you were young? Were they growing stuff? Was there agriculture, for example?

KP: Up in the highlands there was all cane fields cause my father and I used to hunt in this area.

CSH: Ok

KP: So they were all cane fields.

CSH: Ok, sugar cane.

KP: Yea sugar cane and most of the lands on this side were sugarcane and pineapple also. Cause I used to work in the pineapple fields. All the old timers had twenty acre tracts of land that they had bought in the early sixties. When I was in the fifth-fourth grade we worked in the private fields.

CSH: Yea yea we went to Lāna‘i.

KP: Yea, we didn't have to go. It was right up our alley.

CSH: Yea that’s right yea.

KP: Right up Kawaihau Road there was a cannery up there also. A pineapple cannery.

CSH: Right ok.

KP: Down here where the cemetery is, right here on this side, there was a Catholic church right here. The priest rectory was right up here and there was a hall here.

CSH: Not here anymore?

KP: Yea not there anymore.

CSH: Ok

KP: But there is a cemetery right there.

CSH: Right, what kind of cemetery?

KP: It’s a Catholic cemetery.

CSH: Catholic ok. Alright great. So um do you have any, now it doesn’t have to be Hawaiian, do you have any memories of any cultural events that was happening around here? What kind of cultural things was going on here?

KP: Like parties and stuff?

CSH: Yea.

KP: Well you know what, right next to Kapa‘a stream, on the north side of the Kapa‘a Stream, there was a hall and they used to have events in this hall right here. They used to have parties in this hall.

CSH: Oh yea?

KP: It’s hard to remember it was so long ago.

CSH: Right, I know that’s ok, but at least we know there was a hall and events happened here. Could have been all kine events. Baby *lū‘au*, all kine stuff.

KP: All kine stuff.

CSH: Right

KP: You talking to me, it’s just my memories is coming back to me.

CSH: That’s good! That’s how.

KP: You were asking me about cultural events.

CSH: Yea, we were at the hall. This was the sixties yea? Seventies? Mostly sixties.

KP: Yea mostly sixties.

CSH: What were your practices? You said you fished around here?

KP: Yes

CSH: Yea?

KP: Right below-

CSH: Right by the bridge?

KP: Right by the bridge. Right below the bridge there is a roadway right here.

CSH: Great ok.

KP: And we fished all from here. There was mostly our fishing right here.

CSH: Ok so what kine fish did you get?

KP: *Pāpio*... *Ulua*. My grandparents, they were fisherman they used to fish.

CSH: To sustain themselves?

KP: Yea

CSH: What about the stream? What about the stream? Did you guys use the stream for any food?

KP: Sometimes we would go crabbing over there.

CSH: Crabbing?

KP: Yea

CSH: Was this place ever used for surfing? The mouths of the river and ocean area. Was there surfing going around during your time?

KP: It would be north of the Kapa‘a Stream would be surfing out in this area. When I was growing up in the sixties it was just me and my neighbor on the whole beach. There would be nobody!

CSH: Wow

KP: Yea, now its hundreds of people. Everybody used to want to go to Wailua beach cause that’s where all the Coco Palms was in the heydays.

CSH: Yea exactly.

KP: All the *wahine*s were there with all the tourist and stuff.

CSH: Ok so what kind of, do you remember what kind of vegetation was in that area when you were young? And what’s there today?

KP: Well right now it’s all, like I said, it’s all ironwood and it’s all overgrown.

CSH: Ok. No natives around the area, no native trees?

KP: Um not that I know of. Now I guess up there someone is farming.

CSH: Farming what? Farming trees?

KP: Farming vegetables.

CSH: You know when the… is any kine *hukilau*s (to fish with a seine) in the water? All the Hawaiian fishermen’s using those waters, are they still used today? Did people still fish there today by the bridge?

KP: Yea, people still fish down there.

CSH: Ok

KO: I believe people still fish over there, yea.

CSH: Ok. Do you still fish?

KP: No I don't, I’m too busy. My brothers and my grandparents and my father used to fish.

CSH: Ok... What about any cultural sites like *heiau*, fishing shrines, that kind of stuff? Most important is do you know of any burials around the bridge area because the sand?

KP: Um not that I know of. Since we have been living there we never came across any.

CSH: Only the Catholic cemetery right there, right?

KP: Mmhmm mmhmm

CSH: That’s it?

KP: That’s it. That’s the only place I know of.

CSH: It a big issue today.

KP: Burials, yes. I am very aware of that.

CSH: What are your ideas of the probability of any being there? Did you ever hear of anything in the past of them finding bones in that area?

KP: No when I was growing up nobody mentioned about finding any bones.

CSH: That’s good to know.

KP: We used to be down there all the time. We never found bones. I never heard of anybody finding bones

CSH: You never see any old temples or rock formations of house sites from ancient times or anything like that?

KP: No, not that I know of.

CSH: So around that area do you know of anyone else who would be using that area for gathering practices, or fishing, or do you ever see any *hula halau* (dance schools) down there practicing or stuff?

KP: No

CSH: Ok

KP: Even when I grew up I never saw any. Maybe they do it now but I never see any *hula halau*s down there.

CSH: Ok

KP: Like I said it was just me and my friends down at the beach.

CSH: Right yea.

KP: We used to go make our own *paipo* (short or small board) boards and go bodysurfing and you know um well we had real boards back then but we used to use our paipo boards back then for go catch waves and stuff.

CSH: Oh right yea. What kine boards? So you did surf little bit kine in the water?

KP: Little bit. We used to make our own plywood boards.

CSH: Ah sounds fun. Right on.

KP: Yea so we used to surf and whatever catch waves and stuff. You know, neva have boogie boards back then so we make our own plywood.

CSH: Right. Very cool. Now was that in the area here?

KP: Yea, Keālia right around here. We just hang around right over here. Because it’s the least side of these rocks, there’s a rock jetty. This is a jetty right here.

CSH: So in this area do you know in the stream, do you know what kind of life is in the stream? Is there *‘ōpae* (*kala‘ole*; mountain shrimp) in there or is there *‘o‘opu* (goby) fish in there? You ever look in the stream what kind of life is in there?

KP: Actually above here...

CSH: Mmhmm?

KP: This must be Hauaala Road. Right about here from here on my grandparents uh I used to take my grandmother. She used to poke Oopu during Oopu season, I just flashed on it now.

CSH: That’s good.

KP: She and I used to go *‘o‘opu* fishing. Yes, yea *‘o‘opu*. We used to get a lot of *‘o‘opu*.

CSH: Ok

KP: Not anymore.

CSH: Not anymore huh? Hmm

KP: Ho I started flashing back, I started flashing back right now.

CSH: Yea good good. That’s how. So your grandma used to take you yeah?

KP: Yeah. I used to go with my grandmother and grandfather.

CSH: Right

KP: Mostly my grandmother she used to love *‘o‘opu*.

CSH: Yea, mine too, I still love to eat *‘o‘opu*. How about? Are you familiar with any place names that have significance, meanings around here? Not too much cause their Hawaiian yea? Any famous areas here as a child? Where there places they told you not to go?

KP: No

CSH: Ok alright. Were there stories when you was young? Any stories you remember?

KP: Well I knew back in the old days there was like, you know, this was a thriving sugar plantation. There's a monument to Col. Spalding. I don't know if you have heard of Col. Spalding?

CSH: Yea yea I have heard of Spalding family.

KP: There’s a monument up there.

CSH: Ok

KP: If you take the road, I think it’s this road up here, there is a Spalding monument. It’s called Spalding Monument.

CSH: Ok... How about any old trails you know of? Did you go and use any of the ancient kind of trails that went from *makai* to *mauka* or *mauka* to *makai*?

KP: Mmmm not so much old trails we just go whatever was back roads yea.

CSH: Ok so do you have any or do you know of any concerns the community might have related to Hawaiian or other cultural practices within this project area?

KP: Not that I know of. Personally, I think it would just enhance the area.

CSH: Yea ok it will enhance the area. What about the historic nature of it? You think that should be kept the way it is as it’s replaced or?

KP: What do you mean historic?

CSH: Well what happened is they will have stage areas and then they will have a temporary bridge while they are working on that bridge.

KP: Mmhmm

CSH: But the historic nature I mean its design... you know?

KP: Mmhmm

CSH: We have view plains from bridges from the mountain to the sea.

KP: Being that it’s kinda like it’s really low profile I don't think, and the mountains are kinda like in the valley like in there, I don't think it will be obstructing any view plains.

CSH: Right ok ok

KP: Just the nature that the whole area, the topography of the area, I don't think it would be detrimental to any view plains.

CSH: Do you have any concerns of what um how traffic will be during the replacement of the bridge, the work, the actual work? Do you have any concerns about flow of traffic? Any recommendations regarding site management, protection of that area?

KP: My concern would be just um cause the people-

CSH: Commute commute

KP: Yea some people drive really fast.

CSH: Right so you going out to Anahola that way or is it this way? Coming this way yea, to Anahola?

KP: Yea I would think so.

CSH: So Waipoli, this way is Anahola yea?

KP: That way is Anahola, yea.

CSH: Right so Kapa‘a down here. Where is the fire station?

KP: Kaikea

CSH: Kaikea? Where is that?

KP: Kaikea is...

CSH: Over here?

KP: Isn’t this the fire station right here?

CSH: Yea that’s it. Right there yea ok.

KP: That’s the fire station right there.

CSH: Right right yea yea.

KP: Yea

CSH: Ok so is there anything else you would like to say?

KP: Not really but when I saw your um...

CSH: Letter?

KP: When I saw, when I read your letter I looked up the map all the overview um I feel good that they are doing this.

CSH: Ok great right right.

KP: I have no problems, I have no qualms

CSH: You have no problems?

KP: Yea

CSH: Ok great. That’s good to hear.

KP: I mean-

CSH: Yea it doesn’t sound like.

KP: I mean-

CSH: It doesn't sound like culturally much has happened or still happens in that area.

KP: Mmhmm

CSH: No impact there.

KP: I don’t think, for me, I don't think there is any nature impact you know? I feel that it will enhance the property in that area right there.

CSH: Ok and the flow of traffic.

KP: And the flow of traffic.

CSH: Yea because when you get out, when everyone’s going out to Ke‘e, to Haena, and you know coming from the airport.

KP: Mmhmm

CSH: Ok so what I have to do now is go back and transcribe what we talked about and I will send you the transcription but I need your address.

KP: Mmhmm sure.

CSH: Ok and so u and then I have your number. So do you have your email? Do you have an email?

KP: Mmhmm

CSH: It’s faster.

CSH: Ok so what I will do is send a hard copy of the transcription to your house and one via email.

KP: Mmhmm

CSH: And then just look it over then you can take out whatever you want, you can add stuff you may have thought of but send it back to me in a final draft. And then what I will do is take your final draft and I will incorporate, have Nicole incorporate it into-

KP: Or I could just leave it as is.

CSH: Or you can leave it as is. Yea right exactly.

KP: Mmhmm cause my computer is not too spiffy right now.

CSH: Oh ok yea so you let me know.

KP: Or I'll call you.

CSH: Yea cause I will have the hard copy and I will follow up too. I will follow up on all of it. And then we will give you a copy of the report for your family.

KP: I, what prompted um so is this generated from the DOT?

CSH: No um so see this is-

Appendix D Puanani Rogers Transcription

Cultural Impact Assessment, Kapa‘a Stream Bridge Project: Cultural Surveys Hawai‘i (CSH) interview with Puanani Rogers (PR), a *kupuna, kupa ‘āi au*, and leader of the Ho‘okipa Network, on 17 December 2015 in Kapa‘a Town:

CSH: Aulii Mitchell

CSH: May I ask you name?

PR: Puanani Rogers. I am born and raised in the *ahupua‘a* of Keālia in the *moku o Puna* and the *mokupuni o Kaua‘i, o ka pae ‘aina o Hawai‘i.*

CSH: When were you were born?

PR: September 8, 1939.

CSH: We know where you were born, and so mama and papa, *nohea mai lāua*? Where is mama and papa from?

PR: My dad was from the Philippines and his name was Anacleto Ribuca Batted, Sr. and my mother is, *hapa haole* (half Caucasian) born in Honolulu and raised mostly on Kaua‘i. Of the Kane ‘*Ohana* from Maui is our Hawaiian side.

CSH: How many siblings you have?

PR: I have two brothers and two sisters, and I was the baby.

CSH: Do you have children?

PR: I have six children.

CSH: Do you have *mo‘opuna*?

PR: I have sixteen *mo‘opuna* I am grateful.

CSH: Are you familiar with any cultural sites in these areas near Keālia Bridge?

PR: In the areas in close proximity there are to these areas because after they did the Keālia, the bike bath they found bones and its markers were all around.

CSH: Can you show me on the map where they are?

PR: (Pointing to the map) Okay, right by the scenic overview and around there is a path, it is a beach path, it is all paved and everything (pointing to the fire station on the map). Do you know about this one here on the Keālia Path? It is just pass the other site. It is just around there [there] is a marker too.

CSH: (marking on the map based off Aunty Puanani Roger’s comments).

PR: Burials are often found in sand.

CSH: Who you? (A woman steps in and talks about a fresh pond and waterfall with a *mo‘o wahine* and states her name is Wahine‘oma‘o‘ula, Anne Punohu, and she is *hānai* to Hawaiian families, the Hanalei Halele‘a Family and the Mahu‘iki Family; she ‘*ūniki* (graduated, as from *hula* or other ancient arts) from Puni Kama‘u. Ms. Punohu also talked about ancient battles held in that place,

but a place where many *iwi* are and says she is knowledgeable about where the *mo‘o* in the area resides. She added that when the sand shifts you may find burials.)

PR: I was going to add when I was growing up and there were drownings sometimes with little children we used to hear the parents and everybody and my uncles and aunties always say something about the god guardian and every so often somebody drown in the river. You can always count on it.

CSH: Hilo same kind stories by the Wailua River, every year the *mo‘o* take someone.

PR: Sometimes the ocean, but usually by the mouth of the river, that is *mo‘o* related.

CSH: I seen *mo‘o* before he was a man, he was old and he was not handsome, quite scary looking.

PR: uuuuuu, ohhhhh really! Long hair?

CSH: Long hair but scaled face, right under the bridge in Wailuku where Kamehameha used to tie his canoe right by the bridge in Wailuku, he pop his head up and look at me!

PR: You didn't see the tail?

CSH: No only the face and shoulders, so we looking at this area.

PR: Did she say there was also battles there that is why the *iwi* might be in the dunes? That is something to think about and be aware about.

CSH: Any sites or *heiau* you know of near the bridge or sites?

PR: Closer to the APE, the impact area?

CSH: APE yes; that area are sandy areas.

PR: Yes they are; so not necessarily burials though so far in my life time, we have not, weren’t any that I have known of *iwi* there (I now question mark the others the girl pointed too). This is where the plantation camp was, Filipino, Japanese, Portuguese.

CSH: You know why there was a hall?

PR: Yes, that was a hall, but there was right this was all homes, these people all worked for the train and the plant in because the mill was right around here. And there was that sugar mill (pointing on map) in Keālia. There was a whole plantation community, they had their own store, you know the company store, it is still there. Where is the road that goes this way and the road that goes up? This one here, right around the plantation camp, the mill was… (looking at map). The monument was further up (Dennis put on map) it was more, the monument was more further up I think so. The monument was up above Kumukumu up here some place (pointing to the map) that is called the Spalding Monument and he was a manager of the plantation, the mill.

CSH: Okay.

PR: On this map it is hard to tell. I am sure you can find museum like at the Kaua‘i Museum.

CSH: No more *heiau*, no more cultural, no more *heiau*.

PR: Those things would be more *mauka*.

CSH: What was it like in your time in this area, cultural practices?

PR: There was a lot of people out there, practitioners foraging for food. Less restrictions in those days so we lived the old style, the old way of life, so we could go where ever we wanted to go where the food was to get from the *kai* or from the *mauka*. That is the kind of life it was. There is still people fishing today, but the supermarkets are too convenient now days. But I prefer eating food from the *‘āina*.

CSH: So the bridge being replaced, how it, do you feel it will impact the community?

PR: It will be a huge impact. Yes, the river and the ocean may be impacted by, when they start the construction. It would restrict our access to the ocean where we go fishing by the river mouth which is a very popular surfing place.

CSH: Did they surf when you were young?

PR: No, as a matter of fact when I was little my mom folks used to warn us, "Oh that is a dangerous beach!" They say there is under-tow there then mom used to take us to the Kapa‘a Beach Park, to the calmer waters. In my early teens and 20s it was a popular beach and everyone was there and it was a surfing beach and it was safer, I felt better because I really knew how to swim, so it has evolved, Keālia Beach has evolved now and now it is one of those popular ones, always filled.

CSH: What kind of vegetation is there in this area (pointing to project area on map)?

PR: There is still some native plants, like *hala* (screw pine) that we use to weave. *Naupaka* (beach succulent) too, the morning glory, *pōhuehue* and believe it or not there is a kind of plant over here that looks like sisal, yeah but this one is like taller and when the spikes with white flowers on it,but I don't know if it still there. Used to have another beach plant tree with curly leaves, I forget the name.

CSH: Where there any trails?

PR: Trails would be known by the fisherman or the people that go crabbing in the river.

CSH: Oh…they still go crabbing?

PR: All the time they used the river for crabbing, the Samoan crab. They used the bridge to drop off the net there with the round nets or they go in the boats and they go up the river and drop nets. They used to [go] fishing in the river for *‘o‘opu*, *‘ōpae* maybe more upland, in Keapana and more over where there is more shallow streams and then you go *hali hali* (fetch) underneath the buffalo grass and that is how we catch the shrimp, have to go cooler water. *‘O‘opu*, ā*holehole*, mullet.

CSH: They still use it today?

PR: Yes, but it is so overgrown it needs to be cleared. All up here, you know I live up here and when I look down I used be able to see the river, I cannot see the river in anymore. The way my dad built the house our dinning was right here with a picture window overlooking this scene right here (pointing and marking the map). Do you know who maintains this river, who is supposed to be clearing it? This is a good time to ask some questions like that?

CSH: What do think the community might think about this proposed project?

PR: It really going to disrupt our flow of traffic down here very much so. It will be quite an inconvenience. That was the old railroad track and what they did was they put the bike pass there now, okay so now they are saying there are going to build a detour bridge. Two lanes going one

this way and one going that way and perhaps this is the bike pass over here (pointing to map). A big impact to North Shore people, this is the only way to get across to get home. For me I will be going more up the other way.

CSH: Do you have any recommendations?

PR: I do think that there needs to be improvements because the traffic now is way more than it was when I was growing up. Safety of course is number one, environmentally *pono* is number two. This project may also affect our people and their practices. What are the cumulative effects that could cause harm or inconvenience must be considered as well. Also the sensitivities to the cultural aspects of any part of our *‘āina* in this area will be affected, because in the past our people’s concerns have been ignored and sometimes there seems to be no benefit to the people might come out of a project. How does it affect us? Sometimes yes, sometimes no, but that must be considered, ‘cause we are the ones that live here and breath here and raise our children here. I speak to that because in my experience that has not been happening and our culture and our *‘āina* is being exploited to foreign investors to accommodate tourism and *kānaka maoli*, the people, all our people, not just *kānaka maoli*, all the people that live here we all get affected, but we are at the bottom of the totem pole when it comes to any benefits or anything good that might come out of a project.

CSH: I'm good with that! Puanani, *mahalo* for all you do and for meeting with me to talk story about the project.

Appendix E Boundary Commission Reports for Kapa‘a and Keālia

Kapaa Ahupua‘a, District of Puna, Island of Kauai, Boundary Commission, Kaua‘i, Volume 1, pps. 26-31

Boundary of Kapaa,

1872

No. 5

October 1, Received the following petition

Honolulu, September 29th, 1872

Duncan McBryde, Esquire, Commissioner of Boundaries

Dear Sir:

I beg to acknowledge your letter of the 16 instant, informing me that application had been made to you by Charles R. Bishop & to Kanaina, Guardians of W.C. Lunalilo, to know the boundaries of the Waipouli situated in the District of Puna settled and defined.

I would now make application to know the Boundaries of the Ahupuaa of Kapaa on Kauai defined and settled at the same time. The side adjoining Kealia is already fixed.

I also wish to know the boundaries, to have the Boundaries, to have the boundaries [sic] of the Ahupuaa of Wailua on Kauai defined if it can be done at the same time,

I remain, Yours Truly

Signature, John O. Dominis, Commissioner & Land Agent

Therefore appointed the 11th day of November A D. 1872 for the hearing of said petition at Waiole at the hour of 10 am Court opened at 10 am when J.W. Makalena appeared and handed to the court the following note.

Honolulu, November 5th, 1872

Honorable Duncan McBryde, Boundary Commissioner Island of Kauai

Sir:

The bearer of this, Mr. J. W. Makalena, has been authorized by the Commissioner of Crown lands to act in their behalf in the settlement of the Boundaries of any and all crown lands which may be brought before you as already advertised by you.

I have the honor to be, Sir, Your most Obedient servant

J.O. Dominis, Commissioner of Crown Lands

[page 27]

1872, Boundary of Kapaa

Pahuwai, sworn, The boundary of the Ahupuaa of Kapaa commences at the sea adjoining Waipouli at Kaluapalipo;

Thence mauka to given lot called Heahukahiva;

Thence to commencement of an auwai called Makahakupanihi;

Thence along said Auwai to stones to [at] Pohakuhinana;

Thence to a stone in Indigo, Kaumihewa;

Thence to a stone, Pohopohoiki;

Thence to a place on Ridge, Hulemoa;

Thence passes near hau trees, Puakeii;

Thence past hau clump across stream & Ridge to Kalouulu;

Thence to top of ridge, Hinakamakani

Thence to where houses were formerly at Panini

Thence to Hau bush, Hauiki

Thence to stream, Kaukahoku

Thence across stream, Kawaiholana

Thence to where there were formerly houses, Kapukaili

Thence to a little place for catching fowls, Kainamanu

Thence to junction with Olohena & Waipouli, Kahilimalanai

Thence up ridge to Kapehuaola

Thence to Water fall, and along ridge to Makaleha

Thence to Junction with Kealia at a high stone peak called Pohakupili

Thence down the Kealia boundary to the Sea

Kaahu, sworn, The Boundary of this land commences at the sea adjoining Waipouli at a place called Kaluapalepo

Thence to a grass plot called Kahua

Thence to commencement of Auwai, Mahahakupanihi

Thence along Auwai to Pohakuhinana

thence to stone in long indigo, Kaumihewa

thence to a stone called Pohopohoiki

thence to a place on Ridge called Hulumoa

thence across stream and ridge to Kalouulu

thence to where houses formerly stood, Panini

thence to a hau bush, Hauiki

thence to stream, Kaukahoku [page 28]

thence to a stream called Kawaiholana

thence to where houses formerly were at Kapukaili

thence a place for catching fowls, Kainamanu

thence to junction with Olohena, Kahilimalanai

thence to extreme top of ridge, Kapehuaola

thence Along ridge to Makaleha, Makaleha

thence along ridge to Pohakupili

The junction of this land with Kealia and thence along the Kealia boundary to the sea, and thence to place of commencement.

Decision

Commencing at the sea shore adjoining Waipouli at Kaluapalepo. thence to a spot on Kula near Government road called Keahukahiva, thence to commencement of large Auwai Mahahakupanihi, thence along Auwai to Pohakuhinana, thence to a stone in Indigo Kaumihewa, thence to a stone called Pohopohoiki, thence along ridge to Hulemoa, thence past hau trees, thence past hau clump across stream to Ridge Kalouulu, thence to top of ridge Hinakamakani, thence to former site of houses Panini, thence to hau bush Hauiki, thence to stream Kaukahoku, thence across stream stream [sic] to Kawaiholana, thence to Kapukaili where houses formerly were, thence to a little mound called Kainamanu, thence to Kahilimalanai junction with Olohena and Waipouli. thence up and along ridge to top of mountain called Kapehuaola where there is a waterfall and thence along top of mountain ridge from peak to peak to Makaleha, and thence continuing on mountain ridge to a high sharp rocky peak called Pohakupili, the junction of Kapaa with Kealia and thence following down the Kealia boundary as rectified by the Boundary commissioner on the 5th day of December 1850 to the sea.

Duncan McBryde, Commissioner of Boundaries, Kauai

[page 29]

1872, Boundary of Kapaa

Notes of Survey of Southern Boundary of Kapaa

Bearings, Links

Commencing at sea beach at a place called Kaluapalepo from thence the following objects

Oahoaka, South 65° 40’ West; Nono, South 82° 32’ West; Anahola peak North 6° 40’ West, thence from beach on the following bearings and distances

North 96° 44’ West 544 links to Heaka 3 stones let into the ground close to roadway

North 34° 3’ West 1960 links along across flat to Makahaikupanihi

South 75° 44’ West 3400 links across through Kololoku swamp & Along Auwai

North 64° 52’ West 2200 links along south side of Water hole to stone Kaumeheiwa

North 63° 7’ West 1818 links up a gully to large stone called Popopohoiki

North 9° 36’ West 3565 links up a gully to ridge called Kahulamoa

North 56° 49’ West 1580 links up a gully to ridge called Kahulamoa

North 29° 17’ West 1775 links up a gully to a ridge called Kahulamoa

North 67° 25’ West 2995 links up a gully to Puahii hau trees

North 23° 44’ West 1965 links, at 1100 links passing old Kukui tree (bottle let in) to spur

North 64° 37’ West 1854 links up ridge

South 89° 39’ West 1200 links up ridge to Kalouula

South 83° 37’ West 1892 links up ridge to Hinamakamakani

North 76° 16’ West 1410 links up ridge to Panini (goose pen)

North 63° 12’ West 1594 links up ridge and along road to Hauikii a clump of hau trees

North 39° 33’ West 645 links up ridge and through hau clump

South 39° 18’ West 2600 links crossing several small gullies & Stream Kaukahoku and up onto spur opposite Kainahola water fall

North 72° 31’ West 830 links up spur

South 81° 54’ West 1066 links up spur

South 68° 45’ West 1110 links up spur and along narrow ridge & across a gully

South 78° 5’ West 2333 links crossing a gully and on up ridge

South 82° 57’ West 941 links crossing a gully and on up ridge

South 65° 18’ West 1549 links crossing Kawaihoolawa Stream and on to Spur

North 77° 4’ West 1021 links up Kawaihoolawa ridge

South 62° 49’ West 759 links up Kawaihoolawa ridge

South 81° 28’ West 276 links up Kawaihoolawa ridge

South 69° 47’ West 339 links up Kawaihoolawa ridge

South 44° 5’ West 558 links up Kawaihoolawa ridge

South 66° 23’ West 1592 links up Kawaihoolawa ridge and through hau bushes

South 86° 20’ West 1088 links up Kawaihoolawa ridge

South 71° 39’ West 404 links up Kawaihoolawa ridge [page 30]

South 48° 14’ West 193 links continuing up Kawaihoolana Ridge

South 86° 26’ West 795 links continuing up Kawaihoolana Ridge

South 50° 2’ West 640 links continuing up to Lehua trees thus [diagram: 2 trees]

South 81° 35’ West 445 links continuing up

South 61° 49’ West 924 links continuing up

South 76° 7’ West 382 links continuing up

South 74° 52’ West 694 links up same ridge to Kapukaili

North 71° 49’ West 1822 links up same ridge to Kahuahale

North 65° 50’ West 1755 links up same ridge to Kahuahale

South 69° 13’ West 700 links up same ridge and through Bush

North 88° West 500 links up same ridge and through bush

South 75° 19’ West 1200 links up same ridge and through bush

North 63° 40’ West 400 links to open space in bush called Kainamanu from whence the following Objects Bear: Ouhoaka, South 32° 47’ East; Noni peak, South 58° 53’ East; Makaleha, North 1° 40’ West

North 86° 40’ West 400 links entering Bush to head of gully

North 75° 45’ West 263 links along ridge in bush

North 63° 54’ West 120 links along ridge in bush

North 40° 30’ West 100 links along ridge in bush

North 14° 30’ West 270 links along ridge in bush

North 55° 55’ West 224 links along ridge in bush

North 44° 20’ West 160 links along ridge in bush

North 18° 45’ West 153 links along ridge in bush

North 42° 15’ West 167 links along ridge in bush

North 32° 30’ West 390 links along ridge in bush

North 36° 7’ West 300 links along ridge in bush

North 66° 4’ West 200 links along ridge in bush

North 88° 30’ West 212 links to a large Ohia tree at the head of Waipouli & junction of Kapaa And Olohena and known by the name of Kahilimalanai; thence on up a ridge to Kapihuaola (See plan) thence on round the top of mountain range to Makaleha and round to open leading down to Pohakupili, prominent and well defined point (see plan)

At all the stations on the survey three large holes have been dug and in the centre of them a bottle let into the ground and broken [diagram: holes at points of triangle with bottle broken in the middle]

[page 31]

I hereby certify that is a correct survey of the Boundary as shown me by Judge McBryde Commissioner of Boundaries for Kauai.

James W. Gay, Surveyor

December 1872

N.B. Notes on bearings from true North J.W.G.

Duncan McBryde, Commissioner of Boundaries, Island of Kauai

[No. 5, Kapaa Ahupua`a, District of Puna, Island of Kauai, Boundary Commission, no amount given, 1872]

Keālia Ahupua‘a, District of Puna, Island of Kaua‘i, Boundary Commission, Kaua‘i, Volume 1, pps. 11-14

Chambers Wahiawa

1870

No. 1.

Boundary of Kealia, Apana 7

Petition for Rectification of Boundry [sic]

Received the following petition, Kealia February 22nd 1870

To the Honorable Duncan McBryde, Commissioner of Boundaries for the Fourth Judicial Circuit, Island of Kauai

[margin note: Certificate sent to Interior Department]

The undersigned, your petitioner, respectfully represents into [unto] your Honor that he is the owner and in possession of the Ahupuaa of lands called Kealia, Halaaula & Homaikawaa, situated in the district of Puna, island of Kauai, that the same was not awarded to him by the Land Commission, patented or conveyed by deed from his Majesty, the King by boundaries described in said award patent or deed and therefore your petitioner makes this application to your honor to have the boundaries of said land decided and certified to, in accordance with the provisions of the act entitled An Act to facilitate the settlement of boundaries &c &c approved June 22, 1868, and in furtherance of this application represents that the said lands of Kealia, situated as aforesaid adjoin the land called Kapaa owned by the Commissioner of Crown Lands and also adjoins the government lands called Kamamalo and is under the supervision and control of his Excellency, W. Hutchinson, His Majesty's Minister of the Interior, and said land is now fully described in the annexed copy survey.

I have the honor to be your most Obedient servant,

(signed) E. Krull

Thereupon appointed the 5th day of December A.D. 1870 for the hearing of said application and according to law notified the commissioner of Crown and Government lands.

Court opened at Kealia 9 a.m.

The parties appeared and declared themselves ready for trial.

After the hearing of the several Witnesses the court gave decision in the matter as follows:

See Decision page 147 [page 12] Chambers Kealia

Boundaries of Kealia according to decision rendered on the 5th day of December 1870.

Commencing upon the sea shore at the Southeast corner of this land at rocks at low water marks, called Waileia which point is in a straight line with the Northerly side of Kapaa river before it turns previous to entering the sea, and bearing North 85° West to high rocky place called Pohakupili. From the above point following the sea to the small stream of water on Kumukumu and thence

passing up and around the boundaries of the land called Kumukumu by the following bearings & distances:

North 78° West 35 chains;

North 72 West 40 chains;

North 70° 30’ West 13 chains;

North 82° 30’ West 10 chains;

North 65° 30’ West 17 chains;

North 50° 30’ West 9 chains;

North 43° 30’ West 8 chains;

North 74° 30’ West 28 ~~80/100~~ chains;

South 86° East 31 chains;

South 82° East 310 chains;

South 71° East 42 5/100 chains;

South 67° East 17 chains;

South 76° East 6 chains;

South 67° 30’ East 14 chains;

South 86° West to the sea;

At the Northeast corner of Kumukumu; from thence following the sea to a stone on the South bank at the enterance [sic] into the sea of the small stream or river of Kamamalo, which is the Northeast corner of land called Hoomaikawaa; From the above point the Northerly Boundry [sic] of these lands runs

North 84° West 768 feet along near South side of Kamamalo River &

South 79° West 1220 feet to top edge of a certain hill; thence

North 86° West 568 feet along near edge of pali bounding Kamamalo gulch on the south, thence

North 72° West 500 feet along on top of ridge separating Homaikawaa and Kamamalo gulch, thence

North 70° West 935 feet passing along near North side of Kealia Auwai and from thence always following along near the north side of the Kealia auwai bearing and distances as follows

North 81° 30’ West 265 feet;

North 73° 30’ West 1270 feet;

South 77° 30’ West 600 feet;

North 84° 30’ West 2600 feet;

North 75° 30’ West 700 feet;

South 84° West 1058 feet;

South 86° West 2055 feet;

South 85° West 1070 feet;

South 79° 30’ West 642 feet;

South 55° West 270 feet;

North 87° West 1256 feet;

South 48° West 855 feet;

South 68° West 780 feet;

South 89° 30’ West 664 feet;

South 83° West 553 feet;

South 89° 30’ West 950 feet;

South 80° 30’ West 400 feet;

South 64° West 523 feet;

South 45° West 289 feet;

South 30° West 200 feet;

South 73° 30’ West 1050 feet;

North 83° West 600 feet;

North 57° 30’ West 875 feet;

North 73° West 573 feet;

South 85° 30’ West 900 feet;

North 78° West 225 feet;

South 64° 30’ West 162 feet;

North 78° 30’ West 245 feet;

South 87° West 270 [feet];

North 61° West 152 feet to a point in the auwai, a short distance makai of the crossing of the old mountain road on the edge of the bank of a small stream of water, from thence crossing [page 13], said stream

South 76° West 600 feet; thence

South 86° West 171 feet &

South 81° West 1050 feet, following along near said old mountain road to the entrance of said road into the forest; thence following always along said mountain road up along on the top of the ridge bounding Kealia river on the North as follows:

South 72° West 372

North 83° West 167 feet;

South 78° West 170 feet;

North 75° West 205 feet;

South 76° West 475 feet;

North 72° West 500 feet to a clearing on the ridge called Pohakuhapai; from thence

North 83° West 5000 feet passing along near top of ridge bounding Kealia Valley on its Northerly side to the extreme NorthWest corner of these lands.

The Boundry [sic] on the South side, commencing upon the sea; then at the Southeast corner of these lands at the place called Waileia, runs

South 75° West 1061 feet crossing sand spit to Kapaa river and up along Northerly side of said river in all its turns and windings by the following bearings & distances;

South 75° 30’ West 500 feet;

North 45° 30’ West 279 feet;

North 3° West 680 feet;

North 42° 30’ East 269 feet;

North 18° East 260 feet;

North 36° 30’ West 243 feet;

North 72° West 360 feet;

South 77° 30’ West 400 feet;

South 54° West 765 feet;

North 67° 30’ West 1372 feet;

North 65° 30’ 354 feet;

North 44° West 1300 feet;

North 81° West 149 feet;

North 42° West 660 feet;

South 74° West 350 feet crossing the auwai called Makoli; thence

South 36° West 150 feet;

North 68° West 200 feet;

North 64° West 131 feet;

North 63° West 470 feet; thence passing up through the middle of the river;

South 70° West 1100 feet to a Kukui tree on Northerly side of the river, near makai of the crossing of the Government road; thence

South 57° West 238 feet over Kula and

South 34° West 978 feet to the middle of Kapa [sic] river, from thence up through the middle of Kapaa River;

North 67° West 480 feet &

North 73° West to the lapa or ridge at junction of Kapaa & Kealia Rivers; from thence following up on middle of said ridge;

North 77° 30’ West 220 feet;

North 44° West 600 feet;

North 10° 30’ 589 feet;

North 30° 30’ West 323 feet;

North 32° West 324 feet;

North 28° West 263 feet;

North 85° West 290 feet;

South 56° West 225 feet;

South 57° 30’ West 375 feet;

South 68° 30’ West 495 feet to an open clearing; thence

North 77° 30’ West to top of ridge boundary Minomino valley on the south, from thence following along mauka on top of said ridge to bluff; where said ridge runs southerly, called Pualani; thence following along top of said ridge, bounding Minomino on the South and Kealia Valley, passing over Mountain peak called Hapu to the sharp, tall rocky peak called Pohakupili; from thence following down said ridge and crossing Kealia river and valley to the NorthWest corner of these lands.

Signed W.H. Pease

[page 14]

1870, Boundary of Kealia continued

Ua Kapeiiia [? Smudged hoohikiia?] e au na palena o Kamalomalo peli nui Homaikawaa Kealia, Hulaula pili nu Kapaa e liki nu re ana a W.H. Peawe nona na Eka 6500 a ua pololei.

Dec. 7th 1870

Signed. S.W. Makalena ana Aina Aupuni

Duncan McBryde, Commissioner of Bounderies [sic]

Kealia Ahupua‘a, District of Puna, Island of Kaua‘i, Boundary Commission, Kaua‘i, Volume 1, pps. 147-148

No. 1

Note: Kumukumu has since this survey been purchased by E. Krull from the Government

Kealia Boundary

The following decision was rendered on the 5th day of December A.D. 1870 but neglected to be entered.

Commencing upon the sea shore at the southeast corner of this land at rocks at low water mark, called Waileia, which point is in a straight line with the Northerly side of Kapaa river before it turns previous to entering the sea. From the above point following the sea to a small stream of water on Kumukumu and thence passing up and around the Boundaries of the land called Kumukumu to the sea at the Northeast corner of Kumukumu and from thence following the sea to a stone on the south bank at the entrance into the sea of the small stream or river called Kamalamalo; which is the Northeast corner of land called Hoowaikawaa. From the above point the Northerly Boundary of these lands runs along south side of Kamalamalo river to top edge of a certain hill. Thence along near edge of pali bounding Kamalamalo gulch on the South and along the top of ridge separating Hoowaikawaa & Kamalamala gulch. Thence passing along near north side of Kealia Auwai and from thence following always along near North side of Kealia Auwai to a point in the auwai a short distance makai of the crossing of the old mountain road on the edge of the bank of a small stream of Water. From thence crossing said stream and following along near said old mountain road tot he entrance of said old mountain road into the forrest. Thence following always along said mountain road up along the top of the ridge bounding Kealia river on the North to a clearing on the ridge called Pohakuhapai. From thence passing along near top of ridge boundary Kealia Valley on its northerly side to the entrance Northwest corner of these lands.

The Boundary on the south side, commencing on the sea shore at the Southeast corner of these lands at the place called Waileia crossing sand spit to Kapaa river and up along Northerly side of said river in all its turnings and windings to where it crosses the Auwai called Makole. [page 148]; thence passing up through the middle of the river to a kukui tree on Northerly side of the river near Makai of the crossing of the government road. Thence to the Middle of the Kapaa river, from thence up through the middle of the Kapaa river to the lapa or ridge at junction of Kapaa and Kealia river and thence following up on middle of said ridge to an open clearing. Thence to top of ridge bounding Minomino valley on the south; from thence following along mauka on top of ridge to bluff where said ridge runs northerly called Puualeiwi. Thence following along top of said ridge bounding Minomino on the south and Kealia valley passing over mountain peak called Hapu [Hapei?] to a tall sharp rocky peak called Pohakupili; from thence following along on pali bounding Kealia valley on the south to a ridge on makai side of a deep gulch running down into Kealia valley; from thence following down said ridge and crossing Kealia river and valley to the Northwest corner of these lands.

Duncan McBryde, Commissioner of Boundaries, Island of Kauai

[No. 1, Kealia Ahupua`a, District of Puna, Island of Kauai, Boundary Commission, 6500 Eka, 1870]

Appendix F Place Names of Kapa‘a and Keālia

This is a partial list of Kapa‘a place names, based on those found in the Land Commission Awards (1848-1853), the Boundary Commission document on historic maps, and those found in *Place Names of* Hawaii, by Pukui, Elbert and Mookini (1974).

Apopo	-*‘Ili* and *pali* (cliff) name in Kapa‘a listed in LCA 8843; Trig. station south central Kapa‘a (Harvey 1904 map of Kapa‘a traced from R.M. 2334 by Jos. Iao in 1908). “Apana 1. Eono loi maloko o ka ili o Apopo...” TMK 4510:por.4. Bounded on north by pali of Apopo (Soehren, ulukau.org).
Awawaloa	-*‘Ili* name in Kapa‘a listed in LCA 8837; to Kamapaa. “Apana 3. Ekolu loi maloko o ka ili o Awawaloa...” TMK 4621:2. (Soehren, ulukau.org). This is just inland from Keahiahi Point.
Donkey Beach	-beach, Keālia, “For many years Līhu‘e Plantation Company kept a large herd of mules and donkeys in the pasture behind the beach at Paliku. For this reason the beach was named Donkey Beach. When nearby Keālia was in full swing as a plantation town, many of the animals grazed in the shoreline pastures, but today only a few mules remain.” “Donkey Beach, located 1.5 miles from Keālia Beach, is a large, picturesque pocket of sand north of Paliku Point at the base of a rocky, sloping pasture filled with 'i/ima, naupaka, ironwoods, and a large grove of hau. The backshore is lined with beach heliotrope. The steep foreshore indicates the force of the high surf that seasonally sweeps the beach. A surfing site immediately offshore is popular with surfers, bodyboarders, and bodysurfers. The waves form over a flat, rocky bottom. During the winter and spring, high surf creates dangerous ocean conditions, including a pounding shorebreak, strong backwashes, and powerful rip currents. A number of drownings and many near-drownings have occurred here. … Donkey Beach is not visible from Kuhia Highway, and there are no public .rights-of-way to it.”[Clark 1990:13]
Gore Park	-park in Kapa‘a (Soehren, ulukau.org)
Hahanui/Hakanui-	-*pali*, stream *‘ili*, in Kapa‘a LCA 3599 & 3554 by Keo: “No. 1 is the entire ili of Hahanui & contains 15 lois.” Bounded on the mauka side by the brook of Hahanui and on the north by the pali of Hahanui (Soehren, ulukau.org).

Hauiki	-name of hau bush land along Waipouli Kapa'a boundary (Boundary Commission, Kauai Vol. 1, pps 26-31)
Hikinui	-a farm plot belonging to Daniela Oleloa with a fishpond in Kapa‘a listed in LCA 10564.
Hinakamakani	-Ridge between Kalouulu and Panini in Kapa‘a (Boundary Commission, Kauai Vol. 1, pps 26-31).
Hoa	-pali in Kapa‘a (Soehren, ulukau.org).
Hoopii Falls	-wailele, in Kapa‘a, E lev. about 60 ft. on Kapaa Stream. (Soehren, ulukau.org).
Hulumoa	-place on ridge between Waipouli and Kapa‘a(Boundary Commission, Kauai Vol 1, pps 26-31); PE: the Hawaiian mistletoes. hulu moa. PE: same as hulu manu 2 [green seaweeds, not edible] (Soehren, ulukau.org).
Humuula	-pu‘u or mountain in Moalepe valley Kapa‘a, listed in LCA 8247.
Kaehulua	-Trig. station, south central Kapa‘a (Harvey 1904 map of Kapa‘a traced from R.M. 2334 by Jos. Iao in 1908).
Kahana	-‘Ili name in Kapa‘a listed in LCA 3243/3971 in Kapa‘a; by Honolii: “in the ili of Kahana...No. 1 is 6 lois all uncultivated at present.” Lexicology: kahana. PEM: cutting (Soehren, ulukau.org).
Kahanui	-‘Ili name listed in LCA 3554 in Kapa‘a.
Kahewa/Keahukahiva	-name of grass plot along Kapaa Waipouli boundary near the sea and the government road (Boundary Commission, Kauai Vol. 1, pp. 26-31); Trig. station 236 ft. (Harvey 1904 map of Kapa'a traced from R.M. 2334 by Jos. Iao in 1908).
Kahilimalanai	-Junction of the boundaries of Kapaa, Waipouli and Olohena where there is a big ohia tree (Boundary Commission Kauai Vol. 1, pps 21-31).
Kainamanu	-a little hill between Kapukaili and Kahilinalawai between Kapa‘a and Waipouli for catching fowl (Boundary Commission Kauai Vol. 1, pp 26-31); Mt. Kainamanu 1143.6 ft (Harvey 1904 map of Kapa'a traced from R.M. 2334 by Jos. Iao in 1908).
Kalahikinui	-Trig. Station north central Kapa‘a (Harvey 1904 map of Kapa‘a, traced from R.M. 2334 by Jos. Iao in 1908).
Kaloko/Kalolo	-village name in Kapa'a listed in LCAs 3638 & 8843.
Kaloloku	-Trig. Station NE Kapa'a (Harvey 1904 map of Kapa'a traced from R.M. 2334 by Jos. Iao in 1908).
Kalouulu	- place name in Kapa‘a between Puakeii and Hinakamakani ridge (Boundary Commission, Kauai Vol. 1, pps 26-31).
Kaluapalipo/Kaluapalepo	-shoreline boundary of Kapa‘a at Waipouli (Boundary Commission, Kauai Vol. 1, pps. 26-31).

Kapa‘a	ahupua‘a and town, Lexicology: Ka-pa‘a. PEM: the solid or the closing: USGS 1963; North 89,000, East 560,000 (Soehren, ulukau.org)
Kapa‘a Beach Park	-park, USGS 1963: North 90,000, East 562,000 (Soehren, ulukau.org); The sand beach that he sand beach that fronts Kapa‘a town and Kapa‘a Beach Park has been narrowed as the result of severe shoreline erosion that began in 1959….Off Kapa‘Off Kapa'a Beach Park the nearshore bottom is shallow and rocky. Although it is not a particularly appealing site for swimming, several large sand pockets are . deep enough at high tide for swimmers. The wide, shallow reef offshore attracts many local fishermen who spear fish, hunt for octopus, and gather seaweed. The reef is one of the few places on Kaua'i where lamalama, or torch fishing, is still seen on moonless, low-tide nights (Clark 1990:11).
Kapa‘a Homesteads	-homestead lands, USGS 19673, North 94000, East 545,000 (Soehren, ulukau.org)
Kapehuaola	-name of mountain where there is a waterfalls bwetween Kahilimalanai and Makaleha (Boundary Commission, Kauai Vol. 1, pps ;26-31)
Kapukaili	-name of place where there were formerly houses in Kapa‘a between Kawaiholana and Kainamanu (Boundary Commission, Kauai Vol. 1, pps 26-31.
Kaukahoku	-stream name in Kapa‘a between Hauiki and Kawaiholana (Boundary Commission, Kauai Vol. 1, pps 26-31)
Kaumihewa	-stone between Pohakuhinana and Pohopohoiki in Kapa‘a (Boundary Commission, Kauai Vol. 1 pps 26-31).
Kawaiholana	-stream name in Kapa‘a between Kaukahoku Stream and Kapuhaili (Boundary Commission, Kauai Vol. 1 pps 26-31).
Keālia	-ahupua‘a north of Kapa‘a, ke-ālia, PEM: the salt encrustation, village (Soehren, ulukau.org).
Kealia Beach Park	-Kealia means "the salt bed" or "the salt-encrusted area." In former times flat, low-lying shoreline sites were periodically flooded by high surf and high tides. Shallow ponds would often form. After several days of exposure to the sun, the water that had inundated the flats would evaporate, leaving behind a thin layer or occasionally a pocket of salt. Salt from the deeper pockets was gathered to satisfy a variety of domestic, medicinal, and ceremonial needs….The only major commercial activity in Keālia today is sand-mining of the extensive dunes just inland of the highway. These are the only significant dunes left on the windward side of the island since the extensive dunes in Waipouli and Kapa‘a were leveled for development. About 150 feet wide and half a mile long, Keālia Beach lies between two rocky points. The nearshore bottom is a long sand bar whose depth constantly changes. Surf breaks on the sand bar throughout year, attracting a constant flow of bodyboarders and surfers. Most of these wave riders tend to congregate at the north end of the beach, where the best waves are usually found. High surf during the winter and

	spring on Kaua‘i’s north shore wraps around the island and breaks at Keālia. It often undermines the sand bar, exposing the bedrock below. During these periods of high surf, nearshore rip currents are very powerful and dangerous [Clark 1990:11-12).
Kealialoa	-lo‘i in Kealia (Soehren, ulukau.org).
Kealia Ditch	-ditch in Kealia, “takes water form Kealia Stream to Kaneha Reservoirs (Soehren, ulukau.org).
Kehapae	-loko name in Kapa‘a listed in LCA 10564.
Keiwa Ridge	-boundary point, ridge, Includes Puu Lauii on the Kapaa/Kealia boundary (Soehren, ulukau.org).
Kolina	-wailele, waterfalls north central Kapa‘a (Harvey 1904 map of Kapa‘a traced from R.M. 2334 by Jos. Iao in 1908).
Kalehaka	-pali in Kapa‘a, listed in LCA 3243/3971.
Kolouna	-pali in Kapa‘a, listed in LCA 8247.
Lae	-Trig. Station in NE Kapa‘a (Harvey 1904 map of Kapa‘a traced from R.M. 2334 by Jos. Iao in 1908).
Laipo	-Trig station in eaxt central Kapa‘a, 110.7 ft (Harvey 1904 map of Kapa‘a traced from R.M. 2334 by Jos. Iao in 1908).
Maeleele	-‘Ili name for Kapa‘a listed in LCA 3638.
Mailihuna	-Trig. Station of 182.9 ft. in north central Kapa‘a (Harvey 1904 map of Kapa‘a traced from R.M. 2334 by Jos. Iao in 1908.
Makahaokupanihi/Makahaihaikupanihi	**-‘**auwai in Kapa‘a (Boundary Commisson, Kauai Vol. 1 pps 26-31); Harvey 1904 map of Kapa‘a traced from R.M. 2334 by Jos. Iao in 1908.
Poo	-surf at Kapa‘a (Soehren, ulukau.org).
Puu Eu	-boundary point, pu‘u, “Between Anahola and Makaleha on the Anahola/Kealia/Kalihiwai bdry, and on the Hanalei/Kawaihau District bdry; corner of Anahola/Kealia/Kalihiwai.” Elev. 2750 ft. Written "Pueo" in BC 31 (Soehren, ulukau.org).
Waiakaea Canal	-ditch feature in Kapa‘a, Drains the low marsh lands of Waipouli and Kapa‘a to the sea. (Soehren, ulukau.org); Waika‘ea Canal is one of several in Waipouli and Kapa‘a that were built to drain the inland marshes to make the land suitable for agriculture… For many years the canal has served as a landing for local boaters…. Waiaka‘ea Canal is a popular area for picknicking and fishing. Fishing restrictions in effect at the site include no multi-hook fishing and no crabbing with more than 10 nets per person [Clark 1990:11].
Waileia	-boundary point, rock, “The Kapaa/Kealia bdry commenced “upon the sea shore at the southeast corner of [Kealia], at rocks at low water mark called Waileia” (Soehren, ulukau.org).

Appendix G
National Historic Preservation Act Section 106 and HRS Chapter 6E Consultation Documentation

AFFIDAVIT OF PUBLICATION

IN THE MATTER OF
NOTICE OF CONSULTATION-KAPAA BRIDGE

STATE OF HAWAII }
} SS.
City and County of Honolulu }

Doc. Date: AUG 2 8 2015 **# Pages:** 1
Notary Name: Patricia K. Reese First Judicial **Circuit**
Doc. Description: Affidavit of Publication

Patricia K. Reese AUG 2 8 2015
Notary Signature Date

PATRICIA K. REESE NOTARY PUBLIC Comm. No. 86-467 STATE OF HAWAII

Lisa Kaukani being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc. publisher of The Honolulu Star-Advertiser, MidWeek, The Garden Island, West Hawaii Today, and Hawaii Tribune-Herald, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the aforementioned newspapers as follows:

Honolulu Star-Advertiser 0 times on:

MidWeek 0 times on:

The Garden Island 1 times on:
08/28/2015

Hawaii Tribune-Herald 0 times on:

West Hawaii Today 0 times on:

Other Publications: 0 times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

Lisa Kaukani

Subscribed to and sworn before me this 28th day of August A.D. 2015

Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii
My commission expires: Oct 07, 2018

Ad # 0000791398

PATRICIA K. REESE NOTARY PUBLIC Comm No 86-467 STATE OF HAWAII

SF

NOTICE OF CONSULTATION

SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966 AS AMENDED (2006) AND CHAPTER 6E OF THE HAWAII REVISED STATUTES

MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
FEDERAL-AID PROJECT NUMBER: HI STP SR56(1)
TAX MAP KEYS: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

Notice is hereby given that the Federal Highway Administration, Central Federal Lands Highway Division and State of Hawaii Department of Transportation, Highways Division propose to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection, near Mile Post 10 in Kapaa and Kealia Ahupuaa in Kawaihau District on Kauai.

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge. The existing Kapaa Bridge does not meet the current roadway standards for width as well as bridge standards for live loading and seismic requirements. The existing bridge railings and approach railings do not meet current crash test requirements. The replacement Kapaa Bridge would be a single-span 190-foot long structure and would accomodate two 12-foot travel lanes, two 8-foot shoulders, and guardrails. Two intersection alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The potential area of disturbance, including temporary construction areas, is 4.1 acres.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (2006), and Chapter 6E of the Hawaii Revised Statutes, Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are requested to contact Mr. Michael Will via email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228-2583.

Please respond by September 30, 2015.

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: D. KALIKO SANTOS
OFFICE OF HAWAIIAN AFFAIRS
4405 KUKUI GROVE STREET, SUITE 103
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
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Dear Ms. Santos:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations*, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

No historic resources eligible for listing on the NRHP have been identified within the permanent improvement or temporary construction limits to date; however, an archaeological inventory survey of the project is currently being conducted.

Area of Potential Effects

The archaeological and historic architectural Area of Potential Effects (APE) is illustrated in the attached APE Aerial Imagery map, and includes both temporary and permanent impact areas.

Cultural, Archaeological, and Historical Studies

To provide you information on the cultural, archaeological, and historical settings of the project area, we are including on CD the archaeological study prepared for this project: Archaeological Reconnaissance Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai.

Please note that the study area indicated in the report is larger than the attached APE map. At the start of the project, we assumed a large study area so that field findings could inform the conceptual design process at an early stage to help avoid or minimize effects to potentially sensitive sites. An archaeological inventory survey is currently being conducted and will reflect the APE.

Consultations

Section 106 notice/advertisement will be included in The Garden Island. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are asked to provide a response within 30 days of notification.

Letters for this project are being sent to the following NHOs as well as other organizations with knowledge of cultural, archaeological, and historical resources:

- Office of Hawaiian Affairs
- Kauai Historic Preservation Review Commission
- Kauai-Niihau Island Burial Council
- Queen Deborah Kapule Hawaiian Civic Club
- Hookipa Network
- Historic Hawaii Foundation

We welcome any comments you have on this project's proposed improvements or APE. We are particularly interested in any information you may have on the historic and cultural sites that have been recorded in the area, or other historic or cultural sites about which you may have knowledge. In addition, if you are acquainted with any person or organization that is knowledgeable about the proposed project area, or any descendants with ancestral, lineal, or cultural ties to or cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area, we would appreciate receiving their names and contact information.

If you have information and/or would like to be a Consulting Party, we would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228.

Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Enclosures:

- Kapaa Bridge Area of Potential Effects (USGS Map)
- Kapaa Bridge Area of Potential Effects (Aerial Imagery)
- On CD: Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai

cc (with enclosures on CD):
Christine Yamasaki, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Dr. Susan Lebo, SHPD
Mary Jane Naone, SHPD Kauai Lead Archaeologist

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: KAUAI-NIIHAU ISLAND BURIAL COUNCIL
C/O STATE HISTORIC PRESERVATION DIVISION
ATTN: KNIBC
601 KAMOKILA BLVD, ROOM 555
KAPOLEI, HI 96707

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

To whom it may concern:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations*, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

No historic resources eligible for listing on the NRHP have been identified within the permanent improvement or temporary construction limits to date; however, an archaeological inventory survey of the project is currently being conducted.

Area of Potential Effects

The archaeological and historic architectural Area of Potential Effects (APE) is illustrated in the attached APE Aerial Imagery map, and includes both temporary and permanent impact areas.

Cultural, Archaeological, and Historical Studies

To provide you information on the cultural, archaeological, and historical settings of the project area, we are including on CD the archaeological study prepared for this project: Archaeological Reconnaissance Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai.

Please note that the study area indicated in the report is larger than the attached APE map. At the start of the project, we assumed a large study area so that field findings could inform the conceptual design process at an early stage to help avoid or minimize effects to potentially sensitive sites. An archaeological inventory survey is currently being conducted and will reflect the APE.

Consultations

Section 106 notice/advertisement will be included in The Garden Island. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are asked to provide a response within 30 days of notification.

Letters for this project are being sent to the following NHOs as well as other organizations with knowledge of cultural, archaeological, and historical resources:

- Office of Hawaiian Affairs
- Kauai Historic Preservation Review Commission
- Kauai-Niihau Island Burial Council
- Queen Deborah Kapule Hawaiian Civic Club
- Hookipa Network
- Historic Hawaii Foundation

We welcome any comments you have on this project's proposed improvements or APE. We are particularly interested in any information you may have on the historic and cultural sites that have been recorded in the area, or other historic or cultural sites about which you may have knowledge. In addition, if you are acquainted with any person or organization that is knowledgeable about the proposed project area, or any descendants with ancestral, lineal, or cultural ties to or cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area, we would appreciate receiving their names and contact information.

If you have information and/or would like to be a Consulting Party, we would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228.

Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Enclosures:

- Kapaa Bridge Area of Potential Effects (USGS Map)
- Kapaa Bridge Area of Potential Effects (Aerial Imagery)
- On CD: Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai

cc (with enclosures on CD):
Christine Yamasaki, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Dr. Susan Lebo, SHPD
Mary Jane Naone, SHPD Kauai Lead Archaeologist

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: KEITH YAP
KAUAI-NIIHAU ISLAND BURIAL COUNCIL
P.O. BOX 1571
KAPAA, HI 96746

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

Dear Mr. Yap:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations*, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

No historic resources eligible for listing on the NRHP have been identified within the permanent improvement or temporary construction limits to date; however, an archaeological inventory survey of the project is currently being conducted.

Area of Potential Effects

The archaeological and historic architectural Area of Potential Effects (APE) is illustrated in the attached APE Aerial Imagery map, and includes both temporary and permanent impact areas.

Cultural, Archaeological, and Historical Studies

To provide you information on the cultural, archaeological, and historical settings of the project area, we are including on CD the archaeological study prepared for this project: Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai.

Consultations

Section 106 notice/advertisement will be included in The Garden Island. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are asked to provide a response within 30 days of notification.

Letters for this project are being sent to the following NHOs as well as other organizations with knowledge of cultural, archaeological, and historical resources:

- Office of Hawaiian Affairs
- Kauai Historic Preservation Review Commission
- Kauai-Niihau Island Burial Council
- Queen Deborah Kapule Hawaiian Civic Club
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- Historic Hawaii Foundation

We welcome any comments you have on this project's proposed improvements or APE. We are particularly interested in any information you may have on the historic and cultural sites that have been recorded in the area, or other historic or cultural sites about which you may have knowledge. In addition, if you are acquainted with any person or organization that is knowledgeable about the proposed project area, or any descendants with ancestral, lineal, or cultural ties to or cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area, we would appreciate receiving their names and contact information.

If you have information and/or would like to be a Consulting Party, we would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228.

Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Enclosures:

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cc (with enclosures on CD):
Christine Yamasaki, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Dr. Susan Lebo, SHPD
Mary Jane Naone, SHPD Kauai Lead Archaeologist

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: PAT GRIFFIN
KAUAI HISTORIC PRESERVATION REVIEW COMISSION
C/O KAUAI PLANNING DEPARTMENT
4444 RICE STREET, SUITE A473
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

Dear Ms. Griffin:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations*, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

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The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered: the first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-foot northbound left turn lane and a 145-foot southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

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Consultations

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- Kauai-Niihau Island Burial Council
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Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Enclosures:

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- On CD: Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai

cc (with enclosures on CD):
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U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: KIERSTEN FAULKNER
HISTORIC HAWAII FOUNDATION
680 IWILEI ROAD, DOLE OFFICE BUILDING, SUITE 690
KAPOLEI, HI 96707

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024, (4)4-6-14:092 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-14:090 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 MAILIHUNA ROAD RIGHT-OF-WAY), (4)4-7-008:042, (4)4-7-003:999 KUHIO HIGHWAY RIGHT-OF-WAY, (4)4-7-003:001

Dear Ms. Faulkner:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio State Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the *Code of Federal Regulations*, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

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The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for listing on the National Register of Historic Places (NRHP).

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent private property. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

No historic resources eligible for listing on the NRHP have been identified within the permanent improvement or temporary construction limits to date; however, an archaeological inventory survey of the project is currently being conducted.

Area of Potential Effects

The archaeological and historic architectural Area of Potential Effects (APE) is illustrated in the attached APE Aerial Imagery map, and includes both temporary and permanent impact areas.

Cultural, Archaeological, and Historical Studies

To provide you information on the cultural, archaeological, and historical settings of the project area, we are including on CD the archaeological study prepared for this project: Archaeological Reconnaissance Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai.

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Project Manager

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U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

August 26, 2015

In Reply Refer To:
HFPM-16

TO: PUANANI ROGERS
HOOKIPA NETWORK
4702 MAILIHUNA ROAD
KAPAA, HI 96746

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
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Dear Ms. Rogers:

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August 26, 2015

In Reply Refer To:
HFPM-16

TO: LIBERTA ALBAO
QUEEN DEBORAH KAPULE HAWAIIAN CIVIC CLUB
P.O. BOX 164
KAPAA, HI 96746

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
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Dear Ms. Albao:

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cc (with enclosures on CD):
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Mary Jane Naone, SHPD Kauai Lead Archaeologist

COUNTY OF KAUAI
PLANNING DEPARTMENT
4444 RICE STREET, SUITE A473
LIHUE, KAUAI, HAWAII 96766-1326

MEMORANDUM

DATE: October 28, 2015

TO: J. Michael Will, P.E.
Program Engineering Manager
Federal Highway Administration
Central Federal Lands Highways Div.
12300 West Dakota Avenue, Suite 380
Lakewood, CO 80228

FROM: FOR Kauai Historic Preservation Review Commission

SUBJECT: Letter (8/25/15) from J. Michael Will, P.E., Program Engineering Manager, US Department of Transportation, Federal Highway Administration requesting to be placed on the Kaua'i Historic Preservation Review Commission agenda to discuss and review the Wainiha Bridges No. 1, 2, 3; Bridge 7 E; Kapa'a Stream Bridge; and Hanapēpē River Bridge.

This is to inform you that the Kauai Historic Preservation Review Commission (KHPRC) met on October 1, 2015 to discuss and review the proposed bridge projects submitted in accordance with the Section 106 Consultation.

The KHPRC appreciated the opportunity to comment on the project and received the documentation on the subject bridges. The comments offered by the KHPRC are contained in the attached minutes of the KHPRC meeting of October 1. 2015.
Please feel free to contact us should you have any questions regarding this matter.

Mahalo.

cc: State Historic Preservation Division

attachment

KAUA'I COUNTY HISTORIC PRESERVATION REVIEW COMMISSION
Līhu'e Civic Center, Mo'ikeha Building, Meeting Room 2A/2B

MINUTES

A regular meeting of the Kaua'i County Historic Preservation Commission (KHPRC) was held on October 1, 2015 in the Līhu'e Civic Center, Mo'ikeha Building, Meeting Room 2A/2B.

The following Commissioners were present: Chairperson Pat Griffin, Anne Schneider, Stephen Long, Charlotte Hoomanawanui, Victoria Wichman, and Larry Chaffin Jr.

The following Commissioners were absent: Althea Arinaga, David Helder, and Kuuleialoha Santos.

The following staff members were present: Planning Department – Kaaina Hull, Shanlee Jimenez; Deputy County Attorney Jodi Higuchi-Sayegusa; Office of Boards and Commissions – Administrator Jay Furfaro, Support Clerk Darcie Agaran.

CALL TO ORDER

The meeting was called to order at 3:00 p.m.

APPROVAL OF THE AGENDA

Ms. Griffin: If there are no objections as we move to approve the agenda, I would like to place Items C.2., C.3., and C.4. at the end of the business today, rather than where they appear now. With that, may I have a motion to approve the agenda?

Ms. Schneider: I make a motion that we approve the agenda.

Mr. Chaffin Jr.: Second.

Ms. Griffin: Thank you. Ms. Schneider moved and Mr. Chaffin seconded the motion. All in favor? (Unanimous voice vote) Opposed? Hearing none, the motion carries 6:0.

APPROVAL OF THE AUGUST 6, 2015 MEETING MINUTES

Ms. Griffin: The Approval of the August 6, 2015 Meeting Minutes. Are there any corrections?

Hearing none. May I have a motion to approve?

Ms. Wichman: Move to approve.

Ms. Schneider: I second the motion.

Ms. Griffin: Ms. Wichman moved and Ms. Schneider seconded the motion. All in favor? (Unanimous voice vote) Opposed? Hearing none, we accept the minutes as written. Motion carries 6:0.

COMMUNICATIONS

Re: Letter (9/8/15) from Ronald A. Sato, AICP, Senior Associate, HHF Planners Regarding Environmental Reviews for Federally-Subsidized Public Hearing Projects (County of Kaua'i); Section 106 Consultation – No Effect Determination – Hale Hoolulu (Eld), TMK: 5-2-08:56; Hale Hoonanea (Eld), TMK: 2-1-03:17; Hale Nani Kai O'Kea (Eld), TMK: 4-6-14:105; Home Nani (Eld), TMK: 1-6-07:31; Kawailehua (Federal), TMK: 2-6-04:58; Kekaha Haaheo, TMK: 1-3-08:20 & 26.

Ms. Griffin: Item B.1., a letter from Ronald Sato regarding environmental review for Federally-Subsidized Public Housing Projects; Section 106 Consultation.

Mr. Chaffin Jr.: Where is that?

Ms. Griffin: It's at the end of the minutes, so it's…let's call it half an inch in.

Is there anyone in the public who is here to testify on the Federally-Subsidized Public Housing renovations? No. If there aren't comments at this point, may I have a motion to receive the communication?

Ms. Schneider: I make a motion that we receive the communication.

Ms. Griffin: Ms. Schneider has moved and Ms. Wichman has seconded the motion to receive the communication.

Mr. Chaffin Jr.: From HHF Planners?

Ms. Griffin: Yes. Discussion? Hearing none. All in favor? (Unanimous voice vote) Opposed? (None) The motion carries 6:0. Thank you.

UNFINISHED BUSINESS

Re: Letter (7/17/15) from Kimi Yuen, Senior Associate, PBR Hawai'i & Associates, Inc. informing the KHPRC of the Draft Environmental Impact Statement (EIS) for the Hā'ena State Park Master Plan that has been prepared pursuant to Chapter 343 of the Hawai'i Revised Statutes and Administrative Rules, Title 11, Chapter 200.

Ms. Griffin: Item C.1., Unfinished Business. The letter from Kimi Yuen, Senior Associate at PBR Hawai'i & Associates informing the KHPRC of the Draft Environmental Impact Statement for the Hā'ena State Park Master Plan. There is a memorandum in our packet, immediately after the HHF Planners letter. Kaaina, would you like to tell us about this, please?

Deputy Director Kaaina Hull: Yes, just real briefly. During the last KHPRC meeting, essentially the Hā'ena State Master Plan, the draft EIS, was being presented to you folks for your review and comment. The ultimate summary that happened at the meeting was there were some concerns, there were some statements, but overall there was a concern of having time to review the draft EIS in which the Commission wanted additional time to review it on their own and submit comments to the Department to essentially synthesize, and then get back to you folks for your review and action.

So the comments that you have before you now are what the Department received. The Department is in agreement with these comments and would recommend passage of, or adoption of those comments to be sent to OEQC for their inclusion in these communications for the draft EIS.

Ms. Griffin: And that's Office of Environmental Quality Control.

Mr. Hull: Correct. Sorry about that.

Ms. Griffin: Thank you. There is the two-page response. Is there a motion to adopt?

Ms. Schneider: I make a motion that we adopt the comments as Kaaina has stated them.

Ms. Griffin: Second? Larry Chaffin seconded. Anne Schneider made the motion. Discussion?

Mr. Long: This is about the Hā'ena Beach Park?

Ms. Griffin: It's the State Park Plan, yes.

Mr. Long: Right. I have some comments.

Ms. Griffin: About the draft of the memo?

Mr. Long: Not about the memo; about the plan itself.

Ms. Griffin: Okay.

Mr. Long: Is now an appropriate time for that?

Ms. Griffin: The motion has been made to adopt the comments as they were sent in to the Planning Department from any of us who sent them in, and to adopt them as written. So we should deal

with whether or not to adopt these; that's the motion. And then I will ask if there are other comments.

If there are no comments, the motion has been made to adopt this memorandum as written. All in favor? (Unanimous voice vote) Opposed? Hearing none, they are adopted. Motion carries 6:0.

Along with the letter, are there other issues? Stephen?

Mr. Long: Oh, thank you. I did have some additional thoughts or questions or comments regarding the Hā'ena Beach Park Plan. Is there a representative from the consultant or the State here?

Alan Carpenter: Yes.

Ms. Griffin: Mr. Carpenter, please identify yourself as well.

Mr. Carpenter: Hi. Good afternoon, Commissioners. I'm Alan Carpenter, Division of State Parks. So not to step backward, but if I may kind of give you a brief update on things that have happened from our side since the last time we met.

We were under the understanding that you folks were going to compile your comments and get it to us by the deadline, which was September 8th. We held a public meeting on August 19th. It was very well attended in Hanalei; over three hundred (300) people. It was a little contentious, and many people at that time asked for additional time to digest the plan because it is a very intimidating document as there is a lot in there and it's very complex. Subsequently we also received a number of written comments asking for an extension. We have, in fact, granted that extension to the public and we have a new date of October 9th to accept formal public comments. However, subsequent to that, we also met again with our Master Plan Advisory Committee and the consensus after that meeting was there's enough dissention and confusion in the community about the plan that the amount of time that we had given to digest it and the amount of time we spent presenting the plan in a public forum was not adequate. We agreed collectively that was, in fact, the case and that we would rather get this done right than get it done quickly. So we have internally, we're not putting a halt to the OEQC process, but we are going to take more time to engage with the community, have additional public outreach led by the Master Plan Advisory Committee who feel…they've invested so much in the plan that it's really their responsibility to take it out, obviously with State Parks support. We envision that process is probably going to allow for another six (6) months of discourse prior to taking the plan to the DLNR Board for finalization, so there is time. I'm not saying hey, give yourselves six (6) more months and get back to us, but we will continue to accept comments, particularly from agencies because of the complexity and the length of the plan, and our own, sort of, misstep in taking it out at such a late time. There was a lot of public interaction, but it was very early on and this has been like an eight-year process, so we feel that it's only fair to the community to extend it at this time.

Ms. Griffin: Well thank you. You will be getting a memorandum from the Historic Preservation Review Commission with our comments as it stands now. There are additional questions I think that you have.

Mr. Long: Yes, thank you. At our last meeting with you, and thank you very much for being here, I also understand that our responsibility is towards historical nature of comments, so I'm going to keep myself to that subject.

Mr. Carpenter: Thank you.

Mr. Long: I had a question about the resources that were mauka of the highway. How are those going to be handled and access to those?

Mr. Carpenter: That's a complicated issue because we have identified rock fall danger immediately of the cliffs, which includes the highway and a little bit makai of the highway. To back up a little bit, we originally envisioned taking jurisdiction of the highway from DOT, turning it into an interpretive pedestrian corridor, which would highlight the caves and the other sites mauka of the highway, as well as the lo'i to the makai side. We have pretty much committed, through a collaborative process with the community, to moving people away from the rock fall hazard, which is where that boardwalk trail comes in, in the plan, right. That trail is situated so that it's beyond the 0% rock fall hazard line; that was not originally part of our intent. So there will be no directed public access along the highway, which gives you the most direct views of, in particular, the two (2) wet caves. However, those caves will be interpreted from this trail, so there will be an interpretive waypoint along the way. In fact, there are a couple of advantages to the boardwalk, and this was something proposed by the folks who are working the lo'i; not by us. They direct people and they keep people in a single, sort of, file corridor away from the hazard zone, but also you are kind of immersed…this is both a plus and a minus…you're immersed in the lo'i system. You are walking right through it, so you get the best view of that cultural landscape because you're in the middle of it. But you also get a view of Makana, which is a very important cultural peak that is over lined at the whole park with tremendous significance; a view that you don't get when you're right up against the base of the cliffs and you're walking on that road. You can't see it. So it's another thing, you get to see a little bit more of Hā'ena's cultural landscape as you move. Now, we are not going to physically barrier anybody from walking down the road, but you will have to do so at your own risk. I think due to our primary mission of keeping people safe, we're not going to invite people to those caves.

Mr. Long: There are two (2) caves, the dry and the wet cave, down on the highway.

Mr. Carpenter: They are both wet; one (1) is higher than the other.

Mr. Long: Okay. And then up above, for decades we'd take the kids and go up, and there's this cave up there where you can go into.

Mr. Carpenter: Right. Okay, yes, the dry cave is back at the County Park.

Mr. Long: About 35, 40 feet up. So that's the cave we'd take our kids to; put lifejackets on them, take them through various caverns, which was fun.

Mr. Carpenter: Yes. It is and a lot of people do it. Technically, it's not allowed, right; swimming in the waters is not allowed, and we'll probably keep it that way. Again, that is right smack dab in the middle of the rock fall hazard zone, so we are not going to invite people to go up there. You know, it's a double-edged sword. You can go back and look at what we had to do with Kaliuwa'a, Sacred Falls on O'ahu, which is a very culturally important place to a lot of people, but the danger is so great that we felt that we had a duty to literally keep people out, so nobody can go there today. I don't know if it will come to that. I don't know if the risk in this area is of that magnitude. I know the engineers who do the study; I think they do good work. I haven't read the rock fall danger report cover to cover, and some of its just probability, so I can't say how great that risk is.

I know that when I go to places, I have a very, sort of, keen awareness of hazards now when I visit places. I see things differently now that I've seen all of these hazards in our own parks. I always use, sort of, the barometer of well, would I take my kids there? And I think I would. I would probably take my kids up there. But that's not a…you can't use my measure, right, so we have to go with what the report says, and if it says there's a high risk of somebody being injured or killed, we either have to mitigate that risk or move people out of the way. And that's, you know, we are going to move them out of the way and simply not invite them in. There's not going to be people chasing you up there and telling you to get out most likely, but staffing's a whole other issue.

I see you had a concern in here that the cost involved in implementing this is an issue. I think the first one was, is this ever going to happen? Will this Master Plan ever be completed? The Master Plan will be completed. Will it be fully implemented? I doubt it will ever be 100% implemented. It will be implemented in phases as funding allows, and I think little things hopefully will help the community realize that these are small changes that are for the good. We like to think that the whole process is going to be a community-based adaptive management strategy. So the community has been driving this from the beginning, but we have to accept it and we have to accept the liability that our decisions bring. Anyway, I hope…has that answered your question at all?

Mr. Long: Yes, thank you.

Mr. Carpenter: Alright.

Mr. Long: During your last presentation to us, you mentioned something about no restrictions for traditional gathering rights. I take that to mean if somebody in the neighborhood wants to go fishing, they got their fishing pole, they can walk down the highway and go fishing. So what kind of mechanisms are going to be in place to allow that to happen?

Mr. Carpenter: My guess is…I think the easiest way for us to implement that would be to have a Special Use Permit that people could get, probably annually. You come in, you give your reasoning behind your cultural attachment, your reason to get there, and that would be your pass for that year to get in. It wouldn't cost anything.

Mr. Long: Okay. I know that you are going to have to restrict the number of people by about half. We don't have the site plan up here, so what happens when somebody drives down to the end of

the road, and at what point are they told to turn around? I mean, is there a sign like the "Closed Bridge" barrier that says "Kē'ē Beach now full for the day"?

Mr. Carpenter: I think there are a number of ways that could happen, and I don't think we have the answer. This is largely dependent...the notion of setting a visitor limit, which is really breaking new ground, not just here, but anywhere. I mean, there's no National Park that does that, currently. We don't have a model to go on. All we know is there's too many people there now; too many cars and too many people. And it's having a detrimental effect on the resource and visitor experience. There are so many things that have to come together before we can even think about implementing that. So we have to have the issue of enforcement outside of the park. A shuttle is almost mandatory to be in operation if we are going to cut down the number of cars dramatically. To answer your question, I don't know exactly how it will work. Whether it would be you have to purchase an advanced ticket for any given day, or whether it would be all manifested right there by a control point and staff in the park; probably a combination thereof. There's a lot of scenarios envisioned in that plan, and I think that's part of the reason people are very concerned about it because it looks like we're just throwing out all of these things to confuse people, but we are really throwing out all of the these things because we are not sure which one is going to work. We want to be able to implement and adapt as we go to make sure that if we mitigate all of the impacts in the park, but create a whole bunch outside, that's not a success, right? So, we don't know, but it probably will start with limited parking and no visitor limit; that will be the first step. And we may implement a visitor limit without enforcement, and see how that works. I'm guessing it won't. Actually, out-of-state visitors might comply; I don't think locals will. There's a big question of local access, and we are hearing a ton about that. If we implement a visitor limit and we don't have the ability to discriminate between local and visitor, there will be times when locals will not be able to go. They will be turned around, too. We haven't figured that out yet. Although one thing we're pretty sure we'll do is there will be a peak period during the day when this limit will apply. Very early in the morning and late in the afternoon it won't, which means those who want to go there early to fish, those who want to run down the trail, go surf at Hanakāpī'ai, those who want to come and watch the sunset at 6:45 will be able to come in, as long as there's parking place available.

But again, to get back to your question, we don't have the perfect answer yet, but it's going to take experimentation, and hopefully a solution can be reached.

Ms. Griffin: Do you have a date for the next public meeting?

Mr. Carpenter: We don't. We do not yet.

Mr. Long: My final thought...and we don't have the site plan up here...

Mr. Carpenter: Do you want one?

Mr. Long: No.

Mr. Carpenter: Okay.

Mr. Long: But my consideration is that there ought to be some kind of a turnaround in the site plan; not a hammerhead, so people get there then it's the easy (inaudible).

Mr. Carpenter: There is a turnaround. There's a turnaround before you even enter the parking lot.

Mr. Long: Okay, that's all. Thank you.

Mr. Carpenter: Okay.

Ms. Griffin: Thank you so much. As the conversation and the plan potentially evolves, I assume you'll come back and see us, and we may well generate a second memorandum to you.

Mr. Carpenter: We would be glad to. We want to keep you folks involved. A lot of people think this plan was a done deal. I mean, one of the things was just the semantics for the fact that it was called a "Final Draft", but I mean, it's still a draft. We're still very open to modifying the plan, and I think we've already made some concessions. The plan that you see, it'll change. Most likely the development will be lessened. I can almost certainly say that, but we are going to hear more from the public before we make the final decisions.

Ms. Griffin: Great. Thank you so much.

Mr. Carpenter: Okay, thank you.

NEW BUSINESS

Re: Class IV Zoning Permit Z-IV-2015-41, Use Permit U-2015-40 and Variance Permit V-2015-6 to allow installation and height variance for a 53 feet high stealth telecommunications structure and associated equipment on a parcel located in Līhu'e, situated at the Tip Top Motel/Café and Bakery site, further identified as 3173 Akahi Street, Tax Map Key 3-6-006:073, Līhu'e, Kaua'i.

Ms. Griffin: So moving into New Business. Item D.1., Class IV Zoning Permit and Use Permit and Variance Permit to allow installation and height variance for a 53-foot high stealth telecommunications structure and associated equipment on a parcel located in Līhu'e, situated at the Tip Top Motel/Café and Bakery site, further identified as 3173 Akahi Street.

Mr. Hull.

Mr. Hull: Okay. Thanks Pat. For the Commission, this is a unique review for you folks. The structure itself is a new structure where it's going onto the Tip Top Café and Motel is actually not a historic structure. It's close to it; it is forty-seven (47) years old. In a few years it will be part of our inventory, but as of currently, it is not. To give you guys some background on why it is here before you folks for your review, the application was before the Planning Commission back in August. What Verizon was proposing to do is put a telecommunication tower there with the

antennas to meet customer demands, essentially. To take a few steps even further back, over the past several years, there have been an increasingly large amount of applications concerning telecommunication facilities. The vast majority of them have come to Kaua'i and the ones that have received approval are in the Agricultural Zoning District. One of the biggest issues that generally arises concerning these sites, because they are often high…they average generally at 70 to 100 feet, some of them go up to 150/160 feet…is the ability to stealth them because the telecommunications tower can have this fairly industrial look, and it also breaches into the horizon as impacts on the view plain. Over the past decade, the telecommunication industry has gotten very used to the fact that on Kaua'i, stealthing of these sites is very important. I'd say roughly 90% of the sites have some type of stealthing capability. Because the majority of them are in the Agricultural Zoning District, they are actually turned into what make them look like pine trees, essentially. A handful has come into the urban area, and those that have generally stealth themselves by going on an existing building of the necessary height and making like a full wall around the antennas that does not interrupt the transmission of radio frequency (inaudible). As demand for these sites increase, in particular because of data and the iPhone craze now, the telecommunication companies are increasing the amount of sites that they need in the urban area. When Verizon came with this application in Tip Top, the original proposal that they came with was, and I believe Shan handed it out to you guys, it's one of the paper ones that we just handed out today.

Ms. Schneider: The monopole?

Mr. Hull: Well actually the monopole is not what they originally proposed. I actually asked them to provide that to see essentially what it would look like with a monopole at that site. Ten (10), fifteen (15) years ago I think most applications that's what the Applicant would have proposed. But the telecommunication industry, like I said, has gotten very used to the fact that on Kaua'i, you have to kind of stealth in order to get review by Planning Commission. So they automatically came in with a stealth proposal, which is the other handout you folks have, in which it kind of just is that 55-foot high tower essentially.

Ms. Schneider: Steeple?

Mr. Hull: Yes. When the Department saw that in the preliminary review with them, we had actually informed them that they can submit that application, but given the protrusion in the horizon, the impact of what the Department deemed as somewhat monolific, the Department would probably be recommending denial on that application. So in looking at other strategies that have been utilized in the urban form on the mainland, per se, is the use of either a water tank or a clock tower is a fairly common strategy to stealth telecommunication facilities. In looking at that, we kind of had asked what a clock tower would look like, and they came back with a rendering, which you guys got in the original packet that was submitted to you guys last week. With that proposal, the Department did feel that did, in fact, blend with the urban form of the Līhu'e Town Core. It also served somewhat of a functional aesthetic in the sense that the clock would be functioning. We took it to the Planning Commission with a recommendation of approval. The Planning Commission, on August 25th, approved the site for telecommunication; however, they had concerns about the design. So ultimately, the Applicant has to return to them with a design

proposal that they feel is appropriate. Aesthetics is a very tricky subject to get into. If you have seven (7) Commissioners, you are probably going to have seven (7) different opinions on what's aesthetically appropriate. The Planning Commission actually referred this application to you folks to see what your design review would be of the site within a historical context, keep in mind, but that is why, essentially, you have been handed this application. It's not officially a historic site, but the Planning Commission is requesting that you review the site and do a design evaluation and possibly if you have a recommendation on one (1) of the options that the Applicant has given. So essentially you have three (3) options that the Applicant has given to you folks, which is…technically you guys have five (5) options, actually. You've got the three (3) that were previously transmitted to you; one (1) was…

Ms. Griffin: The clock tower, the silo, and the water tank.

Mr. Hull: The water tower. And then you also have these options, which were the original proposal, as well as just straight going telecommunication tower. The Department still holds by its recommendation to the Planning Commission that the clock tower is the most aesthetically appropriate for this area. However, it's here for your review and your comment, essentially.

Ms. Griffin: Thank you very much. Are there questions of Kaaina? Is the Applicant here?

Mr. Hull: She is.

Kathy O'Connor-Phelps: Good afternoon, Madam Chair and the rest of the Commission. I'm Kathy O'Connor-Phelps. I'm a consultant for Verizon Wireless who will be the carrier at this project. We are eager to get your input. We are willing to basically do any design to get it going and get it approved. I will say that the owner's preference is the clock tower. He's not crazy about the water tank and it's not good for co-location if you want to have another carrier utilize that site as well. I think, Mr. Hull, didn't you say that it was called the Times Square? He had looked in some documents from way back when and it called it the Times Square of Līhu'e, so I think the clock tower fits in just great with that. But if you have any questions, comments, kind of guide the Commission, otherwise you are going to end up with a pineapple. (Laughter in background)

Mr. Hull: She says that jokingly, but there was a request, essentially, to entertain looking at a possible pineapple design; a 50-foot pineapple.

Ms. O'Connor-Phelps: Yes. The landlord freaked.

Mr. Hull: To the Applicant's credit, she actually had their engineers take a look and see if that was even feasible.

Ms. O'Connor-Phelps: We did. It was basically going to look like the water tank with the crown on top of it, so it would not look right.

Ms. Griffin: Thank you. Are there questions of the Applicant? Larry?

Mr. Chaffin Jr.: We have two (2) packets of drawings. Which one are you talking about?

Ms. O'Connor-Phelps: The clock tower was the one that we revised based on Planning's comments, so that they would support the project; that's what went before Planning Commission in August. Planning Commission said hey, can you try a water tank, can you try maybe like a farm silo, something like that? We said absolutely, we can adjust those, so you should have the silo, I think we have a smokestack, which is basically the silo without a top, and then the water tank. If you need copies, I have extra.

Ms. Wichman: There's just the one that's just bare, with just the antennas.

Ms. O'Connor-Phelps: Is that the…? Yes. We are just showing a comparison. That's what a monopole, like Mr. Hull said, that's you know a fifteen-year ago design, but that's what they used to look like so they've come a long way. We are spending a lot of money to stealth the tower.

Ms. Schneider: Is this the final version of the tower?

Ms. O'Connor-Phelps: The clock tower?

Ms. Schneider: Yes.

Ms. O'Connor-Phelps: Yes. I mean, unless you guys have further comments and want something added to it.

Ms. Schneider: I think a little more overhang on the roof might make it a little more aesthetic.

Ms. O'Connor-Phelps: A little more overhang?

Ms. Schneider: Yes.

Ms. O'Connor-Phelps: Okay.

Ms. Griffin: What are the dimensions? We did get some plans, but they were reduced down to 8 ½ by 11, which is always a challenge.

Ms. O'Connor-Phelps: Oh, okay. If you want a bigger one, I have one (1). I can pass it around, but I can give you dimensions.

Ms. Griffin: Thank you.

Ms. O'Connor-Phelps: It is 12 by 12. So essentially it'll be a 12 by 12. It's not going to be all the way down to the ground. It'll have the four (4) posts, so he can still put his trash…he has a trash thing underneath there, so he can still utilize that space. And then the antennas at the top, behind, basically what it is, is a fiberglass that can shoot the signal through.

Ms. Griffin: Other questions of the Applicant?

Mr. Long: I have a comment. Since I have an iPhone, I'm in favor of more (inaudible) and stealthing them. (Laughter in background) My comments, aesthetically, are I support Anne's comment on more of an overhang.

Ms. O'Connor-Phelps: Okay.

Mr. Long: I wonder if you even want to do a horizontal soffit with a split pitch.

Ms. O'Connor-Phelps: Horizontal soffit.

Mr. Long: Horizontal soffit with a split pitch.

Ms. O'Connor-Phelps: Okay.

Mr. Long: Your guts of your equipment is all at the top.

Ms. O'Connor-Phelps: Right.

Mr. Long: So you really want a flattest roof as possible. So instead of coming down like this, one could have a horizontal soffit and/or split pitch if possible within that same volume.

Ms. O'Connor-Phelps: Okay.

Mr. Long: And the second thing is, in the interest of reducing the mass, since the guts of the equipment are at the top, and there probably needs to be some circulation ladder going up the pole.

Ms. O'Connor-Phelps: Yes, between antennas, has to maintain a certain space.

Mr. Long: I believe that, design-wise, one could reduce the mass by keeping the top 12 by 12, which you need to house the equipment, but then you could reduce the base supporting that to something like 8 by 8, which has precedence in other watch towers historically. They'll come up and they'll have a little build out up at the top. So those are my comments.

Ms. O'Connor-Phelps: The only concern I have with the 8 by 8, and certainly we would do it, is that if AT&T came in later on, they may be before you again to go back out because they have to fit their antennas in, and I'm not sure what their configuration would be.

Mr. Hull: To give some background for that, so what you see with these sites, and particularly because…not just because they're costly, but because they can be unsightly, the State of Hawai'i has an official policy, as well as the County, when they are able to do so that they allow for co-location of their competitors on the same pole. So Verizon puts a pole up, they are required to make it available for their competitors to put antennas at a lower level, as opposed to every single competitor having their own sites, and therefore, reducing the amount of poles that are on Kaua'i

or throughout the State. The only issue…I don't think that…that could be part of the aesthetic concern and that's essentially what we are looking at here today. The part of the concern that the Commission may have with it is, you are no longer able to co-locate competitors on that pole. And I say that in a very neutral manner in the sense that if that's what it takes to get this 50-foot tower aesthetically sited, then that's what it takes.

Mr. Long: If that doesn't work because of leasing considerations, one can reduce the mass by additional horizontal bands or a difference in material where you had something at the base and then something above; board and batten, and then stucco. I'm not asking to do any great architecture, just…you can break up the mass with different elements.

Ms. O'Connor-Phelps: Okay.

Mr. Hull: I think one (1) way that's possible, if say this body decides to move on the clock tower and recommend it, that in going back to the design review with the Planning Commission, perhaps the Applicant can have different variations, like you are saying Commissioner, one in which you have additional horizontal lines or ones in which you actually are shrinking the mass to 8 feet where appropriate.

Ms. Griffin: Are there other questions of the Applicant? I know that there are several different types of receivers. The one presented here, is that the only one that's available for this particular placement?

Ms. O'Connor-Phelps: You mean, did we go to other owners?

Ms. Griffin: I'm sorry?

Ms. O'Connor-Phelps: Did we go to other property owners? Is that what you mean?

Ms. Griffin: No. I'm talking about what it looks like on top. There used to be different types of transmitters, different sizes, and different looks.

Ms. O'Connor-Phelps: Yeah, I mean, what's inside is typical of what it is today. They are 8-foot antennas; they are rather large.

Ms. Griffin: Okay.

Ms. O'Connor-Phelps: And then what we call "remote radio units" gives it a boost in signal, and then surge suppressors, just in case there is a power surge.

Ms. Griffin: Any other comments? Is there anyone in the public who would like to testify?

Yes, come up Palmer.

Palmer Hafdahl: If I may, I'm Palmer Hafdahl. I'm just sitting here as an interested community member at the moment. The Līhu'e Town Core Plan has in it allowances for pedestrian access from the neighborhoods on Elua Street and Akahi Street to the highway. It included options, one (1) central on Elua Street and then heads up to two (2) connectors from Akahi to the highway. In visiting the site, it was clear that this alignment through the center of Tip Top property happens to line up with the Elua pedestrian pathway suggested. Because of another interest I have, I didn't want to see the possibility of a pedestrian connection, at that point, being missed. Maybe not this Board in terms of how it looks, but in terms of placement, maybe the suggestion that we allow that it be placed so that at a term when there is a willing landowner on both sides that a connection can be accomplished there; just looking forward from the planning standpoint. I appreciate hearing that it actually is elevated above grade and it potentially allows greater access beneath them, but it's just something that I'd like to encourage you to look at when it comes to the aesthetics. Maybe not bringing it down to the ground is a good point, and the possibility of providing that connection. It turns out that it may be a real principal place to make that much needed connection. Thank you.

Ms. Griffin: Thank you. Our Commission is always cautioned to be guided by the laws and standards of historic preservation, and not our own personal taste. So I wanted to say that even though Tip Top is not quite fifty (50) years old, Akahi and Elua Street are certainly eligible to be historic districts. Our Town Core plan, which was adopted as an ordinance in 2010, I believe, talks real specifically about mass and scale. All of these structures, including the clock tower, when you talk about 12 by 12, that's probably about the…this much table, and that's really big. I have some pictures. This one you probably can't see, but this is a historic building. This is the first part of the Civic Center that became historic almost a year ago. This is a historic building, the Kaua'i Museum, and that utility pole has got to be 50 feet tall. Here's another, the light post in front. The round building won't become historic for another two (2) years. This is the post that's directly across the street from Tip Top; it's 50 feet. So I'm not convinced that the, let's be honest here's a cell tower, isn't the best approach. That it's just what it is because I think when people go down Akahi Street, they don't see these poles. They see the houses, they see the offices, and the same is true if any of you who parked up on this side with the real tall lights. The Kaua'i Museum sees this because they've always wondered why the lights go back across in front of their property and then cross the street again, but again, we tend to see the museum; we don't see the utility poles. So for me, looking at this district eligible street that seems like the least intrusive; the actual cell tower itself, rather than these very large things. Also, it is a variance from the 30-foot height limit that is listed on Akahi and Elua Street. I did not attend that Planning Commission meeting and I haven't seen the transcript of the discussion, but it does look to me like that's the least aggressive kind of approach. I don't know. Any other comments?

Mr. Long: Yes. I'm picking up on what Pat is saying. There's another option that isn't presented here, which is the cell tower with some fake metal branches; like up on Princeville, Hoku Heiau, which is what you're talking about. I mean, you're just talking about the utilitarian bare pole, but if it's really…you don't see the telephone poles because you drive kind of like right by them and you don't look out your window up 50 feet. This is a little bit more in the distance, so you are seeing more of the silhouette, which is rectangular. Maybe there is another option, which is not to hide it in a non-existing bell tower. In the city, they hide them in existing church steeples and that kind of thing, which it already exists; it's hollow, that makes sense. Here you are building a really

large object to disguise something that's really small. So in picking up on what Pat's saying, maybe if we just disguise the silhouette of it, in the distance, make it kind of like a tree, or not like a big watch tower.

Ms. Schneider: Or paint it blue like the sky. (Laughter in background)

Mr. Long: That's a thought. Personally, aesthetically I'd have to take a look at both of them, but I think they are both really valid; both are reasonable solutions.

Mr. Hull: If I could interject, too. These are discussions the Department has had with applicants for at least the past fifteen (15) years now, as the person who has been in charge of telecoms for the past several years. First and foremost, concerning the massing, I can understand the Chair's concern with the fact that the clock tower…all of the other options have far more massing than the pole as presented. What I think you guys also need to take in to consideration is the pole as presented is more than likely not what the pole will morph into once co-location happens. The reason the massing is that large is because the antenna massing is that large, so ultimately what you could have here, because of co-location is you can see the top has all of those panel antennas which are roughly going to be about 12 feet in diameter. They are going to have their walls right around those antennas. There are going to be more coming down, and it's just going to have a feel of a very large, massive antenna pole after co-location happens, so that's one (1) of our concerns. And even above and beyond, I mean, the fight that we had with telecommunication carriers in the beginning to get them to realize that they should be stealthing these sites was the sense, and we would generally make the position that there's utility poles galore all around. They are exempted from our review, but why should the utility poles be allowed to not have to stealth, and they are. Our response is, what always has been and will remain to be, those utility poles do impact the view plain. They have become, somewhat, background noise to the passenger in the car or the pedestrian, but they kind of just fold into the landscape because we've just accepted them. But when you do actually look at them individually, they do impact the view plain. And because there's one (1) say unaesthetic structure does not legitimize you having the ability to now also put something that's going to have an impact on the view plain. So that's generally where we stood with these sites.

Concerning the monopine, because that has been, I'd say, the number one strategy for telecommunication carriers on the island, and that's because the bulk of the sites are in the Agricultural District and the monopine blends in with the agricultural area. The trees help mask it and it becomes camouflage with the trees in and around it. A tree pole in an urban environment would stand out a bit like a sore thumb; they really do. I mean, do they look like trees when you're zipping by on the highway, yes, but when you actually stop and actually look at these things, they're not quite the magnificent piece of artwork that one may think is going into these because they do stand out. The only reason they don't stand out is because they've got generally fifty (50) or sixty (60) trees around them. So that's just what I'll put in as the Department's two cents on the review.

Ms. Griffin: Thank you. Okay, so we have some choices. We can choose not to comment on the aesthetics, we can make a choice with one (1) of the presented options, or we can potentially ask

for another refined option, but we are responding to the Planning Commission's inability to decide on the options that they were given.

Ms. Schneider: Kaaina, either way they're coming for a height variance?

Mr. Hull: Yes, they came in for the height variance. Essentially, the Planning Commission approved the variance and approved the site. However, they wanted further input on the actual design of the structure.

Ms. Schneider: So could we ask them to come back with some refinement of the clock version?

Mr. Hull: Given the Applicant's timeline, it'll ultimately be if you can come back, Kathy, is essentially what I think they're asking.

Ms. O'Connor-Phelps: When do you…you meet again in…what are we in…

Ms. Griffin: First Thursday of each month.

Ms. O'Connor-Phelps: So of November? I mean, if that's what it's going to take to get you guys to let us move forward, then certainly. I mean, would we like to go to Planning Commission and be done and ready to submit it to Building Permits this year? Yes, we would obviously like that option better, but…

Ms. Griffin: Well if I can have a motion then we can discuss and then come to a vote.

Ms. Schneider: I make a motion that we ask the Applicant to come back with some refinements to the clock tower version.

Ms. Griffin: Is there a second? Hearing no second, that motion dies. May I have another motion?

Mr. Chaffin Jr.: I have a question. You mentioned trees surrounding this. Are these trees that you have planted or do they just happen to be there?

Ms. O'Connor-Phelps: We've done both. We've done it where there's been trees that have been existing, and then especially on the mainland in Southern California, a lot of palm trees. We do a lot of monopalms, and we are told to plant trees around it. This property is way too small. We would never be able to fit any landscaping. We're pretty tight as it is in there, and there's no…we actually thought about a monopine knowing that Kaua'i liked monopines, and like Mr. Hull said, I think it'll stick out too much. We'd love to do that; it's cheaper. (Laughter in background) My client would be very happy if it was a monopole even, but like Mr. Hull said, the photo sim is not showing what could potentially be co-locators on that pole.

Ms. Griffin: If we cannot get a motion to go forward, then essentially we are not going to make a comment. We will defer to whatever the Planning Commission decides. Is that the choice of the Commissioners?

Mr. Long: I'll make a motion. I move that we support the owner's inclination to support the stealthing of the cell tower in a clock tower construction, and that the mitigating elements on the clock tower proposal as submitted would be to revise the roof profile, perhaps a split-pitch and/or additional overhang, as well as reducing the mass of the tower with materials and other aesthetic elements, and that the Applicant come back before us and present those revisions.

Ms. Griffin: Is there a second?

Ms. Schneider: I'll second the motion.

Ms. Griffin: Alright. It's been moved and seconded that we support the owner by accepting the stealthing of the cell tower in the clock tower, mitigating the design to revise the roof profile, perhaps with a double-pitch and longer overhang, and possibly reducing the mass on the post section itself. Thank you.

Is there further discussion? Larry.

Mr. Chaffin Jr.: I would like to propose that we not tell them exactly what to do, but come back to us with various proposals, so that they're not just limited to this one (1) discussion.

Ms. Griffin: Great, and it did say "possibly" with those suggestions. Is there other discussion?

Ms. Wichman: Yes. I'd like to mention that I think the point that Paul brought up about the walkway that's part of the Līhu'e Town Core Plan, I think that needs to be addressed so that it's not excluded since that already is part of the 2010 plan, right?

Ms. Griffin: Would you like to amend the motion?

Ms. Wichman: I'd like to amend that. That the pedestrian connection should be included within this plan.

Ms. Griffin: So Victoria is moving to amend the primary motion by incorporating the Town Core Plan's pedestrian connection in the concept.

Mr. Hull: I'll just interject real briefly on that. I think you're within the purview of the Commission to say it should be considered. However, also knowing the fact that (1) the Planning Commission has already given approval to the site for a telecommunication facility and the actual requirements say of an access way would be considered an exaction, which Jodi would have to weigh in on, as far as whether you can do that after approval has been given, and then (2) that actual corridor requires, not only the Tip Top landowner giving approval to say an easement or handing the property over to the County, but as well as the abutting property owner as well, who is not part of this application. I'm not saying that the sentiment shouldn't be in the motion, but just to caution, as far as to keep it in the consideration realm.

Ms. Wichman: Okay, so maybe I misunderstood. Was the corridor or the pedestrian connection part of the plan?

Mr. Hull: It is part of the plan, but it also requires, essentially, either the willing landowners convey that land to the County, or establish an easement, or that the County go in there and condemn the lands for that corridor. It's a recommended connection to have, but in order for that connection to be established, it takes one (1) of those three (3) scenarios.

Ms. Wichman: Okay, I understand. So it hasn't been approved?

Mr. Hull: Yes.

Ms. Griffin: Would you like to withdraw your motion? Or...

Ms. Wichman: I was under the assumption that the pedestrian corridor was already part of it, so I'd still like to see that happen. Consideration?

Ms. Griffin: Would you restate the motion, please?

Ms. Wichman: My part of the motion? I would like to see consideration of a pedestrian connection that goes through the Tip Top properties as planned in the Līhu'e Town Core Plan of 2010.

Ms. Griffin: Is there a second?

Ms. Schneider: I second the motion.

Ms. Griffin: It's seconded by Anne Schneider. So the amendment to the primary motion is that consideration be given to future possibility of the pedestrian path crossing the property as shown in the Līhu'e Town Core Urban Design Plan adopted in 2010.

Ms. Wichman: Yes, thank you.

Ms. Griffin: Further discussion on the amendment? All in favor? (Unanimous voice vote) Opposed? Hearing none. Motion carries 6:0.

Going back to the primary motion, is there further discussion? All in favor? (Unanimous voice vote) Opposed? Hearing none, that motion carries 6:0 as well.

Ms. O'Connor-Phelps: Thank you.

Ms. Griffin: Thank you so much, Ms. O'Connor-Phelps.

Re: Garden Island Service Station (Aloha Petroleum Ltd.)
TMK: 3-6-06:89, Līhu'e, Kaua'i

Zoning Permit Z-98-16 for the Proposed Demolition of the Existing Shell Service Station.

Ms. Griffin: Under New Business, Item D.2., Garden Island Service Station (Aloha Petroleum Ltd.), Zoning Permit for the proposed demolition of the existing Shell Service Station.

Staff?

Mr. Hull: Good afternoon, again, Commissioners. Concerning the demolition of the subject service station, the Department has received the demolition application for the Shell Service Station. The site is not on the National or State Historic Registry; however, it is a historic site, as well as on the County of Kaua'i inventory. The profile that we gave to you folks is actually inaccurate, and I'll hand out the accurate profile. I believe the profile we handed to you stated 1942, when in fact it's actually 1930, when the structure was constructed. It has proven through our research to be one (1) of the prime architectural features here on Kaua'i concerning the roof in particular, as well as the overall site, but the roof, in particular, has proven to have significant historical and architectural significance. Actually, it was under consideration, I know, by this body, as far as recommending movement on nominating it to the State Historic Register. Ultimately, this is an application for you folks to begin discussions on. I think at this point, more than likely the Department, at the end of those discussions, will be recommending a deferral. And that is because it is a fairly complex process, and this is a very important building in the Department's eyes. With that, I'll turn it over to Pat because I know she has definite insight to the particular structure.

Ms. Griffin: Thank you. Are there questions of Kaaina?

Ms. Schneider: Kaaina, is there any way we can induce them to keep this building? Since it is iconic.

Mr. Hull: Yes. There are two (2) options, essentially, when you're looking at regulations, right? I mean, you're either going to use the stick or the carrot. The carrot being tax incentives and encouragement from this Commission or from other bodies to encourage the landowner to realize that they essentially have a gem within a rough right here that can be utilized for an array of different things. If that doesn't work, to use the regulatory powers essentially is as to how far you can actually deny a demolition, would lead to an interesting legal and philosophical debate, let's say, but it's not that the Department is going to not necessarily go that far. The Department itself feels that it is a very significant structure and is currently in the process…I have a draft letter that we are sending to the landowner; basically to highlight the site and say what a gem this place really is. Do you realize you have this site? Its significance in Hawai'i's history, and perhaps you may have other plans for it.

Ms. Schneider: Because we were thinking of having this walking tour on an app for Līhu'e, and that would certainly be one (1) of the highlights.

Mr. Hull: Definitely.

Ms. Schneider: I mean, it's like a Route 66 element that is here on Kaua'i.

Ms. Griffin: Is the Applicant here?

Mr. Hull: There's an interesting situation going on with that. Palmer Hafdahl has been working with the Applicant, but actually isn't authorized currently. He doesn't have an actual legal authorization to give official representation to this body, or any other body, on behalf of the Applicant. I'm not sure if he might be willing to testify as a member of the public that has insight to this application; he may or may not. But officially, there is no applicant present at the meeting today.

Ms. Griffin: Okay. Well, the next item is whether or not there is anyone in the public who would like to come up and testify.

Mr. Hafdahl: Aloha. I'm Palmer Hafdahl and I just want to say I have worked with this applicant. I submitted the application for them. I'm kind of their representative here on the island, and I met with them this week and have had ongoing conversations with them. At this point, my last meeting with them is they are happy enough to defer this a bit until they can get their ducks in a row as well, but they'd certainly like to hear the impressions and concerns of the Kaua'i Historic Preservation Review Committee and I'll take those notes back to them.

Ms. Griffin: Thank you.

Mr. Halfdahl: Oh, I did submit the historic review for them as well, so I understand the history of it. On a personal note, my first trade was plastering and I always admired this building's roof as it is done with what you call a scratch coat and plaster. It's the first (inaudible) you take at a three-coat plaster job. It's a unique application. Whether it's historically significant for that, I don't know. It's significant to one plasterer's son, but that's all. (Laughter in background)

Ms. Griffin: Thank you, Palmer. You all had in your packets, and I'm sure you've read the information. There was a wealth of information about the history of the building, the exceedingly important architect, and a little bit in absence, but the ownership. Does anyone have comments?

Mr. Long: I have a question. I noted that there's a demolition permit applied for, so has there been any development plans submitted?

Mr. Hull: No. It just looks like, currently, it's just a straight demolition of the building. Our understanding is that they are essentially having some maintenance issues with the building and there isn't really any plan to necessarily replace the building, per se.

Ms. Griffin: Excuse me, but the letter from Palms Hawai'i does say that the demolished structure will be replaced by an iconic service station canopy and pumps assembly.

Mr. Hull: Yes, but as far as the canopy that is referenced in the letter, as well as the pumps, they still plan to maintain, as we understand it, still maintain the site as a fuel station; however, an actual

enclosed structure, as we understand it, has not been proposed, nor have we even seen the plans or received official plans and application for the new fueling station.

Ms. Schneider: Is there a deadline for you on the demolition permit? Or can you hold that until…?

Mr. Hull: Demolition permits are done via the Building Permit route, which do not have timeline requirements.

Ms. Griffin: Other questions/comments?

Mr. Chaffin Jr.: I'm very concerned that we don't get into trying to design a project that we are not qualified for. We don't have all of the information.

Ms. Griffin: Thank you. Other comments or questions?

Well Kaaina's right. I do have some things to say about this, and it relates to our kuleana; the history of the place and our place. The State Historic Preservation Division. Have we heard from them?

Mr. Hull: No, they haven't commented at this point. It has been referred to them, but they have not commented yet.

Ms. Griffin: Okay. As part of the Architectural Division of SHPD, they say, in Hawai'i, historic places play an important role of tangibly linking the diverse modern population with Hawai'i's unique history. They simultaneously serve as places of memory for those who have always lived here, while educating newcomers about the island's collective history. Preservation is important; not only is it a means to remember our past, but to inspire our future.

In what we do, we talk about places being historically significant. (1) If the building is historically or architecturally significant in terms of its period, style, method of building, construction, or use of indigenous materials. I'd like to suggest that this building absolutely fits that category. In the late 20's and early 30's, as the automobile age, the automobile era, was really coming into its own. Places around the Country really exhibited their own special locations by these service stations. This particular station, the owner, who was the big political boss here at the time, Senator Charles Rice, Charles Atwood Rice, Charlie Rice, and he owned that and they were looking at what we now call plantation-style, double-pitch roof, the old Dickey roof that we know. The architect, Guy Rothwell, who was one (1) of the designers of Honolulu City Hall, Honolulu Hale, and did a lot of other buildings, thousands of them in Hawai'i in his time, he said no, our heritage is Hawaiian. This roof, looking like a thatched roof, is a way to represent that, and using moss rock. At the time it was known as Kōloa moss rock. They actually dyed the roof a yellow to look like straw, and the island for the pumps, red pumps, they painted green. Some of you may remember Al Duvall, and they hired him to actually do the landscaping with native palm trees, native vines, and things. It's an architecturally significant building; there is not another one like it in the universe. (2) The building is a significant reminder of the cultural or architectural history of the City, State, or Nation. Yes. (3) The building is associated with the significant local state or national event, or

the building is associated with one (1) or more significant historic persons or events, or with the broad architectural, cultural, political, economic, or social history of the City, State, or Nation. And definitely, this service station talks about the significance that was starting to happen with transportation, which was the first thing. The automobile era is what got us out of our separate kingdoms at the different plantations. This building represented that in our own local style. (4) The building is one (1) of the few remaining examples of its period, style, or method of construction. Yep. (5) The building is identified with the person who significantly contributed to development of the City, State, or Nation. It was actually a territory then, but Senator Charles Rice was absolutely significant in taking Kaua'i and Hawai'i for all the time he was in the Senate, and his work on the Statehood Commission twice, and what he was doing, so yes. (6) The building is identified as the work of a master builder, designer, or architect whose individual work has influenced the development of the City, State, or Nation. I told you a little about Guy Rothwell, and Palmer Hafdahl has nicely included information, or SHPD, the State Historic Preservation Division. (7) The building value is recognized for the quality of its architecture and it retains sufficient elements showing its architectural significance. Yes. When we go past, there's that unsightly, yellow, 18-inch high belt around the roof that really mitigates the view of it, but it's still there. The fact that there's been malign neglect of upkeep and maintenance does not take away from that fact. (8) The building character is in a geographically definable area possessing a significant concentration or continuity buildings united in past events or aesthetically by planner physical development. That block, when you start right across here where you have the old Garden Island Motors that we call it western, but commercial vernacular in Hawai'i that faults front is there you go up with the Garden Island Newspaper that's now Kaua'i Pasta, that's from the 20's, and then the service station. Next to it, the year after, was built that Spanish mission-style exuberant Līhu'e Theater, which was, at the time, really special; 800 seats they put in in 1930. The place is really special and it is special that the choice was to represent our Hawaiian culture; not simply the dominant plantation era. The National Parks, there's a preservation brief on the preservation and reuse of historic gas stations. It says that historic features that contribute to the character of a gas station should be preserved. A gas station structural form is of central importance. The outward appearance of a historic gas station; its size, shape, massing, and scale often reflected a particular locale. It gives the historic property its identity and contributes today to a public understanding of when and why it was constructed. The roof's configuration pitch and covering are also important, and it goes on. I mention all of that because we have a very historic building in a historic neighborhood in Līhu'e, the County seat and heart of Kaua'i as we call it. We also have the Līhu'e Town Core Urban Design Plan that stresses that the architectural and building design guidelines serve to respect and reinforce the historic context of this neighborhood, and they are talking about the Kūhiō Highway neighborhood. They are intended to protect the various architectural styles and character of existing buildings; that new buildings should be designed to relate to the larger communities, streetscape, and neighborhood by striving to be contextually integrated within the community. Under "Roofs," in this section, it says, new construction or major renovation shall utilize roof shapes, materials, and colors which are compatible with the existing traditional and historic architectural character of the area. I would like to know, from you, if this building is destroyed, is it within the possible use to…because the Town Core Plan says that a Use Permit has to be granted for gas stations. So if this building is destroyed, will any new place be non-conforming with…if it's purposely demolished, will it be non-conforming with the plan and our ordinance?

Mr. Hull: Under Chapter 8, which is the previous zoning ordinance for this area, if it's voluntarily demolished, then I believe no. They would, therefore, have to obtain a Use Permit. But the Town Core Plan overrides Chapter 8 on this, so there is a possibility that actually a Use Permit would be required for any further development, or I should say, any further use of the site after it's been removed from use during that time of demolition. There is a possibility that could go through the Use Permit process; would be required I should say, but we would have to look into that further and particularly, we would have to work with Jodi to get a legal analysis of the non-conforming use being able to continue without a Use Permit. Or the flip side of that, the non-conforming use being required to therefore have to get a Use Permit after demolition.

Ms. Schneider: It wouldn't be grandfathered in?

Mr. Hull: And that's what I'm saying. We have to check on that.

Ms. Schneider: Yes, because if they rebuild it within a year, usually it would be grandfathered.

Ms. Griffin: But they're not talking about rebuilding. They're talking about doing something else.

Mr. Hull: And that one (1) provision year you're speaking to, Commissioner Schneider, is concerning acts of God, essentially. If the structure is destroyed by a storm, they have one (1) year to construct it, but if they voluntarily raze the building, under that particular Code Section, they cannot build it. But because the Town Core Plan is much more of a recent adoption, we would have to clarify that, really.

Ms. Griffin: In that case, I suggest that we do defer until next month when we will have more information; both about the possibilities for this site. Hopefully some possibilities for maintaining this tremendously historic structure and possibly the Applicant here as well. If you agree, I would entertain a motion to that effect.

Ms. Schneider: I make a motion that we defer until we hear something back from the Applicant and make some pitch to try to get them to keep the building.

Ms. Wichman: I second.

Ms. Griffin: It's been moved and seconded that we defer until we hear something back from the Applicant and can discuss with them the possibilities of keeping the building. Discussion?

Mr. Chaffin Jr.: Yes. I'm concerned that the owner…that we're putting criteria on the owner that may not be financially in his or her favor.

Ms. Griffin: Other discussion?

Ms. Schneider: Is that in our kuleana?

Ms. Griffin: No. We are here for historic preservation, not cost, but it's always important.

Mr. Chaffin Jr.: I think you have to consider that.

Ms. Griffin: Thank you. Other discussion? Hearing none.

Mr. Hull: If I could clarify for Commissioner Chaffin, too. Ultimately what goes on with review at the Historic Preservation Commission is the KHPRC serves in an advisory capacity, and would serve in an advisory capacity to either the Planning Director if we're reviewing a Class I or over-the-counter permit, or to the Planning Commission if we're reviewing a Use Permit or Class IV Zoning Permit. That analysis does get taken into place particularly with some reviews at the Planning Commission level where they do take into discretion, as long as it's not a variance that you're talking about, but as far as exactions or requirements made upon applicants and the potential over-exacting, if you will, on a particular application. So that type of review is done, but I'll also defer to what Chair Griffin pointed out is that the purview of this Commission is really to look at the historic qualities and the historical resources and whether or not things like preservation or adaptation can be utilized. So I wouldn't worry too much about the financial side of it being that there will be another review of it, be it at the Planning Commission level or be it at the Planning Director's level, that you don't necessary have to worry about at this point. Just to, somewhat, unlay that concern.

Ms. Griffin: Thank you for that explanation. Is there other discussion? Hearing none. All in favor? (Unanimous voice vote) Opposed? (None) The motion carries 6:0. Thank you, and we'll look forward to your report next month.

Re: Letter (8/25/15) from J. Michael Will, P.E., Program Engineering Manager, US Department of Transportation, Federal Highway Administration requesting to be placed on the Kaua'i Historic Preservation Review Commission agenda to discuss and review the Wainiha Bridges No. 1, 2, 3; Bridge 7 E; Kapa'a Stream Bridge; and Hanapēpē River Bridge.

Ms. Griffin: Okay. Item D.3., New Business, letter from Michael Will, P.E., Program Engineering Manager, US Department of Transportation, to discuss and review Wainiha Bridges No. 1, 2, and 3; Bridge 7 E; Kapa'a Stream Bridge; and Hanapēpē River Bridge.

Staff, is there any…?

Mr. Hull: We don't have a report on these particular ones. I think they are not actually coming for any zoning permits. This is disclosure before you for their 6E Review Process.

Ms. Griffin: Thank you. Applicants?

Nicole Winterton: Hi. I'm Nicole Winterton. I'm the Environmental Manager from Federal Highway Administration, Central Federal Lands. We planned to come before you last month, so we have had some updated project planning, so we did update some presentations for you. We figured you would appreciate the latest and greatest information, so we'll pass that out.

Ms. Griffin: Terrific.

Ms. Winterton: I'll just go ahead and get started, if that's okay, while he's handing that out.

Ms. Griffin: Please.

Ms. Winterton: Like I said, I'm with the Federal Highway Administration, Central Federal Lands. We are a division of Federal Highways that does planning, environmental compliance, design, engineering, and construction management oversight of transportation projects. We typically work in the Federal lands, within or access to Federal lands, such as National Parks and National Fish and Wildlife Service Refuges. We've developed a partnership with the Hawai'i Department of Transportation. Over several years, we've partnered up on some infrastructure jobs here in Hawai'i, and have worked closely and developed a good relationship with HDOT; I'll abbreviate. We've developed into a five-year Memorandum of Agreement to deliver a program of projects with HDOT to help them deliver some critical infrastructure jobs, and also enter in a Peer-to-Peer Partnership with both agencies learning from one another the delivery, programming of jobs, and construction management of jobs. We have several projects on several different islands, but what we are here to talk about are the projects that we have here on this island.

So the project that I thought that I'd start with, if it's okay with you all, is the Wainiha Bridges Project. As part of this partnership, we have four (4) projects on this island. We've also partnered with an A&E, Architectural and Engineering firm, to support us on delivery on a lot of the projects. The Wainiha Bridges Project is a little bit unique, so I'll primarily talk about that project. CH2M Hill is helping support the engineering and compliance for the other bridges on the island, so I'll hand it over to Kathleen Chu, with CH2M Hill, after we talk about the Wainiha Bridges. We also have representatives from Mason Architects and Cultural Surveys Hawai'i, who are providing support from the historic architecture side of things and the archaeological side of things, so if questions come up, they are here to help (inaudible) their purview.

Ms. Griffin: Before you start, just so I'll know whether we can go through or not, is there anybody that's in the public that's going to want to testify on any of these bridges?

Okay, then we'll just go through one to the other. Thank you.

Ms. Winterton: Okay, great. So I think going through the Wainiha Bridges Project, if you want to just kind of run through the slides with me, I think I pretty much covered the role of FHWA in this project. I really wanted to talk about that because I think you probably seen or heard from projects that are federally funded and worked with the division where in those roles, traditionally, HDOT is more the delivery agent for that project and FHWA acts as a Federal agency for the 106. In this project, we are doing the actual design engineering, so we are the lead agency for Federal. These are federally funded jobs, so they are subject to Federal compliance, so Section 106. They are also State projects on the State route, so they're also, you know, with compliance for the State laws as well.

A little bit of project background for the Wainiha Bridges. They have a pretty long background; these are the bridges. We've actually been on this part of the island talking about it here tonight, so Wainiha Bridges 1, 2, and 3, which are the last one-lane bridges on your way to Hā'ena on

Kūhiō Highway, the north shore section. The original Bridges 1 and 3 were constructed in 1904. The stream channel kind of carved a new path, and in 1931 we had a new bridge added. Tidal storms damaged the bridges in '46 and '47, so then we had a new period of significance with new bridges added in this timeframe between the 50's. Bridges 1 and 2 were replaced, and then we had...oh, I'm sorry, we had all of the bridges replaced, and then in '66 we had the east span of Bridge 3 replaced. So just a little bit of background. We have, kind of, two (2) periods of significance with these bridges that were in this location. In 2004, the Bridge 2...so they go in order, Bridge 1 is the eastern most bridge, and then 2 and 3 are two (2) bridges that operate essentially as one (1) single-lane bridge, so just a little bit of background on that. These bridges suffered damage from storms in 2004, and Bridge 2 was replaced. Under inspection in 2007, they were in a pretty bad state of disrepair, so there was an emergency proclamation for the Governor to replace the bridges. HABS (Historic American Buildings Survey)/HAER (Historic American Engineering Record) was done at that time, and new prefabricated modular steel structures that we refer to as Acrow bridges are in there now. That was placed as a temporary measure to secure funding for the permanent replacement, and also to get through the compliance and engineering of that.

If we go to the next slide, just a little bit of reference, this is Bridge 3. In the lower right-hand corner, that's the existing bridge that's there now; that's the Acrow Bridge that we refer to. In the upper left-hand corner, that's the 1950's structure, the historic bridge that was present before that removal in the 2000's.

Central Federal Lands came into this project and there was a lot of background on it. What we really tried to do is seek to understand. There's very strong interest in this project. We have a significant road; the north shore section of Kūhiō Highway is listed on the National Register, and also on the State Register. Also, we knew coming into this that it was important to come up with a context sensitive design, so Central Federal Lands really spent time meeting with the community on the north shore, as well as the Hanalei Roads Committee to really understand what was important, as far as the aesthetic, the natural, the cultural features, so that we could try and develop the goals for the project. Through that process, and I think in the old presentation from last month, I really kind of went through the issues that we've heard from the public. If you're interested, I'd be happy to expand. But we heard a lot of different feedback on how the bridges are operating, and developed a purpose and need for the project. The primary purpose is essentially to provide permanent replacement bridges for the temporary Acrow bridges that are out there. We also identified opportunities to improve operations, manage the maintenance requirements, and also to balance project improvements with the character of the historic roadway corridor. There are issues with sight distance and visibility crossing the bridges. We heard that the rail spacing of the steel bridges is difficult, and I've experienced it, too. It's difficult to see through and across. There are maintenance concerns with vegetation overgrowth affecting site distance. When they had to put those temporary bridges in, they also had to raise the grade of the road a little bit. So all different factors that we identified. We identified a lot of opportunities. One (1) other important thing that we also identified was the significance of the roadway, so it became a balancing act of evaluating what our project transportation goals were, with also the context of the roadway, but also just the aesthetic and natural values that are really important to the community. In kind of reviewing the historic significance and some of those project goals and improvements, we really tried to step

forward a process, and this is where we really would like the Commission's feedback, and this is what we presented. We had our most recent public meeting on September 15th. We've stepped through an alternative evaluation process, and we're preparing an environmental assessment for the project, and identified alternatives based on what we heard. We don't think that we are going to carry forward for analysis and we'd like the Commission's feedback on that. And also on the flip side, alternatives that we'd like to really move forward with analysis, so preliminary design feedback as we move forward with that process.

Moving forward, we identified a lot of opportunities for developing of the alternatives based really on the feedback that we heard and some of the engineering evaluation, which was the sight distance, traffic calming considerations. We heard interest in narrow bridges to help slow the traffic, accommodation of vehicle loads and navigation of emergency vehicles across and between the bridges; we heard feedback on that. Maintenance requirements, the aesthetics compared to historic roadway, historic alignment of the roadway, and then other design criteria and guidelines. Whenever we build new infrastructure or work on infrastructure, we have to document anything that we're doing that deviates from standards and guidelines.

Some of the opportunities, and this is through past coordination with HDOT before we were involved with the Hanalei Roads Committee, was replacement of those Acrow bridges, lowering of the roadway and bridge profiles to improve the sight distance to get it back to a little bit more like it was before, incorporating bridge rails that are shorter and more open than those on the temporary Acrow bridges to address some of that sight distance problem, and then a very minor alignment improvement between Bridges 2 and 3.

On the flip side, moving forward to the next slide, we did hear feedback on the challenges crossing those one-lane bridges, so there were recommendations on replacing the Acrow bridges with two-lane bridges so that you don't have that stop controlled traffic situation. We also looked at this because this is the standard design recommendation that if you were coming at a project today somewhere else in the world, this would be the recommended alternative for the type of roadway we have and the traffic number. However, considering the historic context and the current roadway operating and safety conditions, we're able to apply design exception to eliminate having to create two-lane bridges. Currently, that's being evaluated as an alternative to dismiss from further analysis, so we would certainly like feedback on that.

Ms. Schneider left the meeting at 4:37 p.m.

Ms. Winterton: Another option considered, which is always a consideration on a bridge project because you're crossing a stream is to replace the bridges with one-lane bridges on a new alignment. So that allows you the opportunity to build your new bridge, maintain traffic on your existing bridge, and then switch the traffic and take out the bridge. Basically, it shortens your construction period. We looked at that and it might provide some cost savings and time savings, but it didn't really outweigh some of the other disadvantages from the alignment change, and it didn't really offer design advantages. It's not like it was the ultimate improvement to make everyone see across and between the bridges. At this point, we anticipate dismissing that alternative from further evaluation.

So really where we're left is replacing the Acrow bridges with new one-lane bridges on a similar alignment, so that's closely matching the historic alignment with just a slight minor improvement on the tweak and curve between Bridges 2 and 3. As I mentioned before, we will have to have a design exception because typically one-lane bridges are usually only considered on very low-volume roads, but based on the conditions, the engineering team felt that could be justified. And as I mentioned before, lowering the profile of the road and the bridges to get it back more to the historic conditions. Then, as part of the National Environmental Policy Act process, we do need to carry forward the no action and no build alternative.

A lot of the feedback from the community was interest in width and design considerations, so we looked at a lot of different factors, such as the Design Controlling Criteria; what recommendations are for lane width, shoulder width. We considered functionality; how vehicles can get across the bridges and between the bridges. Potential maintenance considerations for whichever bridges are out there. Pedestrian and bicycle safety; we heard was important. Driver perception and expectation; how they are able to operate on the roadway. And also the historic alignment considerations. They were all kind of factors, and advantages and disadvantages of different varying widths.

Ms. Schneider returned to the meeting at 4:39 p.m.

Ms. Winterton: What you see before you, and what I provided ahead of time with some of the layouts provided for each of the three (3) bridges is, where our team is looking at, as far as reviewing of DOT and Federal standards, what some of the conditions are out there, and that is essentially a 14-foot clear width. It's a precast concrete girder bridge. On the slide, I have some of the lengths. So essentially you have, similar to the historic conditions, a single-span bridge for Bridge 1, approximately 50 feet, single-span for Bridge 2, and then three-span approximately 178 feet for Bridge 3. There are the historic piers in the water, but they are not actually functioning right now. The Acrow Bridge actually spans them, so for permanent replacement bridges, we would need piers to support that length of bridge.

Ms. Griffin: So you'd leave the old pier, but construct new ones? Is that what you're…?

Ms. Winterton: Actually, the recommendation is to…because what we need to do is match the hydraulics and the hydraulic opening with lowering the bridge, so the recommendation is to have a three-span structure with two (2) piers in the water similar to how the historic bridges were, but to put the new piers in and to remove the historic piers. So where exactly they would line up is still being evaluated because obviously they can't put it right where the old ones are.

Ms. Schneider: What is the timeline for this? When would you be doing this?

Ms. Winterton: We aim to get through the environmental compliance process winter/early spring, and then move towards completion of the design and securing the permits. It depends a lot on funding priorities with the State, but we find that as soon as we get everything done and ready to go, the money tends to appear.

Ms. Schneider: What's the duration for doing this?

Ms. Winterton: Okay, so I include that a little bit later, but I should add that...and I didn't include...our memorandum agreement with all of these projects with HDOT is essentially to do the full delivery and construction, and turn the facility back over to HDOT by 2018. So our goal is to get all of the projects that we are working with completed in 2018. The construction approach is a challenge on these projects, and I'll talk a little bit about that later, but the anticipated timeframe, to be conservative, was two (2) years.

Ms. Schneider: And you're going to improve the sight lines for entry and exit of the bridge? Because that's really the problem now.

Ms. Winterton: Yes. So that's the goal, to improve that, but I clarified to the extent possible because there are constraints in this location, and that goes to that balancing act of improvements while maintaining consistency with historic. Are there any questions on that?

On the following two (2) slides, I have a photo of the existing Bridges 2 and 3, and a rendering of what we were thinking about for Bridges 2 and 3. Some of the feedback that we've heard, and I would love the Commission's feedback as well, you know, is really the community has grown to appreciate those 1950's bridges. From an engineering perspective, when you look at the type of the rail spacing and some of the challenges with the sight distance, it actually does provide opportunities for improvements with that type of rail design. With consideration of the design standards, we always like to have crash-tested rail when we do improvements. So we have identified a crash-tested rail that sort of plays off a little bit of the historic rail. It's a structural steel tube rail, and this rail here it's called the Wisconsin Type. We went back and forth on vehicle rail only versus vehicle combo rail, and landed on a vehicle rail, which is a little bit lower and part of that is opportunities for that improvement to the sight distance. It's top-mounted, and max post spacing is 6'-6", which is that max amount that you would want to put it towards to still meet the crash-test standards. We'd probably seek to get close to that again because that visibility through the bridge is problematic.

Construction strategies. As I mentioned, the anticipated duration of construction is two (2) years, and it's depending on funding. Because these are bridges crossing the streams, it is a little bit hard, so we are talking about evaluating site conditions and how we can maintain traffic, and it's shifting the existing Acrow bridges, using them for construction, and shifting them makai to build the new bridges on alignment, and accommodating emergency access through construction. But there would have to be delays and very short-term closures for different milestones, such as moving the bridges. Another challenge for construction is leading up to these bridges, the three (3) original historic bridges crossing different streams, these are the Waioli, Waikoko, and Waipa Bridges, these are load restricted, and construction vehicles and equipment tend to be heavy. So we have evaluated this as a construction challenge, and the current recommendation is...because we do not want to affect the historic integrity of those original bridges, is to provide temporary bridges adjacent to or over so as to not touch the original bridges.

I have here, the second to last slide here, Waioli…the approach is evaluating the site conditions, utilities, right-of-way, and opportunities of where these bridges could be placed under temporary conditions would be…Waioli, mauka of the existing; Waipa, makai of the existing; and Waikoko is a very short structure right on the coastline, and there we have an opportunity to actually go up and over the existing bridge, so building behind on each side and going up and over because we really don't want to negatively impact any historic structures.

The next steps are…we really want to get feedback, continue the design process, and refine engineering through different coordination with you all, the public, we're getting feedback from the public, SHPD, and other interested parties, and prepare the analyses and the reports, and prepare an Environmental Assessment.

Any questions? Comments?

Mr. Chaffin Jr.: Yes. I would appreciate getting this package in advance. You reviewing it in front of us is difficult for me.

Ms. Winterton: Okay. I apologize for that. I did provide a presentation in advance for the last meeting; a lot of the information is similar. And we provided the drawings for each of the bridges. So we actually…in preparation for the public meeting, really took an extra step. We've done a lot of coordination with HDOT to get to a comfort level. There is a pretty big deviation from what is typically the recommended design approach, and so we were seeking to get feedback from the public as well, and I just wanted to give the latest and greatest information. Feel free to absorb this information. We'll take comments through the process, really.

Ms. Schneider: I appreciate that you've taken into consideration what those bridges looked like originally.

Ms. Griffin: Other comments? Thank you. In a general way, it's for those of us who have dealt with roads and bridges for twenty (20) years or more. Having context sensitive solutions roll right off your tongue, you know, is music. To be talking about protecting the historic bridges, rather than all of the reasons why it's too expensive, it can't be done, the people are going to fall through, you know, height limitations, materials, but hearing the "can do" aspects is really a pleasure. I must say that with the Hanalei Roads Committee that they are consulting and in agreement is a really important component to this historical review. They know about the roads up there, and bridges. Thank you.

So moving along to Hanapēpē.

Kathleen Chu: Hello. Good evening, Madam Chair and Commissioners. I'm Kathleen Chu with CH2M Hill, and if you can switch to your next presentation packet. I'm going to talk about three (3) bridges this evening; the Hanapēpē River Bridge, the Kapa'a Stream Bridge, and Bridge No. 7E. I'll stop between each one so you guys can provide your comments on it.

Ms. Griffin: Thank you.

Ms. Chu: Again, thank you for allowing us to share this information with you and getting your feedback. Moving on to Slide 2, the Hanapēpē River Bridge is located on Kaumuali'i Highway. It's State Route 50 at Mile Post 16.5 in Hanapēpē. This bridge crosses Hanapēpē River and it's located between Hanapēpē Road to the east and Puolo Road to the west.

On Slide 3, this is a map showing the areas of potential effect for this project. I believe you received this in advance as well.

Again, just to share with you some of the project background on Slide 4, the existing bridge was built in 1938, and it's a three-span reinforced concrete bridge. It measures 275 feet from the backface-to-backface of the abutments, and has an out-to-out bridge width of 38 feet. Right now it doesn't meet current roadway or bridge design standards. It does not meet any live load or seismic requirements as well. The existing bridge is classified as structurally deficient and functionally obsolete. In addition to the substandard load carrying criteria, it also has been identified as scour critical. Recently, and I guess in the past, too, there's been inspection of the existing timber piles. I'll go into more on the timber piles on Slide 5.

There's been inspection. The DOT does inspection on the bridges every two (2) years. In 2007 and 2008, the existing pier and abutment foundations were...inspection was performed by Nagamine Okawa Engineers. In this inspection, this is where they first, I believe, noticed the undermining at both of the pier foundations and one (1) of the abutment foundations. Just in those two (2) years in 2009, they really noticed that some of the scour at these foundations has increased. Also, one (1) of the remaining unseen timber piles...there's been a lot of rot or marine infestation. They are not sure of the exact cause, but the timber piles, their load carrying capacity has diminished greatly. More recently, the DOT asked KAI Hawai'i structural engineers to go out there after a heavy storm in 2012. They noticed that one (1) of the timber piles has completely been disconnected with the concrete cap, and another one of the piles, 80% of its circumference was gone. The timber piles that are below ground, the structure capacity of those cannot be accessed because they are under water and in the ground. Right now, the DOT does monitor the top of the pier elevations just to keep an eye on the bridge. Secondly, the bridge rail has deteriorated and it does not meet current bridge standards. You can see from some of the pictures that it is decaying. Okay?

So on Slide 6, I wanted to share with you some of the alternatives that are being considered; one (1) is rehabilitation. As I mentioned earlier, the bridge is structurally deficient, and is scour critical, and the timber piles are decaying, so it needs a new substructure. The bridge needs a new foundation. There is no way we can maintain the existing foundation, so it does need a new substructure. In regards to the superstructure of the bridge, it does need a new deck. The bridge needs new bridge rails. It does need to be widened and it needs to be upgraded in regards to seismic and load carrying capacity. So that's a pretty extensive rehabilitation. It's practically all new bridge parts. The replacement is also one (1) of the options. And as Nicole mentioned, no build is also a requirement, just through the NEPA process.

I'm going to expand a little bit more on the replacement option, which is on Page 7. This is the alternative that the project team is leaning towards, just based on the information I shared with you

on the rehab option. One (1) of the goals is to design with as little change as possible. With the bridge structure, we are looking at two (2) different types of, kind of, aesthetic alternatives. The new substructure would be drilled shafts. It would have new pier foundations. It would be 308 feet long and 52 feet wide, so the 52 feet width allows for two (2) 12-foot lanes, two (2) 8-foot shoulders, and the two (2) 5-foot sidewalks. We would match the existing alignment and the profile as much as possible. We are not planning any vertical changes. We are going to continue to meet the 35 mile per hour posted speed limit, and there is no change in the 100-year storm event, so hydraulically it's still good. Right now there is an existing 12-inch waterline, a 12-inch sewer line, and existing electrical and telecommunication lines on the bridge. Those would be maintained as well. The construction strategy for the new bridge would be to place a temporary bridge on the mauka side. The temporary bridge would be 28 feet wide to maintain two-way traffic. We do know this is a very important route and it's important to maintain the two-way traffic.

The next few slides show you just some visualizations and some pictures. The first on Slide 8, this is a picture of the existing bridge. Then on Slide 9, this alternative shows a bridge that most closely resembles the existing bridge. It has an arch fascia that resembles the arch on the bridge now. Then Slide 10 shows the more traditional bridge structure that's also being considered, and this is a straight girder. Okay.

We did have a public meeting on September 17th. About thirty-five (35) members from the public attended. The questions that they asked were primarily ensuring that the temporary bridge could maintain access for their loads because there is a lot of concern with access to the landfill, and also access to the Pacific Missile Range. They were in favor of a new structure that would address any load carrying concerns as well.

In regards to the bridge rails and the end post, on Slide 11, on the west side of the bridge it appears that the bridge end post has been rehabilitated in the past. The ends were altered by the installation of a flushed concrete barrier which transitions into your traditional metal guardrails. On the east side, one (1) of the end posts has also been rehabilitated, but on the south east end, the end post on the makai side, the existing post there has been maintained; existing radius cavetto molding is still there.

Slide 13 shows a rendering of our proposed bridge rail. Again, we had to look for a bridge rail that would meet Federal Highways and the DOT crash-test standards, so this one here is a Texas Balustrade. It would be 42 inches high to meet bridge rail standard height for bicyclists. It is the same bridge rail that's out there on the Līhu'e Mill Bridge. This rendering here just shows you how the end post transitions would look as well.

I'm here to answer any questions or get any of your feedback.

Ms. Griffin: Commissioners, questions?

Mr. Chaffin Jr.: On the alternate drawings you have, are there any estimated costs?

Ms. Chu: Well the arch fascia is more expensive. I don't know the exact cost. There is another handout, an 11 by 17, which shows you the Alternative 1 and the Alternative 2. Also, another 8 ½ by 11, which shows how the fascia would be put in place.

Ms. Griffin: Other questions? I have one (1) question. What is the current width of the bridge did you say?

Ms. Chu: The current width is 38 feet, so I believe its two (2) 11-foot lanes and the 5-foot sidewalks, that's existing.

Ms. Griffin: I know in Kaua'i's Land Transportation Plan there was a view to eventually expand Kaumuali'i Highway all the way out. I'm wondering if this 52 feet wide…tell me what the 16 feet of shoulders is for, and additional 10 feet of sidewalks.

Ms. Chu: Well the 5-foot sidewalk…there's an existing 5-foot sidewalk on both sides of the bridge today, so we're putting back the existing sidewalk. The shoulder, it is primarily a safety. It's for if vehicles get stuck, for vehicles to pull over. There is no intention with this project for this to become an expansion of the two (2) lanes. I don't think the extension of a four-lane highway extended that far west.

Ms. Griffin: Yet. (Laughter in background)

Ms. Chu: At least in the 20-year long range plan. (Laughter in background)

Ms. Griffin: Okay. Also, on the railings, the existing bridge has a very interesting…I don't remember seeing another with this profile on Kaua'i; it's very 30's, deco-ish. It was not possible to do anything similar to this that would still meet Federal Highway standards?

Ms. Chu: You know, we did work closely with Federal Highways to find a bridge railing that had gone through crash testing that would most closely resemble the existing bridge rail. The Texas Balustrade was the closest that we could find with an opening. I know the opening is not quite the same.

Ms. Griffin: Yes. It's an arched opening rather than this…

Ms. Chu: Right, it's kind of a cross, yes. If we were to develop a new…this project would not be able to develop a new bridge standard and have it go through all of the crash testing that's necessary. So the Texas Balustrade is the one that most closely resembles this.

Ms. Griffin: Other questions?

Mr. Long: Well I have a comment about that response. On a number of our bridge projects, we've been working with DOT. Is it Mike?

Ms. Griffin: Most likely it's Donald Smith.

Mr. Long: Yes. So we've asked them to replicate various bridge railings, and they've been able to do that. It appears to me that we have one (1) existing bridge railing and you went through some books to try to get as close as possible because you wanted to find something that has already been crash-tested; yet, wouldn't it be possible to take a look at the design so that we could get something that replicated the existing?

Ms. Chu: I believe the bridge rails that the DOT have installed in place have been crash-tested; I mean, that would be a requirement. They would not be able to install a bridge rail that had not been…well definitely none with Federal funding. It probably is one that they were able to find that is extremely similar to the existing rail.

Mr. Long: But not…sort of similar, but not really like it.

Ms. Chu: Right, I understand.

Mr. Long: So I would like to ask that DOT come back to us with a design of a railing that's identical to the existing; a replication of the historical railing within the certain guidelines, which we have been able to do in the past, rather than look in a book for a railing that has been crash-tested that sort of looks like it.

Deputy County Attorney Higuchi-Sayegusa: I think these folks are here kind of to…through the process under the Federal laws, under requirements, reviewing cultural and historic resources. I would suggest that you folks make your comments, and then I'm not sure if…requiring the return…I'm not sure how that's going to affect your folks' processes or…I mean, if that could be accommodated.

Ms. Chu: Our primary goal tonight is to receive consultation and receive feedback. Some of the next steps are…we are in the midst of doing our environmental documents. There is a goal to have the environmental documents completed by the end of the year. There has been some preliminary engineering that's been advanced; primarily just to determine what any impacts would be. We hope to have a draft EA out by the end, but we are also consulting with SHPD, so I think the process is going to…

Ms. Winterton: Yes. I mean, I can't speak to what it takes to create a totally new rail. I could bring this, this is great input, and bring it back to our structural engineers to go and revisit, but I know they went through a pretty robust exercise to evaluate crash-tested available rails. It is a unique rail, and that's why it's hard to land on that close exact match. We can, again, revisit that, and I don't know if it's an opportunity to create a brand new rail though because of the robust process to get crash testing. With the infrastructure that we're providing and the speeds, I mean, that's the goal to have something that meets the standards. So I think the exercise was pretty robust, but we could definitely take that input, take it back, evaluate, and look at that. It sounds to me like the feedback that I'm hearing is that aesthetics related to the existing rail is extremely important to the Commission.

Mr. Long: As I look at it, you're designing a whole bridge, and we're just talking about the railing; I mean, you have to design everything about that bridge. So to design a railing that passes crash-test ought to be part of your exercise in as the way I look at it.

Ms. Nicole: Yes. I mean, I think that it's more complicated than that to go through…I mean, they go through years and years and years of crash testing through the National Highway Traffic Safety Administration. So I think there are certain parameters that they can, maybe, tweak when it still meets the standards like I was talking about Wainiha and the spacing and stuff like that, so we could take that feedback and provide it to the structural engineers and see what's possible.

Mr. Long: Yes. I mean, on a design level, art deco is rectilinear and this railing has an arch in it, so you're actually taking away part of the cross section of the railing by introducing an arch. So maybe there are certain parameters of railing and steel and volume that your designers could take a look at?

Ms. Nicole: Okay, yes. That's good feedback.

Ms. Griffin: Other comments?

Okay, moving right along.

Ms. Chu: Okay. So the Kapa'a Stream Bridge on Slide 14. This one is located at Mile Post 9.8 on Kūhiō Highway, State Route 56. It's on the east side of Kaua'i. This project also includes improvements at Kūhiō Highway and Mailihuna Road intersection, which is located approximately 550 feet south of the bridge.

The next slide, Slide 15, shows the area of potential effect for this project.

On Slide 16, some of the project background. Kūhiō Highway is a two-lane undivided highway with existing lane widths of 12 feet and shoulders on either side of the bridge range between 4 to 8 feet. There is an existing deficient two-span bridge that was built in 1953. It's also classified as being functionally obsolete. This one also has substandard load carrying capacity, and it doesn't meet current seismic requirements. This bridge has also been identified as scour critical. On this bridge, the condition and the capacity of the existing timber piles is unknown because it's completely underground. This existing bridge is approximately 150 feet long and it is 38.5 feet from out-to-out. Again, it doesn't meet the current width requirements, and the bridge railings and approaches don't meet current crash test requirements. And the Kūhiō Highway and Mailihuna Road intersection is a three-legged stop control on Mailihuna Road. There is also this private driveway that accesses it to the northwest. Just a little bit more about the intersection, which is probably less of a focus for this Commission, but it does experience a lot of delay, and pedestrians currently are not accommodated. In the past, there has been seven (7) accidents within the project limits; none of them were fatal, but six (6) of them occurred directly from the people trying to make the left turn movement from Mailihuna Road onto Kūhiō Highway.

So for the bridge, on Slide 17, the three (3) primary alternatives that are being considered are the rehabilitation, the replacement, and the no build. Again, the existing deficient two-span bridge was built in 1953 starting with the substructure. The current condition and capacity of the timber piles that support the abutments and the center pier are unknown, so right now we just don't know what the adequacy of the existing foundation is. To rehab it, we would have to do a pretty extensive retrofit to the existing foundation to make this a viable option. For the superstructure, to rehabilitate the existing bridge, we would need to widen it, we would need to take down the bridge rails, and this would, again, be an extensive process to strengthen the girders and make it meet seismic requirements, as well as the load carrying requirements. Again, we discuss the no build option as it being a requirement, and then there's the replacement of the existing bridge.

Also on this bridge, with initial consultation with the State Historic Preservation Division, we had met with Architectural Historian Jessica Puff and she recommended that no survey work was needed for Kapa'a Stream Bridge. The bridge is not eligible for listing on the National or the Hawai'i Registers of Historic Places, but the final determination will be made by Federal Highways.

On Slide 18, we share with you what is being proposed. Again, the replacement is where the project team is heading. The new bridge structure would be a single-span concrete bridge, so we would remove the need of a center pier, and this would help hydraulically with flow conditions in the future. The new bridge would be 190 feet long with a deck width of 42.5 feet. This bridge…we're not putting back the sidewalk, we're putting back two (2) 12-foot lanes and two (2) 8-foot shoulders, so the bridge would be widened a total of 4 feet; that's 2 feet on each side. Basically, the bridge railing would be 2 feet, 8 inches high. It would have a 10-inch high metal railing for bike safety, so that would bring it to a total of 42 inches. This also most closely resembles the existing bridge rail. Again, the utilities would be maintained on the existing bridge. In order to construct it, we would place a temporary bridge on the makai side, so this would be between the existing bridge and the shared use path bridge.

Slide 19 is kind of the visual simulations of "Before" and "After" of what the bridge would look like. We did have a public meeting on this bridge on September 18th. As you can imagine, most of the focus was really on the intersection. We didn't have too many comments on the bridge.

Again, I'll just quickly go through the intersection. In relation to the intersection, on Slide 20, it is to improve the traffic operations by trying to help reduce delays and improve pedestrian safety at this intersection. For Mailihuna Road, the traffic does back up so it does have a level of service of F.

Alternative 1 is a roundabout alternative, which would be a single-lane roundabout with a truck apron. It would have splinter islands and marked sidewalks on each approach. The single-lane would be 18 feet wide with an inscribed circle diameter of 130 feet. This roundabout would alleviate congestion and reduce delay on Mailihuna Road, and it would also provide a yield control on all legs. It does have a much larger footprint than the existing intersection, so this alternative would require a lot more grading. It would require more retaining walls, and there would be more encroachment in the undeveloped coastal area.

The next alternative, on Slide 22, is your more traditional intersection with full traffic and pedestrian signals, and crosswalks. This alternative would provide a new northbound left-turn lane on Kūhiō Highway for those going onto Mailihuna Road, and a southbound right-turn lane as well. The northbound left-turn lane would provide 180 feet of storage, and then the southbound right-turn lane would provide 150 feet. So this alternative would include, again, the signal of the marked crosswalks and lighting to improve conditions for your non-motorized modes.

That's it for Kapa'a Stream Bridge, and the Kūhiō Highway and Mailihuna Road intersection. Do you guys have any comments? Questions?

None? Okay.

Mr. Long: I have a comment.

Ms. Chu: Oh, okay.

Mr. Long: Where the new proposed railing for Hanapēpē is similar to the existing, this one has no resemblance to the existing at all, in my opinion; it's like nobody even tried. The existing is somewhat art deco with bi-partake rectangular columns and a different rhythm in the railing, so I don't see any similarity between "Before" and "After", at all. It doesn't look like it was picked out of a book; it looks like it was just poured concrete, the new railing. So it wasn't like somebody said "oh gee, let's pick a railing that's similar to the existing", they just designed a straight pour.

Ms. Chu: Okay.

Mr. Long: So it's the same comment.

Ms. Winterton: Okay. I think that's good feedback, and I can take it back, again, to our structural engineers. I don't know if…I think with this bridge it didn't have as much…not to say that we moved more towards that with Hanapēpē, but Hanapēpē was a more historically significant structure, and I think that effort was very robust whereas I think the aesthetics were integrated into this, so I can bring that feedback back, but I don't think resembling or matching was identified as a goal, so if that's feedback that you think should be considered.

Mr. Long: I'd like to identify it as a goal.

Ms. Winterton: Okay.

Ms. Schneider: Keeping the same rhythm as the old bridge.

Mr. Long: Yes.

Ms. Schneider: As opposed to this very even spacing that you have on the new bridge.

Mr. Long: I mean, you have historical architects in your group, yes?

Ms. Winterton: Yes.

Mr. Long: So could you have that architect talk to that engineer? (Laughter in background) Because this is clearly designed by that engineer.

Ms. Winterton: Yes, I mean, well we have Barbara here who can speak, so really we have the meeting and the minds that come together.

Mr. Long: Are you the architect or the engineer?

Ms. Winterton: So I mean, I think it's that balance of when we have that historically significant structure, there's the balance of striving to maintain or play off of the aesthetics, but we are not trying to recreate history. I don't know if that was the primary goal on this job. I think it's more of a sensitivity towards the community, and the appreciation for the structure that they are seeing.

Mr. Long: Well, the structure that you see when you drive across the bridge is the railing.

Ms. Winterton: Okay.

Mr. Long: That's all you see. You don't see the girders, you don't see the…

Ms. Winterton: We didn't get a whole lot of feedback on the rail itself, except for the visibility out while you're driving.

Ms. Chu: Right, was to keep the bridge rail…to not make the bridge rail too high as to maintain some of the visual plains; the makai/mauka.

Mr. Long: Yes, I understand that. I would say that it's an architecturally significant feature on this bridge. When was this built?

Ms. Winterton: Preliminary coordination is that it is built in 1952 or '53; Barbara could chime in.

Mr. Long: Okay, so it was built in the 50's.

Ms. Winterton: It's not viewed as eligible for the State, nor the National Register.

Mr. Long: I'm not talking about that. I'm talking about it being architecturally and aesthetically significant.

Barbara Shideler: If you believe it's architecturally…

Ms. Griffin: Can you identify yourself?

Ms. Shideler: Barbara Shideler with Mason Architects. It may very well be architecturally significant to the community. In defense of the engineers and CFL, when we consulted with State

Historic Preservation Division, they said that they did not believe it was historically significant, and in fact, it was removed from our scope of work. It's a common bridge type. It was identified as not of historic consideration. I mean, that's why we've come to the local community, to consult with you and get another voice on that. We hear that and it's something to take into consideration as we go forward.

Mr. Long: Thank you.

Ms. Winterton: We can have the meeting of minds reassessed, and connect on the architecture and the safety.

Mr. Long: Yes, because SHPD has their standards, and historically significant is different than aesthetically significant. So I'm interested in the aesthetically significant aspect. Thank you.

Ms. Winterton: Okay, that's good feedback. Thank you.

Ms. Chu: Any other comments on the Kapa'a Stream Bridge?

Mr. Long left the meeting at 5:23 p.m.

Ms. Chu: So the last one is Bridge No. 7E. It's located on Kaumuali'i Highway on Route 50. This one is near Mile Post 7. The route is classified as Rural Minor Arterial, and it's the primary route from Līhu'e to the Kōloa District. This bridge is just west of Maluhia Road.

Slide 24 shows, again, the area of potential effect for this project.

On Slide 25, just some of the project background. The purpose of this project is to improve Bridge 7E to maintain Kaumuali'i Highway's crossing of an unnamed stream and to, again, continue to provide a safe and functional component of the regional transportation system. The existing bridge was built in 1933 and again, the structure doesn't meet current live load, seismic, roadway widths, railings, or other requirements. This bridge is a reinforced concrete box that has two (2) culvert cells with wing wall abutments, and again, is structurally deficient. The bridge is 22 feet long and the width is 32 feet wide. Through this bridge, the existing highway is 10 feet. There are two (2) lanes that are 10 feet with 2-foot shoulders on each side, and the posted speed limit is 50 miles per hour.

Again, the project team looked at the rehabilitation, the replacement, and the no build alternatives. Right now, the top slab of the box culvert does not meet the current live load requirements. The bridge has also been paved over in the past. This would need to be strengthened, so if they strengthen the top slab, they need to increase the slab thickness and they would have to put in increasing reinforcement on the sides of the box, which may also affect the hydraulic capacity of the box and overstress the existing piles. So again, rehabilitation can be very complex, and again, the capacity of the existing piles is unknown as well. The project team moved forward into looking at the replacement option, and then there is the no build option that also needs to be considered.

Mr. Long returned to the meeting at 5:25 p.m.

On Slide 27, the proposed bridge is 24 feet long. We are looking at a single-cell box culvert, so it'll be just a one (1) box culvert cell, versus two (2) cells. This will improve the hydraulic capacity. It will be 44 feet wide, so this would allow for your two (2) 12-foot lanes and 8-foot shoulders, and room for the bridge rails as well. We will put in crash-tested bridge rails. The intent is to match the existing profile and alignment of the roadway, so there will be no changes vertically or horizontally. We'll maintain the existing electrical and telecommunication lines.

The next slide shows you the "Before" and "After" of what it would look like. Right now, most people don't realize they are going over a bridge. There is just guardrail and the bridge has been paved over. So in the future, you will see your standard concrete barrier.

Any comments?

Ms. Griffin: Comments? I noticed on all of these the area of potential effect includes under the bridges and some land. I know we have archaeology represented here, and none of that has been discussed, but I'm wondering if there are areas in any of these bridges that we've discussed, cultural archaeological sites that would have any kind of adverse effect.

Gerald Ida: Gerald Ida, Cultural Surveys Hawai'i. Just speaking generally, no, there's nothing really. At this point, we've done work on each of these bridges and we have submitted reports to SHPD, but they haven't been totally reviewed yet; they are still in draft form. We have had a meeting with SHPD to discuss the findings. We have done subsurface testing, as well as surface surveys of the surrounding areas of the bridges. It's been my experience when you do things like these bridges, because I've done a lot of bridges including Wailua, a lot of these places are pretty messed up where there is an existing bridge. I would have not expected to find anything and indeed we found very little. What cultural material, historical, and pre-contact artifacts we found are not associated with any kind of intact cultural layer or historical layer; they are just messed up. There are some artifactual material in there, but nothing you can really do any kind of analysis on.

Ms. Wichman: So mostly backfill? Is what it looks like?

Mr. Ida: Yes, because they messed the place up big time once they put in the abutments.

Ms. Griffin: So for the purpose of this Commission, we don't need to be concerned about that aspect of the projects as they've been described.

Mr. Ida: Like I said, the ball is in SHPD's court right now. I can see where they might require us to do potentially maybe just a little bit more subsurface work, but…and there are some actual sites in these areas, but they are really kind of marginal stuff like historic culverts and stuff like that.

Ms. Griffin: Culverts may become a big discussion at some point in the not too distant future.

Mr. Ida: I know. Hopefully I will be retired by then. (Laughter in background)

Ms. Griffin: Thank you. Other questions of Gerald? I appreciate that. Thank you.

Other general questions for Kathleen or Nicole? No. We casually gave you comments as we went along, so if there are no other questions, then may I have a motion to receive this information and documentation as we have it?

Ms. Schneider: I make a motion that we receive this documentation as presented.

Mr. Chaffin Jr.: Second.

Ms. Griffin: Second, thank you. It's been moved and seconded that we receive the documentation on the bridges. Discussion? All in favor? (Unanimous voice vote) Opposed? None. The motion carries 6:0. Thank you all very much for waiting so long, for being together with the presentation.

Ms. Winterton: Thank you.

Ms. Chu: Thank you. Thank you for your time.

ANNOUNCEMENTS AND GENERAL BUSINESS MATTERS

Ms. Griffin: We skipped a couple of pieces, and they are short. The first is the Announcements and General Business Matters. There is an announcement about the SHA Conference.

Victoria, do you want to tell us about…?

Ms. Wichman: I do. I'm one (1) of the co-Chairs for the Society for Hawaiian Archaeology Annual Conference that's coming up October 9th, 10th, and 11th. We have invited the Planning Department to come free of charge, so everybody here is invited. Mr. Furfaro, you are more than welcome to come, please. Friday evening, starting at 5 o'clock, 5:00 until 8:00, we'll have the Kaua'i Museum for the first hour; we'll have it all to ourselves. We are having a stewardship award, Naki'ikeaho Stewardship Award, which will be presented to Hui Makaainana o Makana out in Hā'ena. Our keynote speaker will be Mayor Carvalho, and he'll be speaking on his preservation efforts on this island, which I thought that was very appropriate.

Ms. Griffin: So we need to listen to that.

Ms. Wichman: Please come. It's open to the public here at the Kaua'i Museum next Friday night actually, and then on Saturday and Sunday at the Wailua…at Smith's Family Tropical Paradise Luau Grounds, we'll be having our conference; it starts at 8 o'clock in the morning. We have many papers. I know Saturday is kind of a bad time for Kaua'i because it's the same day as the Queen Emmalani up in Kokee, but we do have a lot of interesting papers going on, on that day. We also have conference papers going on, on Sunday, the 11th, and I tried to put most of our Kaua'i papers on that morning, so the Kaua'i people that might've went up to the Queen Emmalani would have an opportunity to hear papers from Kaua'i. As I mentioned, it's free for the County to come;

anybody in the County is welcome to come as our complimentary guest. We anticipate about a hundred (100) archaeologists showing up for this. Very interesting papers; there are several papers on Nu'alolo Kai. There are papers on Kaua'i Nui Kuapapa, which is the ahupua'a and moku signage project here on the island; interesting papers. I could send to Shan our schedule-at-a-glance. Mary Jane Naone and I are the organizers. We are still in the process of doing the last minute T's and I's on our program, so that won't be ready until the conference, but I do have the schedule-at-a-glance which we can pass around or email.

Ms. Griffin: It's online, isn't it?

Ms. Wichman: It is online. Our site is hawaiianarchaeology.org.

Ms. Griffin: Did everybody get this 2015 conference…? So at the bottom of it, it shows the hawaiianarchaeology.org.

Ms. Wichman: Yes, it should have the website on there. So that should have all of the updated schedules as well. Food is included, so it's all good. There's a luau on Saturday night. You are all welcome to come to that as well.

Mr. Hull: Commissioner Wichman, just for clarification, do say KHPRC members that want to attend, do they just show up and they'll be comped? Or should they contact…?

Ms. Wichman: It would be nice if people would let me know, if they would RSVP because I need a headcount for the food. So it's always good for me to know, and then I can have name tags that show who your affiliation is as well. It's a really good opportunity for networking with archaeologists. These are archaeologists that are from across the State of Hawai'i, plus from New Zealand, California, Ohio, New York, and Alaska, several different states as well. We also have a workshop on Sunday afternoon on microfossils. It's kind of interesting. We have a professor from New Zealand who's coming up to give a paper, and since he came we thought we'd ask him to do one on microfossils and phytoliths, which has to do with plants, so it should be quite interesting.

Ms. Griffin: Thank you so much. And thanks to you and our SHPD archaeologist, Mary Jane Naone, they have really, from what I understand, have put this thing together and it should be a really fine conference that all of us should be able to take advantage of. Thank you.

Ms. Wichman: We're looking forward to it. Thank you. And specifically, I'd really like to invite you to the Mayor's keynote address on Friday night, and to honor Hui Maka'ainana o Makana. I think they are very worthy of honoring at this time. The Mayor is such a dynamic speaker that I think…he's so enthusiastic about his preservation efforts that I'm looking forward to hearing him.

Ms. Griffin: Thank you.

Ms. Wichman: Thank you.

Ms. Griffin: Any other announcements and general business matters?

UNFINISHED BUSINESS (Continued)

Re: Report from investigative committee members (Permitted Interaction Group) to discuss and explore strategies on informing the public and land owners on the State and National Register of Historic Places Nomination Process and Incentives for placing historic structures on to the National and State Register of Historic Places.

Ms. Griffin: Going on to C.2., the report from the PIG to discuss and explore strategies on informing the public. There is a printed report here at this point. One (1) of the two (2) possibilities that was on the report that we made last month was the possibility of putting the Shell Station on the National Register, so I just wanted to mention that.

There was also, and we read in the minutes, I think that we had been suggesting our little mini education for this or next month, and that's why I was a little short, Larry, when you talked about cost because one (1) of the opportunities we have…there are tax incentives. Buildings built before 1936 that are on the National Register can get a 20% tax credit on rehabilitation. There are things like that that if we know about, we will be able to discuss with applicants, people who come before us, and to be able to get the information out. I'm hoping that, Mr. Hull, if you can arrange perhaps if Ian Jung will come back and educate us on his time. Or we have some other expert who could give us that training next month; I think would be beneficial for us all.

Was there anything else from our PIG that…?

Re: Report from investigative committee (Permitted Interaction Group) to discuss and explore creating a Smart Phone Application to identify and highlight Historic properties on Kaua'i.

Ms. Griffin: Then on C.3., report from the Permitted Interaction Group to discuss the Smart Phone App.

Ms. Wichman: Nothing has been done, so I'd like to defer that. Kuulei and I have not gotten together. We were supposed to be talking with the Kaua'i Nui Kuapapa, and that hasn't happened as well.

Ms. Griffin: Okay, great.

Ms. Wichman: So defer it, please.

Ms. Griffin: If we can just continue that on the agenda for next month.

Re: Discussion on the status of the Certified Local Government.

Ms. Griffin: And then the status of the Certified Local Government, C.4. I guess the most important question is, when are the applications due for the next round of Certified Local Government funds?

Mr. Hull: It usually happens, I believe, in March. We'll double-check on that.

Ms. Griffin: So perhaps if you can have in your tickler file to put in maybe our December or January agenda to start discussing possible projects. Inventory always comes up, but we do have the possibility of National Register nominations that our PIG has discussed.

Mr. Hull: And on that topic, to use that as an agenda item to segue into the fact that concerning the current inventory that we have or don't have, it's ultimately, and I think the Commission, you are going to have to start wrestling with whether or not they want to do this, but ultimately there are issues that both the Department and SHPD have with the inventory that was produced, and perhaps that needs to be, essentially, pared down. Essentially what it looks like could be a possibility for you guys to put on the back burner and start thinking about is that, to utilize this body, essentially, to go through the list and establish an acceptable inventory, essentially. There is a fair amount of work associated with that, and meetings could be a bit longer, but the inventory list is one (1) of the most critical resources for this body and for the County, in terms of preservation and that is probably the only avenue because it lends itself to public discourse and transparency that would be acceptable, really.

Ms. Griffin: That's great. I think that if we can establish another PIG so that three (3) or four (4) of us can do it, and then we can bring it back to the Commission and get it more efficient. So if you will remind us or have it as an agenda item next month.

Anything else on the CLG? In that case, our next meeting will be next month, November 5th, and hope to see you…yes?

Mr. Long: I have a question and a thought.

Ms. Griffin: Yes.

Mr. Long: We came up with these four (4) neighborhoods to do a historic survey of. We came up with four (4) because that seemed like a reasonable amount of work for them, but we don't know if Pākalā will be included in that group because it's privately owned. My guess is that we likely will not receive permission from the owner to do that survey there. In my discussions with some of the Planning Staff, there was a concern that we didn't have enough neighborhoods on this list. So my consideration is, do we want to put Hanapēpē and Waimea, which were the other two (2) communities that we discussed that we were going to be doing as a tier 2, phase 2, next year. Do we want to put those on this list so that we don't end up with less work than we possibly could have?

Ms. Griffin: Thank you. And that was in my anxiousness to get everybody out of here, I didn't give enough attention to that part of the CLG. It was my understanding that Staff was going to

compile the list of the several different areas that we discussed. Did that happen? Or did it just go down to…?

Mr. Hull: As I understand, it just went to the four (4), but I have to double-check with Myles on that.

Ms. Griffin: Okay.

Mr. Hull: But we should make a note to bring that back at the next KHPRC meeting.

Ms. Griffin: Okay. Yes, Myles did send a message saying that they are going to start doing their field surveys in October and November, but we don't really know… And they will have students as interns doing the inventorying and so forth, and the field surveys, and that they will let the Planning Department know when they have a real schedule for here.

Mr. Long: In my conversation with Myles, he said that they are going to be relying on in-house Staff, students, and volunteers to do this survey work. I'm a member of the public; I would like to volunteer to be part of that team in that process.

Ms. Griffin: They specifically said that members of KHPRC are welcome to participate.

Mr. Hull: Okay. We'll have to look at that. I think having you as a volunteer would be wonderful, but then we'd also have to look at your ability to actually vote on that item though. Inadvertently you push yourself out of the decision-making process because you may have to recuse yourself, but Jodi can look into that.

Ms. Griffin: Thank you. Anything else on that agenda item?

SELECTION OF NEXT MEETING DATE AND AGENDA TOPICS (11/5/2015)

Ms. Griffin: Okay. Then the next meeting is set for November 5th, first Thursday. Is there a motion to adjourn?

Ms. Schneider: I make a motion.

Mr. Chaffin Jr.: Second.

Ms. Griffin: Thank you. All in favor? (Unanimous voice vote) Thank you. Thank you all for taking the time.

ADJOURNMENT

The meeting was adjourned at 5:45 p.m.

Respectfully Submitted,

Darcie Agaran
Commission Support Clerk

Date: 10/20/15

HISTORIC HAWAI'I FOUNDATION

December 9, 2015

Mr. J. Michael Will, P.E.
Project Manager
Federal Highway Administration
Central Federal Lands Highway Division
12300 West Dakota Avenue, Suite 380
Lakewood, CO 80228

Re: Mailihuna Intersection and Kapa'a Bridge Replacement Project (Project No. HI STP SR56(1)
Kawaihau District, Island of Kaua'i, Kapa'a and Kealia Ahupua'a
Tax Map Key: (4)4-6-014:024, (4)4-6-14:092 Kūhiō Highway Right-of-way, (4)4-6-14:090 Kūhiō Highway Right-of-way, (4)4-6-014:031, (4)4-6-014:033, (4)4-6-014:999 Mailihuna Road Right-of-way, (4)4-7-008:042, (4)4-7-003:999 Kūhiō Highway Right-of-way, (4)4-7-003:001

FHWA Reference: HFPM-16

Dear Mr. Will,

Thank you for referring the above mentioned project to Historic Hawai'i Foundation (HHF) under Section 106 of the National Preservation Act (NHPA). HHF received your letter of August 26, 2015 opening consultation, containing the scope of work and attached exhibits, including a Draft Archaeological Inventory Survey Report (AISR).

Undertaking: The project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapa'a Bridge.

APE and Eligibility: The Area of Potential Effect (APE) includes the Hawai'i Department of Transportation (HDOT) right-of-way and portions of adjacent private property as indicated on the maps submitted. The HDOT Historic Bridges Inventory determined that the Kapa'a Bridge is not eligible for listing on the National Register of Historic Places (NRHP) due to its status as covered by "Program Comments," referring to the Advisory Council on Historic Preservation Program Comment Issued for Streamlining Section 106 Review for Actions Affecting Post-1945 Concrete and Steel Bridges (2012).

Additionally, the AISR states:

> *The State Historic Bridge Inventory Evaluation (MKE Associates LLC/Fung Associates, Inc. 2013:3-6) describes Kapa'a Stream Bridge as "a typical post-war bridge and falls under program comments." The status of "program comments" refers to common post-war bridges built after 1945 covered by the Advisory Council program comments. Hawai'i has not yet coordinated the inventory results with their Federal Preservation Office, so is currently* **not** *operating under the Program Comments exceptions. (Emphasis added) [Draft AISR, p. 62]*

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We are concerned with the statement above that the apparent lack of eligibility for the Kapa'a Bridge falls under a provision that may not currently apply to Hawai'i. HHF therefore notes that as an issue that the FHWA/HDOT needs to resolve as part of this Section 106 consultation.

In addition, the ACHP Program Comment encourages the resolution of adverse effects that may result from replacement of existing common bridges.

The AISR identifies three additional cultural resources:

> *During the current AIS, two newly identified cultural resources were documented within the project area. The two cultural resources included SIHP # -2278, the Kapa'a Stream Bridge, and SIHP # -2279, a possibly historic water control complex. [Draft AISR, p. 78]*

> *Two cultural resources were [previously] identified within the project area including the Old Kaua'i Belt Highway bridge foundation (SIHP # -2075) and a new sub-feature of SIHP # -0789: Feature A, Kapa'a Stream Cane Haul Road Bridge (SIHP # -0789: Feature A, Sub-Feature 1). Two previously identified resources are remnants of an earlier bridge. [Draft AISR, pp. 75-76]*

All four resources have been evaluated as described in the Draft Archaeological Inventory Report and determined not eligible for listing on the Hawai'i or National Registers of Historic Places [Draft AISR p. 78]

The APE indicates that the project is adjacent to St. Catherine's Cemetery, but it is unclear if that historic property will be affected. Please confirm that the St. Catherine Cemetery will not be affected by the project.

HHF concurs with the APE and the determination that the other three identified sites are not eligible for NRHP listing. However, we request to be included as a consulting party to resolve the status of the existing Kapa'a Bridge, and, if affected by the project, St. Catherine's Cemetery.

Thank you for the opportunity to comment on this undertaking under the National Historic Preservation Act Section 106 and we look forward to continuing consultation.

Very truly yours,

Kiersten Faulkner, AICP
Executive Director

Copies via email:
FHWA: Meesa Otani
HDOT: Todd Nishioka, Donald Smith
SHPD: Jessica Puff, Susan Lebo, Mary Jane Naone

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

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July 8, 2016

In Reply Refer To:
HFPM-16

TO: THE HONORABLE SUZANNE CASE, CHAIRPERSON
DEPARTMENT OF LAND AND NATURAL RESOURCES

ATTN: SUZANNE CASE
STATE HISTORIC PRESERVATION OFFICER

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION
MAILIHUNA INTERSECTION AND KAPAA BRIDGE REPLACEMENT PROJECT
KAWAIHAU DISTRICT, KAUAI ISLAND, KAPAA AND KEALIA AHUPUAA
PROJECT NO. HI STP SR56(1)
TAX MAP KEY: (4)4-6-014:024 (POR.), 033 (POR.), 090 (POR.), 092 (POR.) KUHIO HIGHWAY AND MAILIHUNA ROAD RIGHTS-OF-WAY, 4-7-003:001 (POR.), AND 4-7-003:042 (POR.) KUHIO HIGHWAY RIGHT-OF-WAY

Dear Ms. Case:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to improve the intersection of Kuhio Highway 56 (HI-56) and Mailihuna Road and replace the Kapaa Stream Bridge north of the intersection. The project area is located near Mile Post (MP) 10 on HI-56 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. This letter is to initiate consultation with the State Historic Preservation Division (SHPD) under Section 106 in accordance with Title 36 of the *Code of Federal Regulations* (CFR), Section 800.3, and in accordance with HRS Chapter 6E-8.

Overview of the Undertaking

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapaa Bridge to maintain the Kapaa Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

This project would reconfigure the intersection of Mailihuna Road and Kuhio Highway by installing traffic signals with new turn lanes or by constructing a roundabout. The preferred alternative for intersection improvements will be determined following the Draft Environmental Assessment review period, as prescribed under HRS Chapter 343.

> The signalization alternative would modify the intersection to add full traffic and pedestrian signals and crosswalks. A left-turn pocket would be added to the northbound side of Kuhio Highway before Mailihuna Road. In addition, a right-turn pocket would be added to the southbound side of the highway.
>
> The roundabout alternative would construct a single circulating lane that would be 18 feet wide, with an inscribed circle that would be at least 130 feet in diameter. The roundabout would include splitter islands and marked crosswalks on each approach.

Both intersection alternatives would include drainage improvements at the southwest corner of the intersection to prevent flooding and control runoff during heavy rains.

Also under consideration is a walkway on the *mauka* side of the highway extending from the intersection to the north side of the bridge. An existing private driveway which has direct access to the intersection would be relocated so that access is from Mailihuna Road, approximately 110 feet *mauka* of the intersection.

The existing Kapaa Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-foot long bridge. The new structure would be approximately 4 feet wider, accommodating two 12-foot travel lanes, two 8-foot shoulders, and guardrails on both sides.

During construction, Kapaa Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed makai of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapaa Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT right-of-way and adjacent public and private properties. The Kapaa Bridge replacement would occur entirely within HDOT right-of-way. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas. Archaeological monitoring will be conducted for all initial ground disturbance and excavation activities during construction.

Area of Potential Effects

The archaeological and historic architectural Areas of Potential Effects (APE) are illustrated in the APE Aerial Imagery map, and include both temporary and permanent impact areas. The APE comprises 4.1 acres and includes the following TMKs: (4)4-6-014:024 (por.), 033 (por.), 090, (por.), 092 (por.) Kuhio Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 (por.), and

(4)4-7-008:042 (por.) Kuhio Highway Right-of-Way. Both of the intersection design alternatives are contained within the APE.

Determination of Eligibility

Pursuant to NHPA Section 106 and HRS Chapter 6E-8, a cultural resources investigation was performed within a field survey area that included the project's APE. The cultural resources investigation comprised an archival literature review and an archaeological inventory survey. The surveys identified four resources within the APE:

- SIHP #50-30-08-2278: Kapaa Stream Bridge
- SIHP #50-30-08-2279: Ditch and culvert
- SIHP #50-30-08-0789A Sub-Feature 1: Railroad bridge foundation
- SIHP #50-30-08-2075: Historic bridge foundation

The surveys did not identify any archaeological resources within the APE. FHWA believes all historic properties with potential to be affected by the undertaking have been identified

In discussion with the SHPD architecture branch in September, 2014, it was determined that the Kapaa Stream Bridge (SIHP #50-30-08-2278) is not eligible for listing on the NRHP or HRHP. At the request of the SHPD, architectural recordation was not conducted.

The historic ditch and culvert (SIHP #50-30-08-2279), railroad foundation (SIHP #50-30-08-0789A), and Kauai Belt Road, Kealia Bridge foundation (SIHP #50-30-08-2075) are all evaluated by Mason Architects as not eligible for listing on the NRHP or HRHP because they lack integrity of design, materials, workmanship, feeling, and association.

FHWA is in agreement with the recommendations of Mason Architects and has therefore determined that the Kapaa Stream Bridge (SIHP #50-30-08-2278), historic ditch and culvert (SIHP #50-30-08-2279), railroad foundation (SIHP #50-30-08-0789A), and Kauai Belt Road, Kealia Bridge foundation (SIHP #50-30-08-2075) are ***not eligible*** for the NRHP or HRHP.

Detailed information on the cultural, archaeological, and historical settings of the project area and the determination of eligibility are provided in the following study prepared for this project, included on the enclosed CD:

- Enclosure 1-APE Figures (USGS Map and Aerial Imagery)
- Enclosure 2- Kapaa Project Plans
- Enclosure 3- Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai
- Enclosure 4- Hawaii SHPD Historic Resource Inventory Form (Reconnaissance Level) for the Kapaa Stream Bridge
- Enclosure 5- Kauai Historic Preservation Review Commission Comments
- Enclosure 6- Historic Hawaii Foundation Comments

Determination of Effects

FHWA has determined that the undertaking will result in a ***No Historic Properties Affected*** finding in accordance with Federal regulations (36 CFR 800.5) and in a ***No Effect*** finding in

accordance with HAR §13-13-275-7, because no resources are eligible for inclusion in the NRHP or HRHP.

Consultations

Section 106 notice/advertisement was published in *The Garden Island* on August 29 2015. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area were asked to provide a response within 30 days of notification.

Section 106 consultation letters were sent to the following organizations as potential consulting parties:

- Office of Hawaiian Affairs
- Kauai Historic Preservation Review Commission
- Kauai-Niihau Island Burial Council
- Queen Deborah Kapule Hawaiian Civic Club
- Hookipa Network
- Historic Hawaii Foundation

The Kauai Historic Preservation Review Commission (KHPRC) met on October 1, 2015 to discuss the project and provided comments (in form of meeting minutes) on October 28, 2015. The KHPRC indicated they feel the Kapaa bridge is aesthetically significant and would like the new bridge railing to keep the same rhythm as the existing railing. General questions were asked regarding the presence of archaeological sites, and Cultural Surveys Hawaii, Inc., the archaeological consultant for the project, discussed the surveys performed and lack of resources identified in the project areas and the ongoing consultation with SHPD.

The Historic Hawaii Foundation (HHF) provided comments on the project in a letter dated December 9, 2015. HHF requested that FHWA resolve the applicability of the Program Comments exception to the Kapaa Bridge as part of the Section 106 process. Additionally, HHF requested confirmation that the St. Catherine's Cemetery adjacent to the project area will not be affected by the proposed project.

We did not receive responses from any of the other organizations.

Request for Concurrence

We request your concurrence with the Area of Potential Effects and Determinations of Eligibility and Effects. We would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380A, Lakewood, CO 80228-2583.

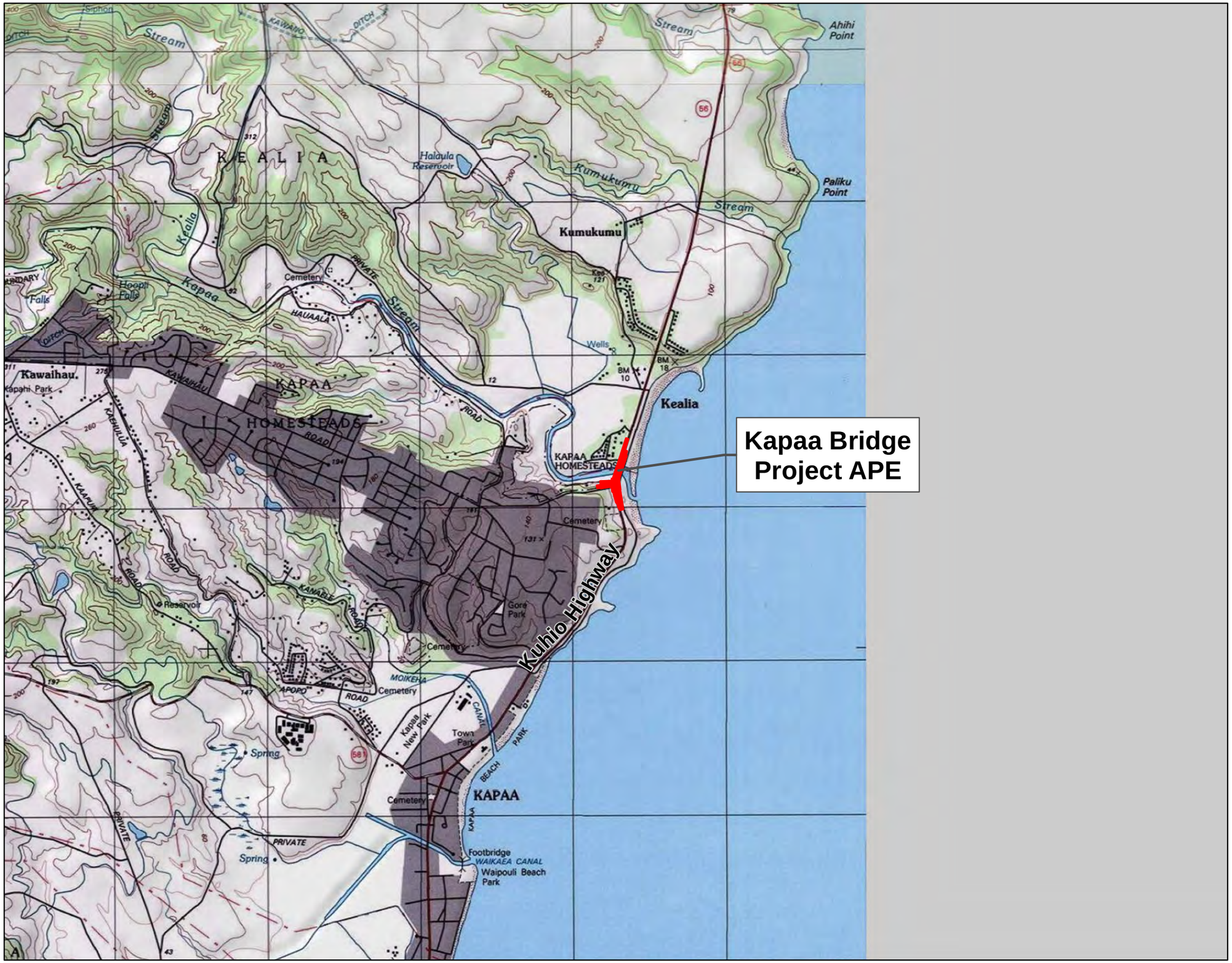
Please feel free to contact Thomas Parker, Environmental Protection Specialist, at (720) 963-3688, email: thomas.w.parker @dot.gov, if you have any questions. We look forward to working with the SHPO on these needed improvements.

Sincerely yours,

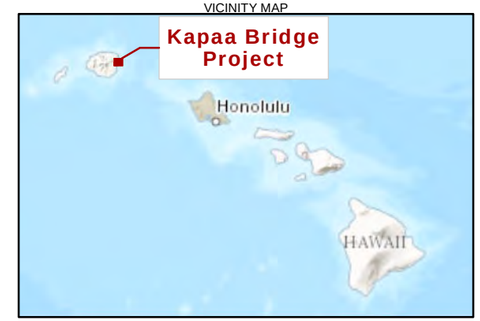
J. Michael Will, P.E.
Project Manager

Enclosures:
1. Area of Potential Effects (USGS Map and Aerial Imagery)
2. Bridge and intersection design drawings
3. On CD: Draft Archaeological Inventory Survey Report for the Kapaa Stream Bridge, Kapaa and Kealia Ahupuaa, Kawaihau District, Kauai
4. On CD: Hawaii SHPD Historic Resource Inventory Form (Reconaissance Level) for Kapaa Bridge
5. KHPRC Comments (October 28, 2015 meeting minutes of October 1, 2015 meeting)
6. Consulting party letter from HHF dated December 9, 2015

cc (with all enclosures on CD):
Christine Yamasaki, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Susan Lebo, SHPD
Mary Jane Naone, SHPD



VICINITY MAP



LEGEND

Area of Potential Effects

N

0 2,000 4,000

Feet

Notes:
1. Imagery Source: ESRI USA Topographic Maps

Kapaa Bridge Project
Area of Potential Effects (USGS Map)
Central Federal Lands - Kawaihau, Kauai

CH2MHILL

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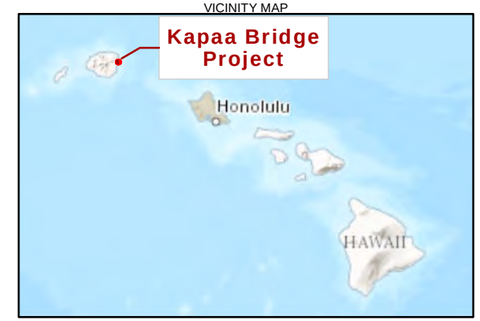
VICINITY MAP



LEGEND

- Existing Bridge
- Area of Potential Effects
- TMK
- Detour Route

N

0 200 400
Feet

Notes:
1. High-Res Imagery Source: Google Earth 12/16/2013
2. Low-Res Imagery Source: Digital Globe 08/26/2011
3. Imagery base map is not orthorectified; therefore project features may not properly align with the imagery.

Kapaa Bridge Project
Area of Potential Effects (Aerial Imagery)
Central Federal Lands - Kawaihau, Kauai

CH2MHILL

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DAVID Y. IGE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
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SUZANNE D. CASE
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FIRST DEPUTY

JEFFREY T. PEARSON
DEPUTY DIRECTOR - WATER

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CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

November 7, 2016

IN REPLY REFER TO:
Log No. 2016.01695
Doc. No. 1611KM04
Concur No Historic Properties Affected

Thomas Parker, Environmental Protection Specialist
Federal Highway Administration
Central Federal Lands Highway Division
12300 W. Dakota Ave., Suite 280
Lakewood, CO 80228

Dear Mr. Parker,

SUBJECT: **Chapter 6E-8 and National Historic Preservation Act Section 106 Review –**
Federal Highway Administration (FHWA) Central Federal Lands Highways Division (CFLHD)
Kapaʻa Stream Bridge Replacement – Ref. No. DTFH68-13-R-00027
Kapaʻa and Keālia Ahupuaʻa, Puna District, Island of Kauaʻi
TMK: (4) 4-6-014: 024, 033, 090, 092; (4) 4-7-003:001 por.; and (4) 4-7-008:042 por.

On July 14, 2016, the State Historic Preservation Division (SHPD) received a submittal from Federal Highway Administration (FHWA) Central Federal Lands Highways Division (CFLHD) for the Kapaʻa Stream Bridge Replacement Project in Kapaʻa and Keālia Ahupuaʻa, Puna District, Kauaʻi Island. The submittal initiated consultation with the State Historic Preservation (SHPD); provided an overview of the undertaking; described the area of potential effects (APE); provided copies of the draft architectural and archaeological inventory surveys; summarized Section 106 consultation; provided a determination of eligibility for the four historic properties identified in the APE; and requested the State Historic Preservation Officer's (SHPO's) concurrence with a project effect determination of *No Historic Properties Affected* (pursuant to 36 CFR 800.5) and a determination of *No Effect* (pursuant to HAR §13-275-7), as none of the historic properties within the APE are eligible for inclusion in the National Register of Historic Places (NRHP) or in the Hawaii Register of Historic Places (HRHP).

The proposed project involves land owned by the State of Hawaii and the APE totals 4.9 acres. The proposed undertaking involves the complete replacement of the existing bridge, construction of a temporary bypass bridge, installation of a new bridge structure, and reconfiguration of the Kūhiō Highway and Mailihuna Road intersection. The new bridge structure is anticipated to accommodate two 12-ft lanes with 8-ft shoulders. Ground disturbance will include excavations for the removal of the existing bridge, reconfiguration of the intersection, traffic improvements, drainage improvements, and the new bridge structure.

The AIS completed in support of the proposed undertaking newly identified two historic properties and relocated two previously identified sites (Belluomini et al. 2016). The two newly identified sites include the Kapaʻa Stream Bridge (Site 50-30-08-2278) and an earthen ditch and concrete culvert (Site 50-30-08-2279), and the previously identified sites include remnant abutments of the former Kauaʻi Belt Road (Site 50-30-08-2079) and a remnant of the former Keālia Stream Bridge Crossing (Site 50-30-08-789A Subfeature 1). The AIS report indicates that each of these sites is significant only under Criterion "d" per Hawaii Administrative Rules (HAR) §13-275-6, and that none are eligible for inclusion in either the NRHP or the HRHP. The AIS resulted in project effect recommendations of "no historic properties affected" pursuant to 36 CFR 800.5 and HAR §13-275-6, respectively. The AIS report indicates each of the historic properties has been sufficiently documented, and recommends no further archaeological work or architectural recordation. However, it further states, that per CFLHD, precautionary archaeological monitoring will be implemented as a good faith effort best management practice, based on community consultation. Archaeological monitoring will occur under a mitigation plan developed for the Kapaa

Stream Bridge Replacement Project and the other two related FHWA/CFLHD bridge projects on Kaua‘i (the Hanapēpē Bridge Replacement Project and the Bridge 7E Replacement Project). SHPD received a final revised draft of the AIS on November 6. The final AIS report was accepted by SHPD on November 6, 2016 (Log No. 2016.01695, Doc. No. 1610KM11).

In your submittal, CFLHD has determined that the Kapa‘a Stream Bridge (Site 2278), the ditch and culvert (Site 2279), the Belt Road remnants (Site 2079), and Keālia Bridge remnants (Site 789A Subfeature 1) are not eligible for listing in the either the NRHP or HRHP. The CLFHD has determined that the proposed undertaking will result in “no historic properties affected” per NHPA Section 106, and “no historic properties affected” per HRS §6E-8.

Based on the above information, the **State Historic Preservation Officer (SHPO) concurs with the CFLHD’s determination of “no historic properties affected”** for the purposes of NHPA Section 106. No NRHP-eligible historic properties occur in the APE.

The SHPD has reviewed the undertaking and **concurs with your determination of “no historic properties affected”** for the purposes of HRS §6E-8. Each of the significant historic properties in the APE have been adequately documented.

SHPD looks forward to receiving a mitigation plan that includes interim protection measures and that meets the requirements of HAR §13-279-4 for review and acceptance prior to initiation of the project.

CFLHD is the office of record for these undertakings. Please maintain a copy of this letter with your environmental review record for these undertakings.

Please contact Jessica Puff, Architectural Historian, at (808) 692-8023 or at Jessica.L.Puff@hawaii.gov for questions regarding architectural resources. Please contact Susan A. Lebo, Archaeology Branch Chief, at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov for questions regarding archaeological resources or this letter, or if there is a change in the scope of work of this project.

Mahalo,

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Michael Will, FHWA (Michael.Will@dot.gov)
Kevin Ito, HDOT (Kevin.Ito@hawaii.gov)
Todd Nishioka, HDOT (Todd.Nishioka@hawaii.gov)
Christine Yamasaki, HDOT (Christine.Yamasaki@hawaii.gov)

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CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

December 30, 2016

IN REPLY REFER TO:
Log No. 2016.02863
Doc. No. 1612KM16
Architecture, Archaeology

Thomas Parker, Environmental Protection Specialist
Federal Highway Administration
Central Federal Lands Highway Division
12300 W. Dakota Ave., Suite 280
Lakewood, CO 80228

Dear Mr. Parker:

SUBJECT: **Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review – Federal Highways Administration and Central Federal Lands Highway Division Archaeological Mitigation Plan with Archaeological Monitoring for Bridge 7E, Hanapēpē River Bridge, and Kapaʻa Stream Bridge Replacement Projects Koloa Ahupuaʻa, Koloa District, Island of Kauaʻi TMK: (4) 1-9-007, 1-9-010, 2-7-001, 2-7-002, 4-6-014, 4-7-003, 4-7-008; various parcels**

Thank you for the opportunity to review the draft plan titled Mitigation Plan for the Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) Contract DTFH68-13-R-00027 on Kauaʻi, for the Bridge 7E, Hanapēpē River Bridge, and Kapaʻa Stream Bridge Replacement Projects, TMK: (4) 1-9-007, 1-9-010, 2-7-001, 2-7-002, 4-6-014, 4-7-003, 4-7-008 (various parcels) (Belluomini and Hammatt, December 2016). The State Historic Preservation Division (SHPD) received this submittal on September 1, 2016. On November 9, 2016, SHPD staff (Susan Lebo, Kimi Matsushima, and Jessica Puff), CFLHD (Thomas Parker), and Cultural Surveys Hawaii (CSH) staff (Scott Belluomini and David Shideler) met to discuss the site significance assessments, register eligibility determinations, project effect recommendations, and mitigation recommendations. Subsequently, SHPD received a revised draft plan via email on December 8, 2016.

This mitigation plan was prepared by CSH on behalf of the Hawaii Department of Transportation (HDOT) and the Federal Highways Administration (FHWA) Central Federal Lands Highway Division (CFLHD); FHWA/CFLHD is the lead federal agency. The area of potential effect (APE) totals 10.04 acres. The proposed bridge replacement projects involve land owned by the State of Hawaii. The proposed projects are subject to Hawaii Revised Statutes (HRS) 6E historic preservation review. The projects are expected to receiving funding from FHWA (Contract DTFH68-13-R-00027) and are determined to be a federal undertaking as defined in 36 CFR 800.16(y) and is subject to the National Historic Preservation Act (NHPA) Section 106 process.

All three proposed undertakings involve demolishing the existing bridge and constructing a new bridge that meets current safety standards. The new bridges will vary in length and width, and overall design. The replacement will also involve constructing a temporary bypass bridge in the interim period. Ground disturbance will likely include work for the demolition and installation of the bridge replacements including footings, foundations, retaining walls, grading, and any associated utility work.

Each of the aforementioned bridge projects have had an archaeological inventory survey (AIS) completed as part of the historic preservation review process. Table 1 summarizes the results of the AIS studies and recommendations:

Table 1. Summary of AIS findings, determinations, and recommendations for various bridge replacement projects

Reference	Project	Historic Properties identified	Significance Assessments Per HAR §13-275-6	National Register Eligibility	Effect Recommendation	Mitigation Recommendation
Yucha et al. 2016	Bridge 7E	Bridge 7E (Site 50-30-10-2285)	Not assessed	Not Eligible	HRS 6E – no historic properties affected Section 106 – no adverse effect	No further archaeological work; adequately documented
		Earthen ditch (Site 50-30-10-2286)	Criterion "d"	Eligible		
Belluomini et al. 2016a	Hanapēpē River Bridge	Hanapēpē River Bridge (Site 50-30-09-2280)	Criteria "a" and "c"	Eligible	HRS 6E – effect with proposed mitigation Section 106 – adverse effect	Development of MOA; HAER documentation; Interpretive materials for Sites 2280 and 2283; establishment of best management practices (BMPs) for removal of Site 2283; protection of nearby historic properties; and precautionary archaeological monitoring
		Retaining wall (Site 50-30-09-2281)	Criterion "d"	Not Eligible		
		Retaining wall (Site 50-30-09-2282)	Criterion "d"	Not Eligible		
		Basalt berm (Site 50-30-09-2283)	Criterion "a"	Eligible		
Belluomini et al. 2016b	Kapaʻa Stream Bridge	Kapaʻa Stream Bridge (Site 50-30-08-2278)	Criterion "d"	Not Eligible	HRS 6E and Section 106 – no historic properties affected	Precautionary archaeological monitoring
		Earthen ditch and culvert (Site 50-30-08-2279)	Criterion "d"	Not Eligible		
		Kauaʻi Belt Road remnants (Site 50-30-08-2079)	Criterion "d"	Not Eligible		
		Keālia Stream Bridge Crossing remnant (Site 50-30-08-789A)	Criterion "d"	Not Eligible		

The Yucha et al. (2016) AIS for Bridge 7E was accepted by SHPD on March 22, 2016 (Log No. 2016.00576, Doc. No. 1603MN15). The Belluomini et al. (2016a) AIS for Hanapēpē River Bridge was accepted by SHPD on November 7, 2016 (Log No. 2016.01214, Doc. No. 1611SL03) and the Belluomini et al. (2016b) AIS for Kapaa Stream Bridge was accepted on November 6, 2016 (Log No. 2016.01695, Doc. No. 1610KM11).

The archaeological mitigation plan was prepared in support of the AIS mitigation recommendations. The mitigation plan includes precautionary archaeological monitoring for all three bridge replacement projects, and outlines protective BMPs and interim protection for the basalt berm (Site 2283) within the Hanapēpē Bridge APE. Although no precautionary archaeological monitoring was recommended for the Bridge 7E replacement project in the AIS, the monitoring provisions within this mitigation plan shall apply to Bridge 7E in the event of the inadvertent discovery of a significant historic property or other condition warranting archaeological monitoring. The mitigation plan stipulates the following monitoring provisions:

- Pre-construction briefing will be conducted prior to construction activities;
- On-site archaeological monitoring for all ground disturbing activities
- The archaeological monitor shall have the authority to temporarily halt all activity in the area in the event of a potential historic property being identified, or to record archaeological information for cultural deposits or features;

- In the event that non-burial historic properties are identified, SHPD will be notified and provisions outlined in Hawaii Administrative Rules (HAR) §13-279will be followed; and
- If human remains are identified, work will cease in the vicinity, SHPD will be notified, and compliance and procedures outlined in HAR §13-300-40 will be followed.

Documentation of non-burial cultural deposits will include recording stratigraphy using USDA soil descriptions, recordation of feature contents through excavation or sampling of features, representative scaled profile drawings, photo documentation, and appropriate laboratory analysis of collected samples and artifacts. Departure from these provisions will occur only in consultation with and concurrence from SHPD.

(1) The mitigation plan also stipulates the following BMPs for the basalt berm (Site 2283):
    a. Construction methods shall not compromise the overall integrity of the berm;
    b. The contractor shall bridge over the berm to avoid impacting it and the remaining portion shall be protected with interim protection measures; and
    c. Any damage or removal shall be repaired with replacement in kind.
(2) Documentation of the Hanapēpē River Bridge (Site 2280) shall be equivalent to Historic American Engineering Record (HAER) Level II and will include:
    a. Written data;
    b. Plan map and/or sectional drawings illustrating the construction material and details; and
    c. Photographic documentation of the design and condition of the basalt berm (Site 2283) prior to and after project work
(3) All documentation shall be prepared by qualified individuals meeting the Secretary of the Interior's Professional Qualification Standards;
(4) Interpretive materials for the Hanapēpē River Bridge (Site 2280) and basalt berm (Site 2283) shall be determined in consultation with SHPD and installed appropriately; any character defining features of Site 2280 shall be salvaged for use in the interpretive area; and
(5) All the additional documentation, along with proposed bridge design plans shall be submitted to SHPD.

The Hanapēpē River Bridge replacement project, although part of this mitigation plan, shall still require the development of a Memorandum of Agreement (MOA) to address the adverse effects of the undertaking.

The revisions adequately address the issues and concerns identified in our earlier correspondence and during the November 9, 2016. The report meets the requirements of HAR §13-279 and the *Secretary of Interior's Standards for Archaeological Documentation*. **It is accepted**. Please send one hardcopy of the document, clearly marked FINAL, along with a copy of this review letter and a text-searchable PDF version, to the Kapolei Office, attention SHPD Library.

Please contact Jessica Puff, Architectural Historian, at (808) 692-8023 or at Jessica.L.Puff@hawaii.gov for questions regarding architectural resources. Please contact Susan A. Lebo, Archaeology Branch Chief, at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov for questions regarding archaeological resources or this letter, or if there is a change in the scope of work for this project.

Aloha,

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: David Shideler, Cultural Surveys Hawaii (dshideler@culturalsurveys.com)
Michael Will, FHWA (Michael.Will@dot.gov)

Final

Mitigation Plan for the Federal Highway Administration/ Central Federal Lands Highway Division (FHWA/CFLHD) Contract DTFH68-13-R-00027 on Kaua‘i, for the Bridge 7E, Hanapēpē River Bridge, and Kapa‘a Stream Bridge Replacement Projects TMKs: [4] 1-9-007, 1-9-010, 2-7-001, 2-7-002, 4-6-014, 4-7-003, and 4-7-008 (various parcels)

Prepared for
CH2M HILL
and on behalf of the
Federal Highway Administration (FHWA)
Central Federal Lands Highway Division (CFLHD)

Prepared by
Scott A. Belluomini, B.A.
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: KOLOA 77)

January 2017

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Management Summary

Reference	Mitigation Plan for the Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) Contract DTFH68-13-R-00027 on Kaua‘i, for the Bridge 7E, Hanapēpē River Bridge, and Kapa‘a Stream Bridge Replacement Projects, TMKs: [4] 1-9-007, 1-9-010, 2-7-001, 2-7-002, 4-6-014, 4-7-003, and 4-7-008 (various parcels) (Belluomini and Hammatt 2017)
Date	January 2017
Project Number(s)	Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) Contract DTFH68-13-R-00027 Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KOLOA 77
Investigation Permit Number	CSH will complete the archaeological monitoring fieldwork under archaeological fieldwork permit number 16-26 issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	FHWA/CFLHD; Hawai‘i Department of Transportation (HDOT); SHPD
Project Proponent	FHWA/CFLHD, HDOT
Project Funding	FHWA/CFLHD, HDOT
Land Jurisdiction	Private; HDOT; State Department of Education (DOE); County of Kaua‘i
Land Ownership	Bridge 7E: Kalihi Mountain Farms; Eric A. Knudsen Trust; HDOT Hanapēpē River Bridge: HDOT Kapa‘a Stream Bridge: State of Hawai‘i; HDOT; DOE; County of Kaua‘i; and Roman Catholic Church
Project Location	Bridge 7E: The proposed project is located along Kaumuali‘i Highway, Route 50 (HI-50), approximately 800 feet (ft) west of the Maluhia Road/Kaumuali‘i Highway intersection within Kōloa Ahupua‘a, Kōloa District, Kaua‘i. The project area is depicted on a portion of the 1996 Koloa U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle. Hanapēpē River Bridge: The project area is located along Kaumuali‘i Highway near mile marker 16 where the highway crosses over the Hanapēpē River. The project area encompasses the Hanapēpē River Bridge over Hanapēpē River, a portion of Iona Road and Kaumuali‘i Highway, areas on either side of Kaumuali‘i Highway, and Hanapēpē River. The project area is depicted on a portion of the 1996 Hanapēpē USGS 7.5-minute topographic quadrangle. Kapa‘a Stream Bridge: The project area is located near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The project area is depicted on a portion of the 1996 Kapaa USGS topographic quadrangle.

Project Description	Bridge 7E: The proposed project would replace the existing Bridge 7E and its roadway approaches to maintain the stream crossing on HI-50 as a safe and functional component of the regional transportation system for highway users. The existing structure, which is a double box culvert, would be demolished and replaced with a single-cell box culvert. Per the findings of Yucha et al. 2016, the bridge is not considered a significant historic property and is not eligible for inclusion in the National Register of Historic Places (NRHP) or the Hawai‘i Register of Historic Places (HRHP). The proposed new bridge structure would be approximately 9.1 meters (m) (30 ft) long and 13.4 m (44 ft) wide, to accommodate two 3.7-m (12-ft) travel lanes with 2.4-m (8-ft) shoulders and guardrails on both sides. The roadway approaches to the bridges would be widened, which would require extending embankment slopes. During construction, Bridge 7E would be closed to traffic, and a temporary bypass road would be constructed to maintain traffic over the stream. A low-water crossing upstream of the existing bridge is recommended for the temporary bypass road because streamflow is relatively low. The proposed improvements would occur within the existing HDOT right-of-way (ROW) and would extend approximately 6.1 to 15.2 m (20 to 50 ft) into adjacent private property. Construction parcels (temporary easements) would be needed from the privately owned parcel *mauka* (toward the mountains) of the bridge. Permanent easements would be acquired on the *makai* (seaward) side for maintenance of grading and drainage improvements. Hanapēpē River Bridge: The proposed project would replace the Hanapēpē River Bridge and its approaches to maintain the Hanapēpē River crossing on HI-56 as a safe and functional component of the regional transportation system for highway users. The Hanapēpē Bridge is eligible for inclusion in the NRHP. The existing Hanapēpē Bridge would be demolished and replaced with a new bridge. Kapa‘a Stream Bridge: The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapa‘a Bridge to maintain the Kapa‘a Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users. The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered. The first is a traffic signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-ft northbound left turn lane and a 145-ft southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety

	and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection. The existing Kapa‘a Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-ft long bridge. The new structure would be approximately 4 ft wider, accommodating two 12-ft travel lanes, two 8-ft shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for inclusion in the NRHP. During construction, Kapa‘a Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed *makai* of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapa‘a Stream. The adjacent pedestrian bridge would not be impacted. The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT ROW and adjacent private property. The Kapa‘a Bridge replacement would occur entirely within HDOT ROW. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.
Project Acreage and Area of Potential Effect (APE)	Bridge 7E: The project area includes approximately 2.24 acres (0.91 hectares). The APE for the current project is defined as the entire 2.24-acre (0.91-hectare) project area. Hanapēpē River Bridge: The project area includes approximately 2.9 acres (1.2 hectares). The APE for the current project is defined as the entire 2.9-acre (1.2-hectare) project area. Kapa‘a Stream Bridge: The project area includes approximately 4.9 acres (2.0 hectares). The APE for the current project is defined as the entire 4.9-acre (2.0-hectare) project area.
Project-Related Disturbance	Ground disturbing activity anticipated for this project consists of excavation activities associated with replacement of the existing bridges as well as the construction of temporary bypass roads during the replacement of the existing bridge. Grading and grubbing on the road shoulder, and drilling and mechanical excavation for posts, anchor blocks and cables, and extension of the embankment slopes is also likely. Some of the guardrail post installation will be in the form of hammering the posts into the ground. Where ground disturbance from drilling and excavation occurs, monitoring will document cultural materials, deposits or stratigraphy.

Historic Preservation Regulatory Context	An archaeological inventory survey (AIS) was conducted by CSH for the Bridge 7E Replacement project (Yucha et al. 2016). An AIS was conducted by CSH for the Hanapēpē River Bridge Replacement project (Belluomini et al. 2016a). An AIS was conducted by CSH for the Kapa‘a Stream Bridge Replacement project (Belluomini et al. 2016b). At the request of the project proponent, precautionary archaeological monitoring is proposed for the three Kaua‘i bridge replacement projects part of FHWA/CFLHD Contract: DTFH68-13-R-00027 (Bridge 7E, Hanapēpē River Bridge, and Kapa‘a Stream Bridge). This mitigation plan complies with Federal and Hawai‘i State historic preservation review legislation and was prepared in consideration of the *Secretary of the Interior's Standards for Archaeology and Historic Preservation* and fulfills the requirements of HAR §13-279-4. Due to Federal funding, the bridge replacement projects are a Federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA), and Section 4(f) of the Department of Transportation Act. As an HDOT project within a State ROW, the projects are also subject to Hawai‘i State historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §6E-8 and HAR §13-13-275, respectively). If human skeletal remains are discovered during the monitoring program, their identification and treatment will comply with Hawai‘i State burial law (HRS §6E-43 and HAR §13-13-300) and Federal burial legislation (Native American Graves Protection and Repatriation Act [NAGPRA]).
Historic Properties Potentially Affected	Bridge 7E: One significant historic property was identified during the AIS for the Bridge 7E Replacement project and evaluated as eligible of listing on the NRHP (Yucha et al. 2016): State Inventory of Historic Places (SIHP) # 50-30-10-2286, an earthen ditch, is assessed as significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) and recommended eligible for inclusion in both the Hawai‘i and National Registers under Criterion D. The historic property possesses integrity of setting, location, design, and materials. No further archaeological work is recommended for the Bridge 7E Replacement project. Each of the significant historic properties have been adequately documented. At the request of the project proponent, precautionary archaeological monitoring is planned as a good faith effort, based on community consultation.

	Hanapēpē River Bridge: Four significant historic properties were identified during the AIS for the Hanapēpē River Bridge Replacement project (Belluomini et al. 2016a). Two historic properties, SIHP # 50-30-09-2280 (Hanapēpē River Bridge) and SIHP # 50-30-09-2283 (earthen/basalt berm), were evaluated as eligible for inclusion in the NRHP: SIHP # -2280 is the Hanapēpē River Bridge. SIHP # -2280 is assessed as significant pursuant to HAR §13-275-6 under Criterion a (be associated with events that have made an important contribution to the broad patterns of our history) for its associations with the development of Kaua‘i’s Belt Road system and the significant role the bridge played in the history of Hanapēpē town, and Criterion c (embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value) as an excellent example of later developments in concrete bridge construction on Kaua‘i and represents the “work of a master.” Ruzicka (2016) evaluated SIHP # -2280 as eligible for listing in the NRHP and the HRHP under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history), for its associations with the development of Kaua‘i’s Belt Road system and the significant role the bridge played in the history of Hanapēpē town, and Criterion C (embodies the distinctive characteristics of a type, period, or method of construction, or that represent that work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction) as an excellent example of later developments in concrete bridge construction on Kaua‘i and represents the “work of a master” (William R. Bartels, Chief Highway Bridge Engineer for the Territorial Highway Department in Ruzicka 2016). SIHP # 50-30-09-2281 is a concrete-capped basalt and mortar retaining wall. SIHP # -2281 was assessed as significant pursuant to HAR §13-275-6 under Criterion d only (have yielded, or is likely to yield, information important for research on prehistory or history). It retains integrity of location, setting and materials. SIHP # -2281 has been adequately documented. Ruzicka (2016) evaluated SIHP # -2281 as not eligible for inclusion in the NRHP or in the HRHP pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively. SIHP # 50-30-09-2282 is a concrete-capped, dry-stacked basalt stone retaining wall. SIHP # -2282 was assessed as significant only under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). It retains integrity of location, setting and materials. SIHP # -2282 has been adequately documented. Ruzicka (2016) evaluated SIHP # -2282 as not eligible for inclusion in the NRHP and in the HRHP pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.

	SIHP # 50-30-09-2283 is a large earthen and piled basalt stone berm. SIHP # -2283 was assessed as significant pursuant to HAR §13-275-6 under Criterion a (be associated with events that have made an important contribution to the broad patterns of our history) for its association with community planning, the development of Hanapēpē and with federal flood control projects. It retains integrity of location, design, setting, materials, feeling, and association. Ruzicka (2016) evaluated SIHP # -2283 as eligible for inclusion in the NRHP and the HRHP under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history) “for its association with community planning and the development of Hanapepe as well as with federal flood control projects” (Ruzicka 2016). Architectural recordation in the form of Historic American Engineering Record (HAER) documentation is recommended for the two historic properties evaluated as eligible for inclusion in the NRHP, SIHP # -2280 (Hanapēpē River Bridge) and SIHP # -2283 (earthen/basalt berm). This will be done in consultation with the National Park Service HABS/HAER/HALS Coordinator in the Pacific West Regional Office, and will be completed by architects, historians, photographers and/or other professionals meeting the Secretary of the Interior’s Professional Qualifications Standards (36 CFR Part 61). Interpretive materials are to be installed in consultation with the SHPD for SIHP # -2280 (bridge) and SIHP # -2283 (earthen/basalt berm). Character defining features of SIHP # -2280 will be salvaged for use in the interpretive signage/kiosk area. During the removal of the small portion of the berm (SIHP # -2283), best management practices (BMP) will be used to avoid compromising the existing integrity of this historic property by ensuring the area where material is removed is left structurally stable and repaired with in-kind materials. Any historic properties directly adjacent to the APE shall be avoided and appropriately protected in place with construction fencing for the duration of the replacement project. No further archaeological historic preservation work was recommended. SIHP # -2281 and SIHP # -2282 have been adequately documented. At the request of the project proponent, precautionary archaeological monitoring is planned as a good faith effort, based on community consultation. Kapa‘a Stream Bridge: Four significant historic properties were identified during the AIS for the Kapa‘a Stream Bridge Replacement project (Belluomini et al. 2016b). No historic properties were evaluated as NRHP-eligible: In consultation with the SHPD architecture branch, it was determined that the Kapa‘a Stream Bridge (SIHP # 50-30-08-2278) is not eligible for inclusion in the NRHP or the HRHP pursuant to 36 CFR 60.4 and HAR

	§13-198-8. The bridge is significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). The SHPD architecture branch determined the bridge had been adequately documented. Thus, no architectural recordation was conducted. SIHP # -2279, a possibly historic water control complex, was assessed as significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history), and is evaluated as not eligible for inclusion in both the NRHP and the HRHP under Criterion D. This historic property possesses integrity of location, design, and materials. SIHP # -0789A, Sub-Feature 1 consists of the remnant portions of the original Keālia Stream Bridge Crossing initially documented by Perzinski et al. (2000) and further documented by Bushnell et al. (2003). Perzinski et al. (2000) and Bushnell et al. (2003) assessed the bridge crossing remnants (SIHP # -789A, Feature 1) as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. The bridge crossing remnants lack integrity of design, workmanship, setting, feeling and association. Thus, the bridge crossing remnants (SIHP # -789A, Feature 1) are evaluated as not eligible for inclusion in the NRHP or in the HRHP pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively. SIHP # -2075 consists of the remnant abutments of the former Kaua‘i Belt Road, Keālia Bridge initially documented by Bushnell et al. (2003). Bushnell et al. (2003) assessed SIHP # -2075 as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. The bridge remnants lack integrity of design, materials, workmanship, feeling and association. Thus, the old belt highway bridge remnants (SIHP # -2075) are evaluated as not eligible for inclusion in the NRHP or the HRHP pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively. No further archaeological work was recommended. Each of the significant historic properties has been adequately documented. At the request of the project proponent, precautionary archaeological monitoring is planned as a good faith effort, based on community consultation.

Monitoring Recommendations	Archaeological monitoring, a form of data recovery, is being conducted as a good faith effort to identify any potentially unidentified subsurface historic properties. This will include on-site monitoring for the entire project area of the three pre-determined bridge replacement projects (Bridge 7E, Hanapēpē River Bridge, and Kapa‘a Stream Bridge) for all ground disturbing activities. This recommendation was based on the results of community consultation and is not considered mitigation for adverse effects to any historic properties identified during the projects' AISs.
Interim Protection Measures	In addition to archaeological monitoring, architectural recordation will be conducted as a good faith effort to minimize incidental impacts to NRHP-eligible historic properties, SIHP # -2280 (Hanapēpē River Bridge) and SIHP # -2283 (earthen/basalt berm), during project construction. In addition, interim protection measures and BMPs were recommended to minimize any adverse effect to SIHP # -2283 (earthen/basalt berm) and SIHP # -2284 (retaining wall). HAR §13-277-5 states that "Interim protection measures shall protect the significant historic property and its buffer zone during construction activities." To minimize the potential for this incidental damage, the protection measures outlined in this mitigation plan shall be implemented (see Section 3).

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Section 1 Introduction

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this mitigation plan for the FHWA/CFLHD Contract DTFH68-13-R-00027 on Kaua‘i, for the Bridge 7E, Hanapēpē River Bridge, and Kapa‘a Stream Bridge Replacement projects, TMKs: [4] 1-9-007, 1-9-010, 2-7-001, 2-7-002:001, 4-6-014, 4-7-003, and 4-7-008 (various parcels).

Ground disturbing activity anticipated for the projects consists of excavation activities associated with replacement of the existing bridges as well as the construction of temporary bypass roads during the replacement of the existing bridges. Grading and grubbing on the road shoulder, and drilling and mechanical excavation for posts, anchor blocks and cables, and extending the embankment slopes is also likely. Some of the guardrail post installation will be in the form of hammering the posts into the ground. Where ground disturbance from drilling and excavation occurs, monitoring will document cultural materials, deposits or stratigraphy.

1.1 Bridge 7E Replacement Project

The Bridge 7E Replacement project is located in Kōloa Ahupua‘a, Kōloa District, Kaua‘i, TMKs: [4] 2-7-001:004 por., and 2-7-002:001 por. Kaumuali‘i Highway Right-of-Way (ROW). The project is along Kaumuali‘i Highway, Route 50 (HI-50), approximately 800 feet (ft) west of the Maluhia Road/Kaumuali‘i Highway intersection. The project area includes approximately 0.91 hectares (2.24 acres). The area of potential effect (APE) for the current project is defined as the entire 0.91-hectare (2.24-acre) project area. The project area is depicted on a portion of the 1996 Koloa U.S. Geological Survey (USGS) topographic quadrangle (Figure 1), tax map plats (Figure 2 and Figure 3), and an aerial photograph (Figure 4).

1.1.1 Project Background

The proposed project would replace the existing Bridge 7E and its roadway approaches to maintain the stream crossing on HI-50 as a safe and functional component of the regional transportation system for highway users. The existing structure would be demolished and replaced with a single-cell box culvert. Per the findings of Yucha et al. 2016, the bridge is not considered a significant historic property and is not eligible for inclusion in the National Register of Historic Places (NRHP) or the Hawai‘i Register of Historic Places (HRHP).

The proposed new bridge structure would be approximately 9.1 meters (m) (30 ft) long and 13.4 m (44 ft) wide, to accommodate two 3.7-m (12-ft) travel lanes with 2.4-m (8-ft) shoulders and guardrails on both sides. The roadway approaches to the bridges would be widened, which would require extending embankment slopes. During construction, Bridge 7E would be closed to traffic and a temporary bypass road would be constructed to maintain traffic over the stream. A low-water crossing upstream of the existing bridge is recommended for the temporary bypass road because flows in the stream are relatively low.

The proposed improvements would occur within the existing ROW and would extend approximately 6.1 m to 15.2 m (20 to 50 ft) into adjacent private property. Construction parcels (temporary easements) would be needed from the privately owned parcel *mauka* (toward the

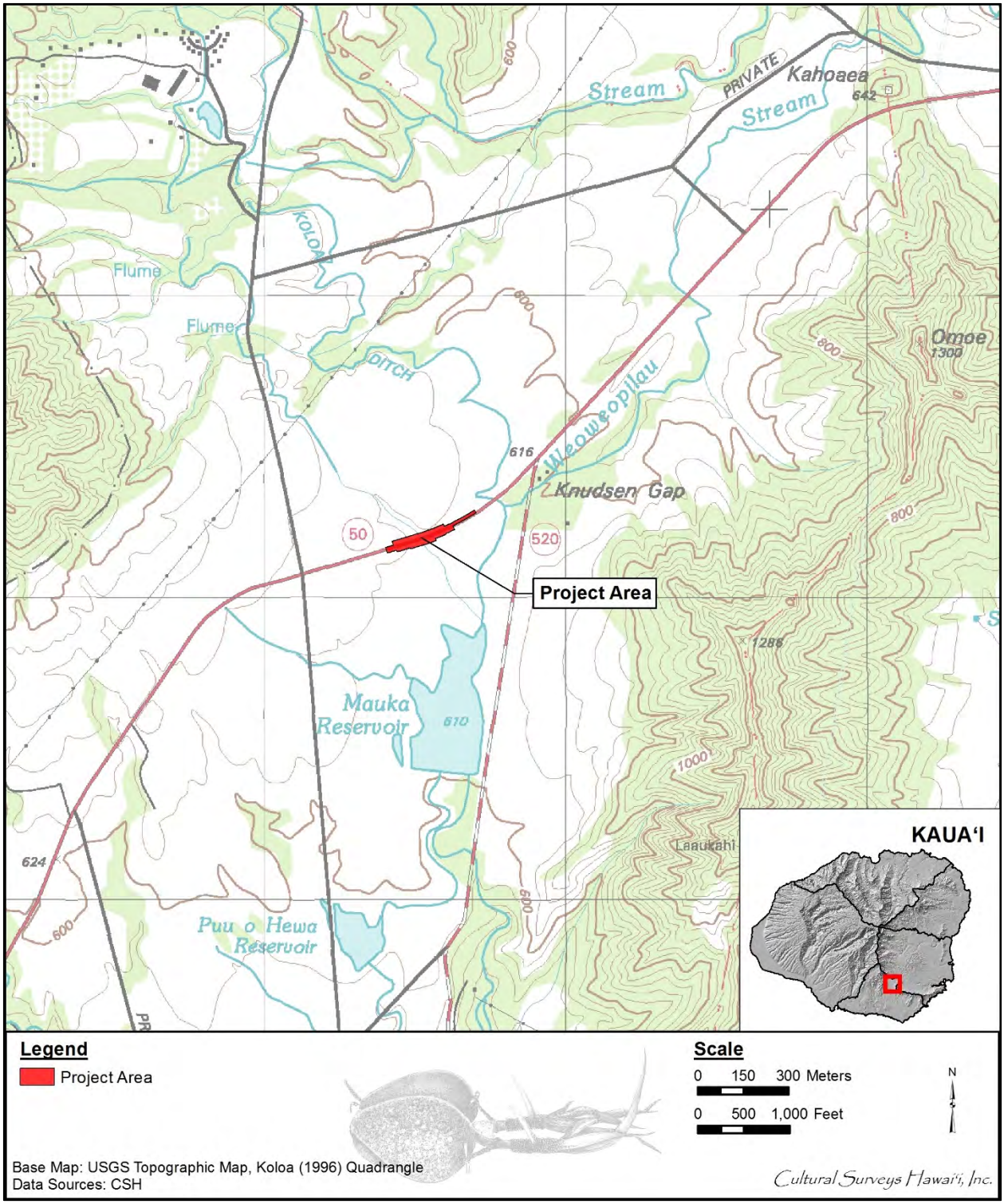

Figure 1. Portion of the 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of the project area for the Bridge 7E Replacement project

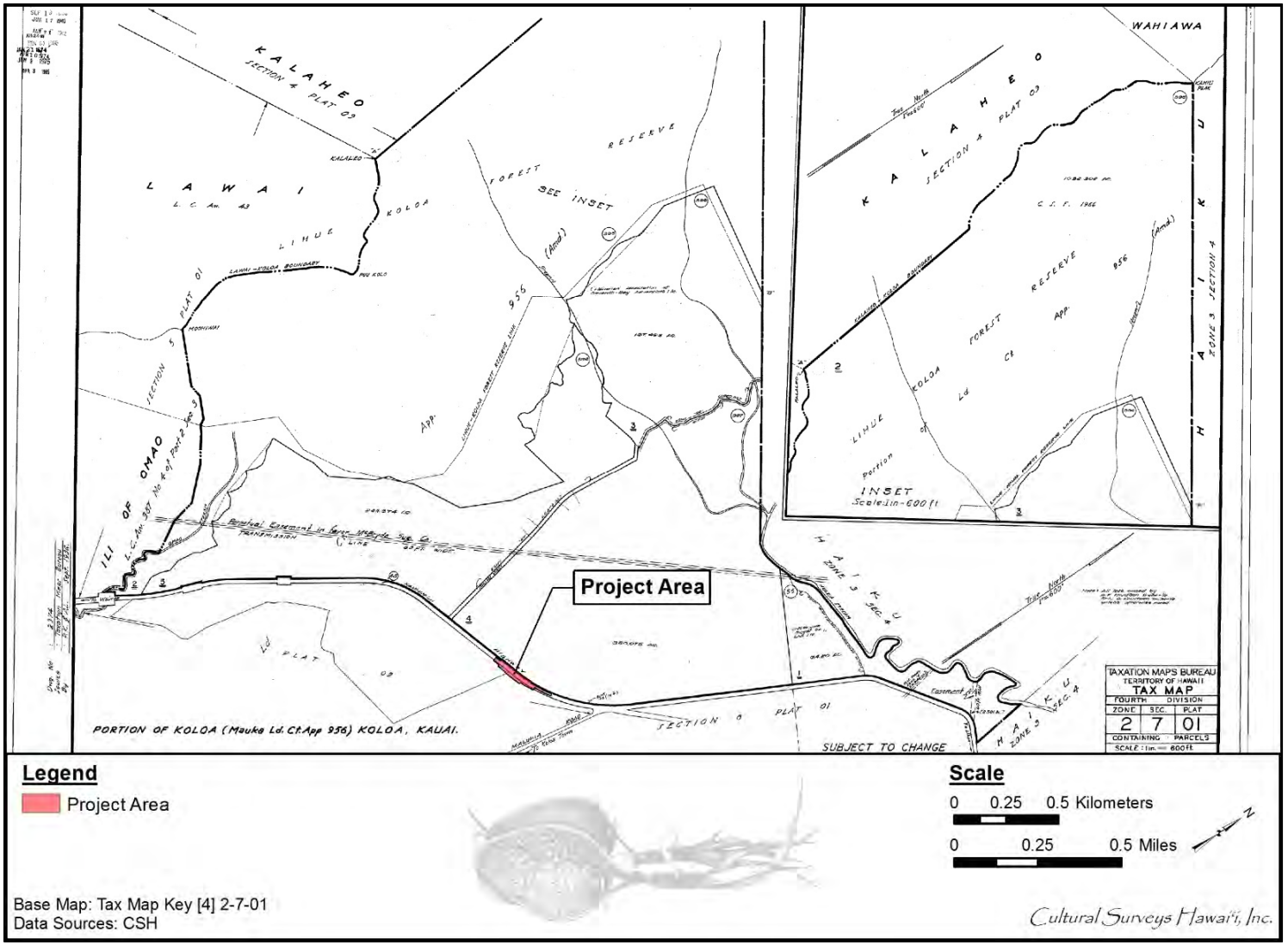

Figure 2. Tax Map Key (TMK) [4] 2-7-01 showing the location of the project area for the Bridge 7E Replacement project (Hawai‘i TMK Service 2012)

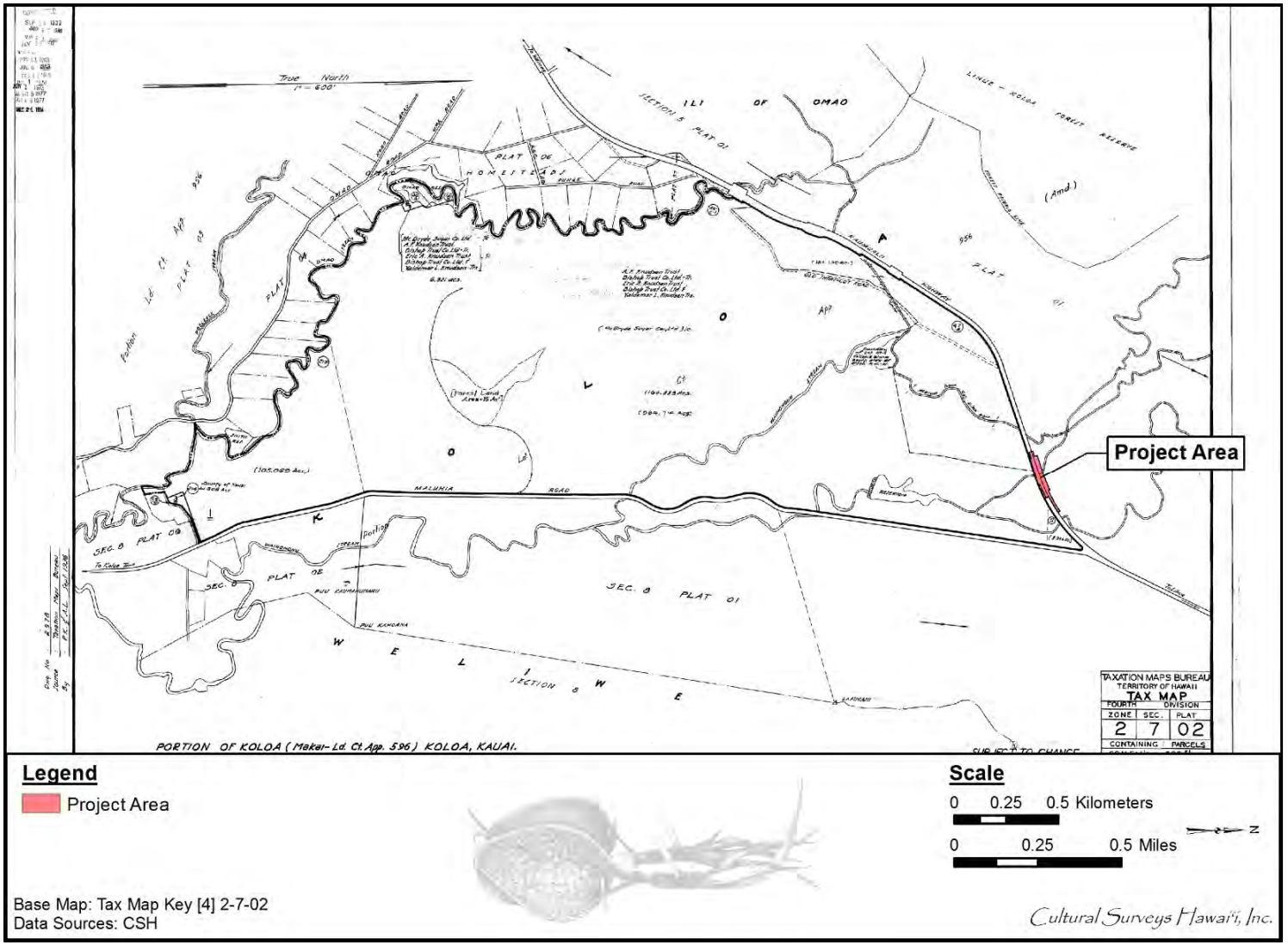

Figure 3. TMK: [4] 2-7-02 showing the location of the project area for the Bridge 7E Replacement project (Hawai‘i TMK Service 2012)

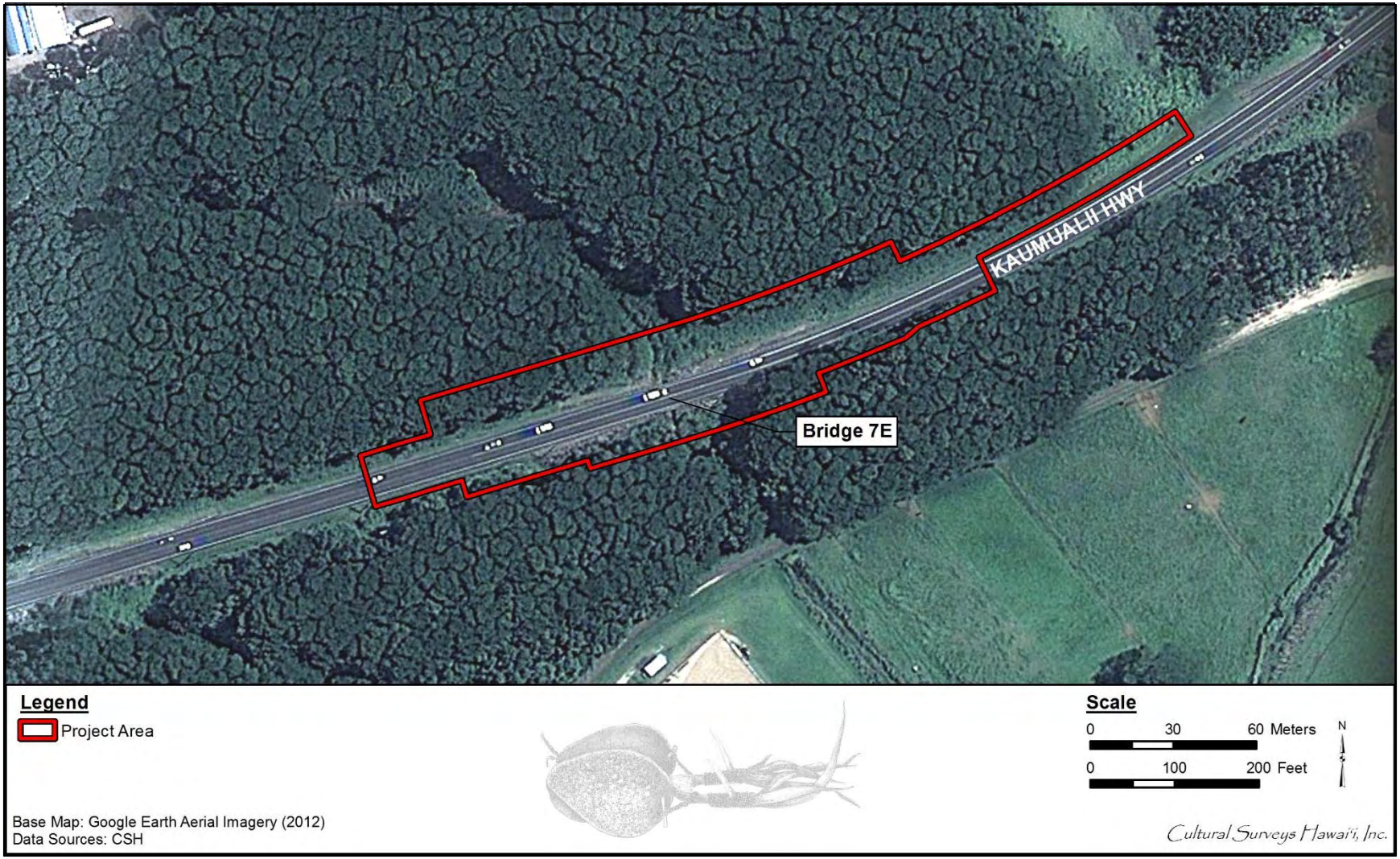

Figure 4. Aerial photograph showing the project area for the Bridge 7E Replacement project (Google Earth 2012)

mountains, inland) of the bridge. Permanent easements would be acquired on the *makai* (seaward) side for maintenance of grading and drainage improvements.

1.1.2 Environmental Setting

1.1.2.1 Natural Environment

The *ahupua‘a* (land division) of Kōloa extends as a fairly large land segment from Mt. Kāhili to the sea. Vegetation within the project area includes exotic grasses, eucalyptus (*Eucalyptus* sp.), and albizia (*Albizia* sp.). According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), soils within the project area include Kapaa silty clay, 3 to 8% slopes (KkB) and Halii gravelly silty clay, 3 to 8% slopes (HfB) (Figure 5).

Soils of the Kapaa Series are described as follows:

> This series consists of well-drained soils on uplands on the islands of Kauai and Oahu. These soils developed in material weathered from basic igneous rock. They are gently sloping to extremely steep. Elevations range from 200 to 800 feet. The annual rainfall amounts to 80 to 120 inches. [Foote et al. 1972:61]

Soils of the Halii Series are described as follows:

> This series consist of well drained and moderately well drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock, probably mixed with volcanic ash and ejecta. They are gently sloping to steep. Elevations range from 300 to 1,000 feet. The annual rainfall amounts to 100 to 200 inches. [Foote et al. 1972:34]

1.1.2.2 Built Environment

The project area’s built environment includes a portion of Route 50 (Kaumuali‘i Highway) and Bridge 7E, the focus of the current project. Bridge 7E was constructed in 1933. The area surrounding the highway is understood to be agricultural land that was used for sugarcane cultivation, but is now cultivated with eucalyptus and albizia trees.

1.2 Hanapēpē River Bridge Replacement Project

The Hanapēpē River Bridge Replacement project is located in Hanapēpē Ahupua‘a, Waimea District, Kaua‘i, TMKs: [4] 1-9-007:001 por. Hanapēpē River, 013 por., and 034 por., and 1-9-010:014 por., 015 por., 046 por. and 050 por., Kaumuali‘i Highway and Iona Road ROW. The proposed project is along Kaumuali‘i Highway near mile marker 16 where the highway crosses over the Hanapēpē River. The project area encompasses the Hanapēpē River Bridge over Hanapēpē River, a portion of Kaumuali‘i Highway, areas on either side of Kaumuali‘i Highway, and Hanapēpē River. The project area includes approximately 1.2 hectares (2.9 acres). The APE for the current project is defined as the entire 1.2-hectare (2.9-acre) project area. The project area is depicted on a portion of the 1996 Hanapepe USGS 7.5-minute topographic quadrangle (Figure 6), tax map plats (Figure 7 and Figure 8), and a 2013 aerial photograph (Figure 9).

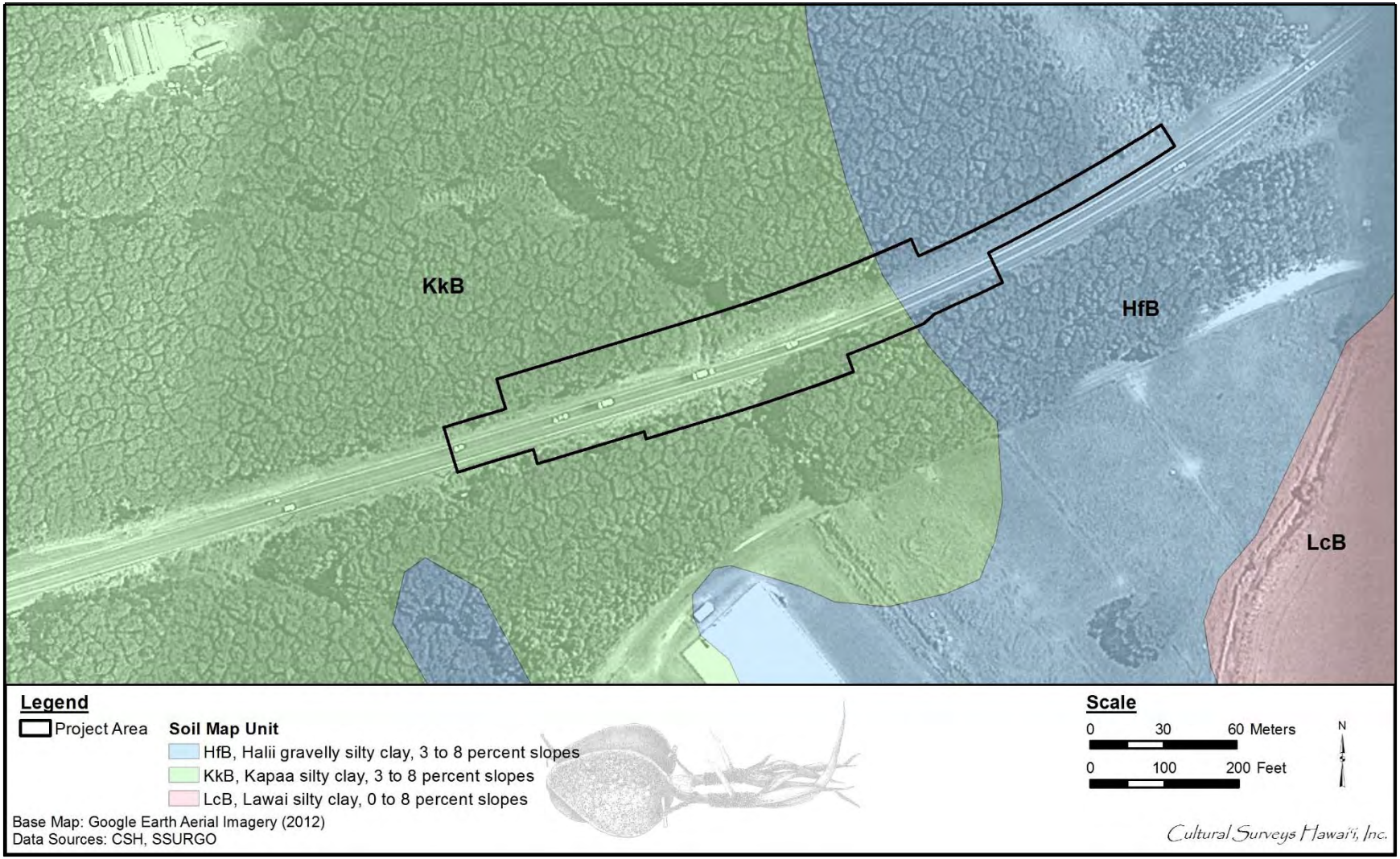

Figure 5. Aerial photograph (Google Earth 2012) showing the project area with an overlay of the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972)

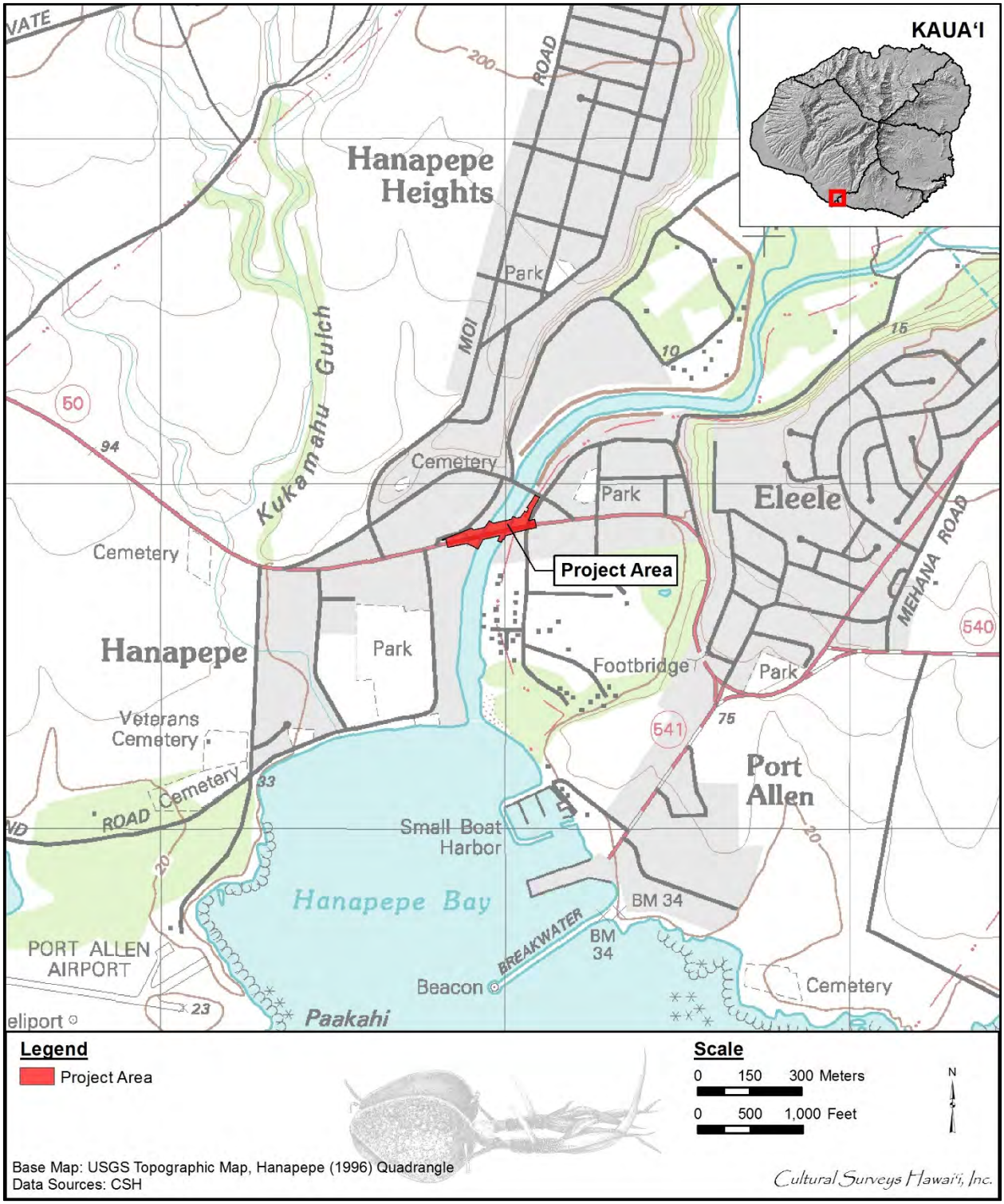

Figure 6. Portion of the 1996 Hanapepe USGS 7.5-minute topographic quadrangle showing the location of the project area for the Hanapēpē River Bridge Replacement project

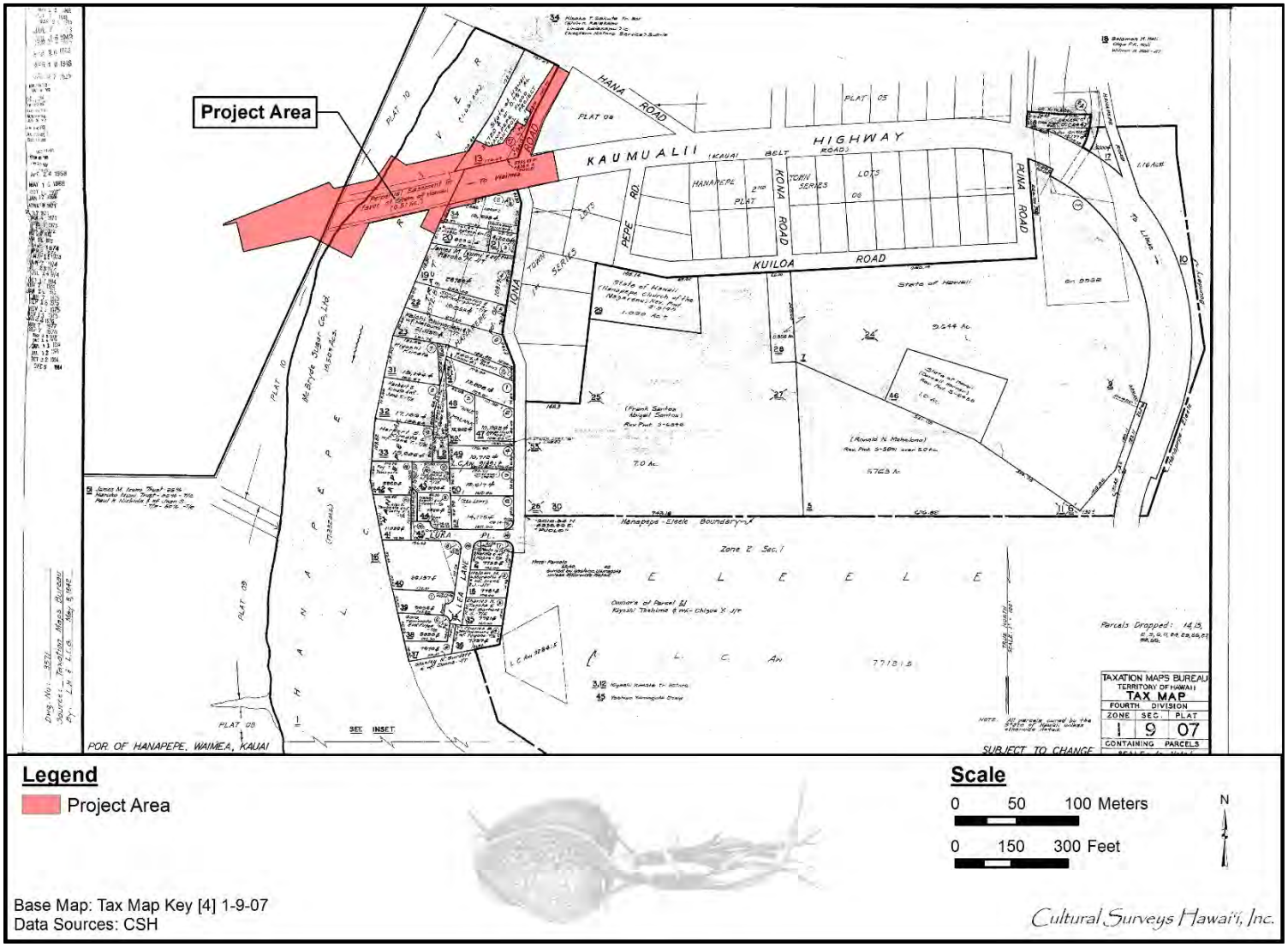

Figure 7. TMK: [4] 1-9-07, showing the location of the project area for the Hanapēpē River Bridge Replacement project (Hawai‘i TMK Service 2012)

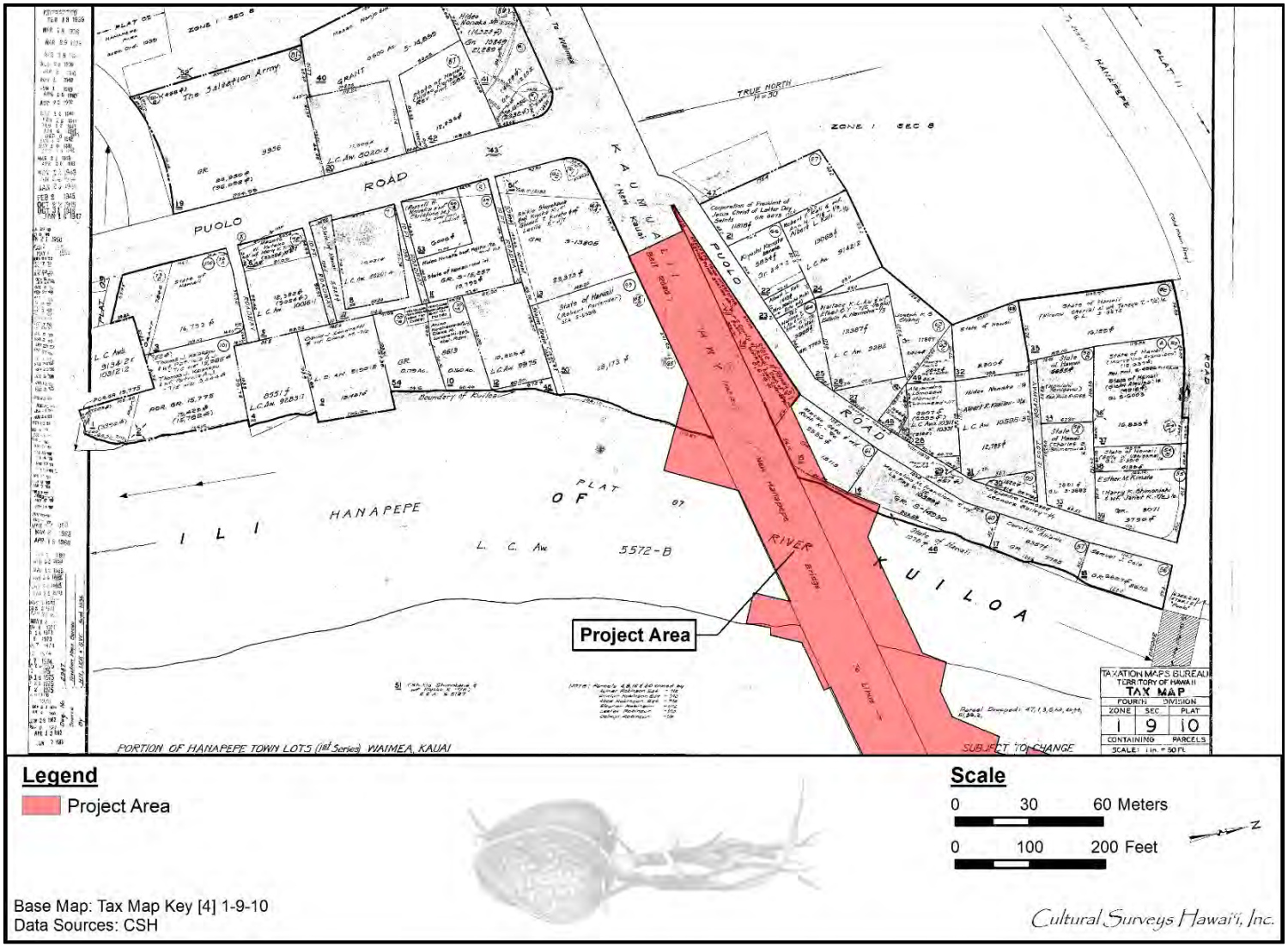

Figure 8. TMK: [4] 1-9-10, showing the location of the project area for the Hanapēpē River Bridge Replacement project (Hawai‘i TMK Service 2012)

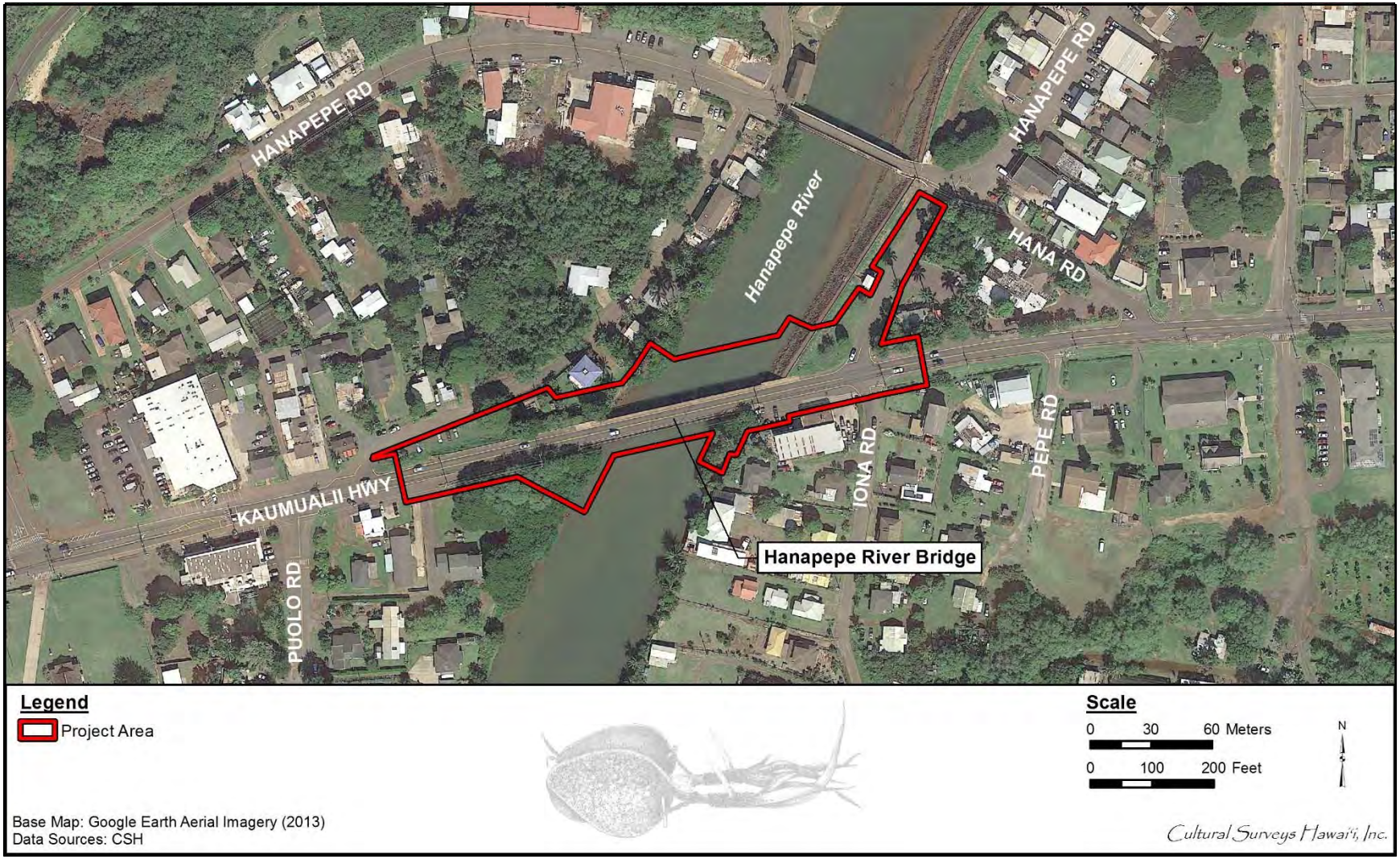

Figure 9. Aerial photograph showing the project area for the Hanapēpē River Bridge Replacement project (Google Earth 2013)

1.2.1 Project Background

The proposed project would replace the Hanapēpē River Bridge and its approaches to maintain the Hanapēpē River crossing on HI-56 as a safe and functional component of the regional transportation system for highway users. The Hanapēpē Bridge is eligible for inclusion in the NRHP. The existing Hanapēpē Bridge would be demolished and replaced with a new bridge.

1.2.2 Environmental Setting

1.2.2.1 Natural Environment

Hanapēpē Ahupua‘a is bounded by the *ahupua‘a* of Ho‘ānuanu and Makaweli in the north and Wahiawa in the south. The project area stretches across the Hanapēpē River at elevations of approximately 20 m (65.6 ft) to 40 m (131.2 ft) above mean sea level (AMSL).

Geologically, Kaua‘i consists essentially of a single great shield volcano, deeply eroded and partly veneered with much later volcanics that rises 17,000 ft above the surrounding sea floor. At the top of the shield was a caldera 10 to 12 miles across—the largest in the Hawaiian Islands. The southern flank of the shield collapsed to form a fault-bounded trough, the Makaweli graben, or depression, some 4 miles wide. Lavas erupted in the caldera gradually filling it, except on the higher northwestern side, and eventually spilled over its low southern rim into the graben, down which they flowed into the sea (Macdonald and Abbott 1970:381).

Hanapēpē is to one side of the collapsed shield, and probably was in part formed by the action of the collapse. It is probably because of this overflow that Hanapēpē Bay and the salt flats at Ukula are at the extreme edge of the infilling. Ethel Damon refers to it as “the long earth crack believed to have been rent asunder by volcanic action rather than worn down by erosion” (Damon 1931:220). The mean yearly rainfall for the shoreline area is 500-750 cm (Giambelluca et al. 1986:86) with the annual temperature range between 60° and 80° (Armstrong 1983) while the upper part of the *ahupua‘a* has an annual rainfall of 8,000 cm or between 4,000-5,000 inches a year with an average temperature of 65°.

The proposed project is located on the leeward side of the island of Kaua‘i where the climate is warmer and less moist than the windward side of the island (Armstrong 1983). Compared to the interior of the island, which hosts the world’s wettest spot with annual rainfall of approximately 450 inches per year, the average precipitation in Hanapēpē is about 27.1 inches per year or 2.3 inches per month (Clean Islands Council 2011). As with Waimea, Hanapēpē is a canyon land with many valleys and streams that carry water from the mountains in the interior to the sea, near the project area.

According to the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972), the project area’s soils consist of Jaucas loamy fine sand, 0 to 8% slopes (JkB), Hanalei silty clay loam, 0 to 2% slopes (HmA), and Pakala clay loam, 0 to 2% slopes (PdA) (Figure 10).

Jaucus sands are described as follows:

> This soil occurs near the ocean in areas where the water table is near the surface and salts have accumulated. It is somewhat poorly drained in depressions but excessively drained on knolls. In the depression there is normally a layer of silty alluvial material flocculated by the high concentration of soluble salts. The water table is normally within a depth of 30 inches. [Foote et al. 1972:79]

Figure 10. Aerial photograph (Google Earth 2013), showing project area along Kaumuali‘i Highway crossing Hanapēpē River, with overlay of soil series (soil boundaries from Foote et al. 1972)

Soils of the Hanalei Series are described as follows:

> . . . somewhat poorly drained to poorlv drained soils on bottom lands on the islands of Kauai and Oahu. These soils developed in alluvium derived from basic igneous rock. They are level to gently sloping. Elevations range from nearly sea level to 300 feet. The annual rainfall amounts to 20 to 120 inches. The mean annual soil temperature is 74° F. Hanalei soils are geographically associated with Haleiwa, Hihimanu, Mokuleia, and Pearl Harbor soils.
>
> These soils are used for taro, pasture, sugarcane, and vegetables. The natural vegetation consists of paragrass, sensitiveplant, honohono, Java plum, and guava. [Foote et al. 1972:38]

Pakala soils are described as follows:

> . . . well-drained soils on alluvial fans and bottom lands on the island of Kauai. These soils developed in alluvium. They are nearly level to moderately sloping. Elevations range from nearly sea level to 400 feet. The annual rainfall amounts to 25 to 40 inches. The mean annual soil temperature is 73° to 75° F. Pakala soils are geographically associated with Makaweli soils.
>
> These soils are used for irrigated sugarcane, pasture, truck crops, and homesites. The natural vegetation consists of koa haole, kiawe, bermudagrass, mango, and associated plants. [Foote et al. 1972:107]

1.2.2.2 Built Environment

The project area is located in the center of Hanapēpē Town, where Kaumuali‘i Highway crosses the Hanapēpē River and extends north along the side of the Hanapēpē River, including a portion of Iona Road. The surrounding area consists of residential houses, restaurants, commercial buildings, a church, the fire station, and a gas station.

1.3 Kapa‘a Stream Bridge Replacement Project

The Kapa‘a Stream Bridge Replacement project is located in Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road ROW, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway ROW. The project area is near mile post 10 on Route 56 (Kūhiō Highway) at the Kapa‘a Stream crossing. The project area includes approximately 2.0 hectares (4.9 acres). The APE for the current project is defined as the entire 2.0-hectare (4.9-acre) project area. The project area is depicted on a portion of the 1996 Kapaa USGS topographic quadrangle (Figure 11), tax map plats (Figure 12 and Figure 13), and an aerial photograph (Figure 15).

1.3.1 Project Background

The proposed project would reconfigure the intersection of HI-56 and Mailihuna Road to improve traffic operations, safety, and local access and would replace the existing Kapa‘a Bridge to maintain the Kapa‘a Stream crossing on HI-56 as a safe and functional component of the regional transportation system for highway users.

The intersection of HI-56 and Mailihuna Road would be reconfigured to improve traffic operations and pedestrian safety. Two alternatives are being considered. The first is a traffic

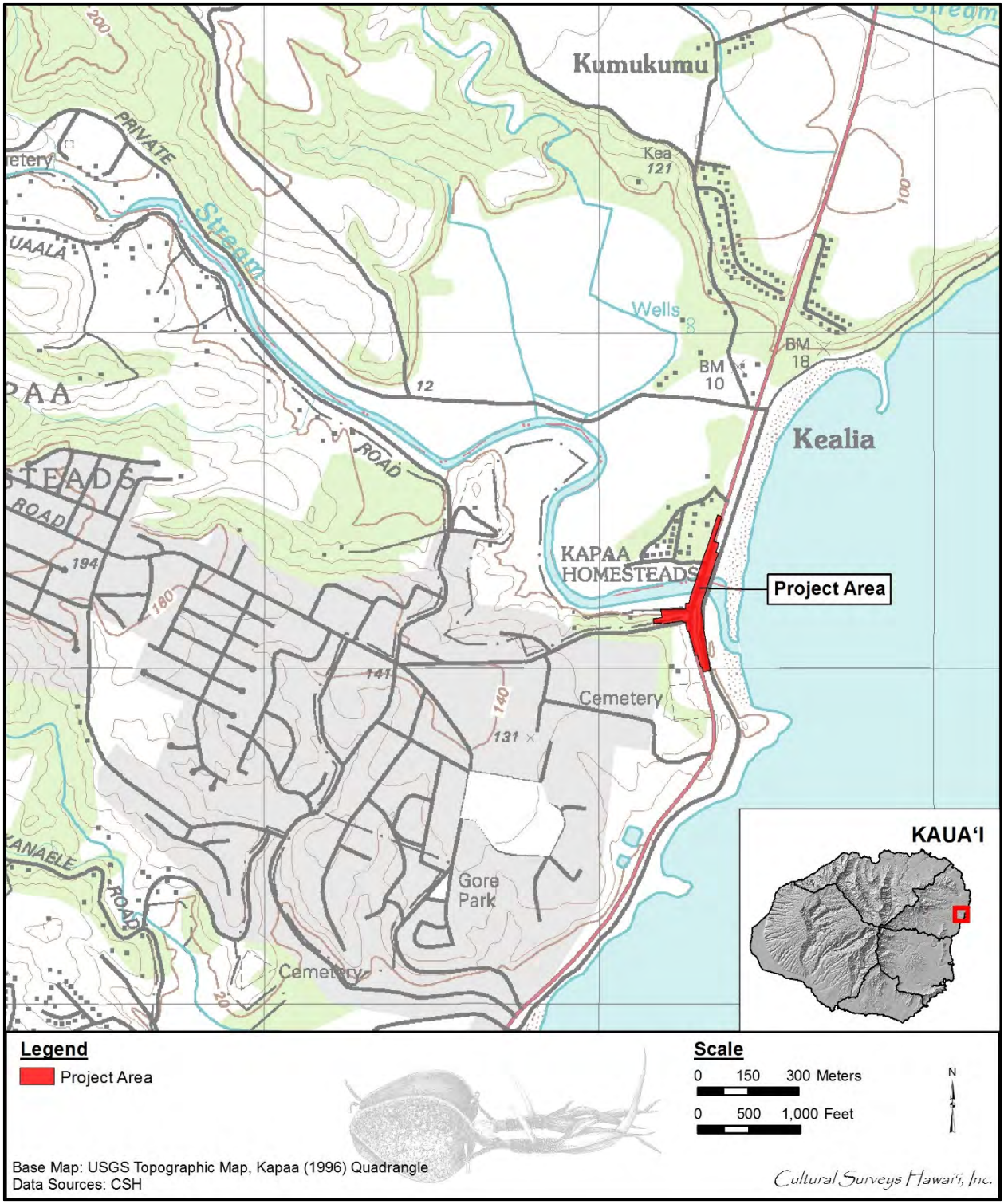

Figure 11. Portion of the 1996 Kapaa USGS 7.5-minute topographic quadrangle showing the location of the project area for the Kapa‘a Stream Bridge Replacement project

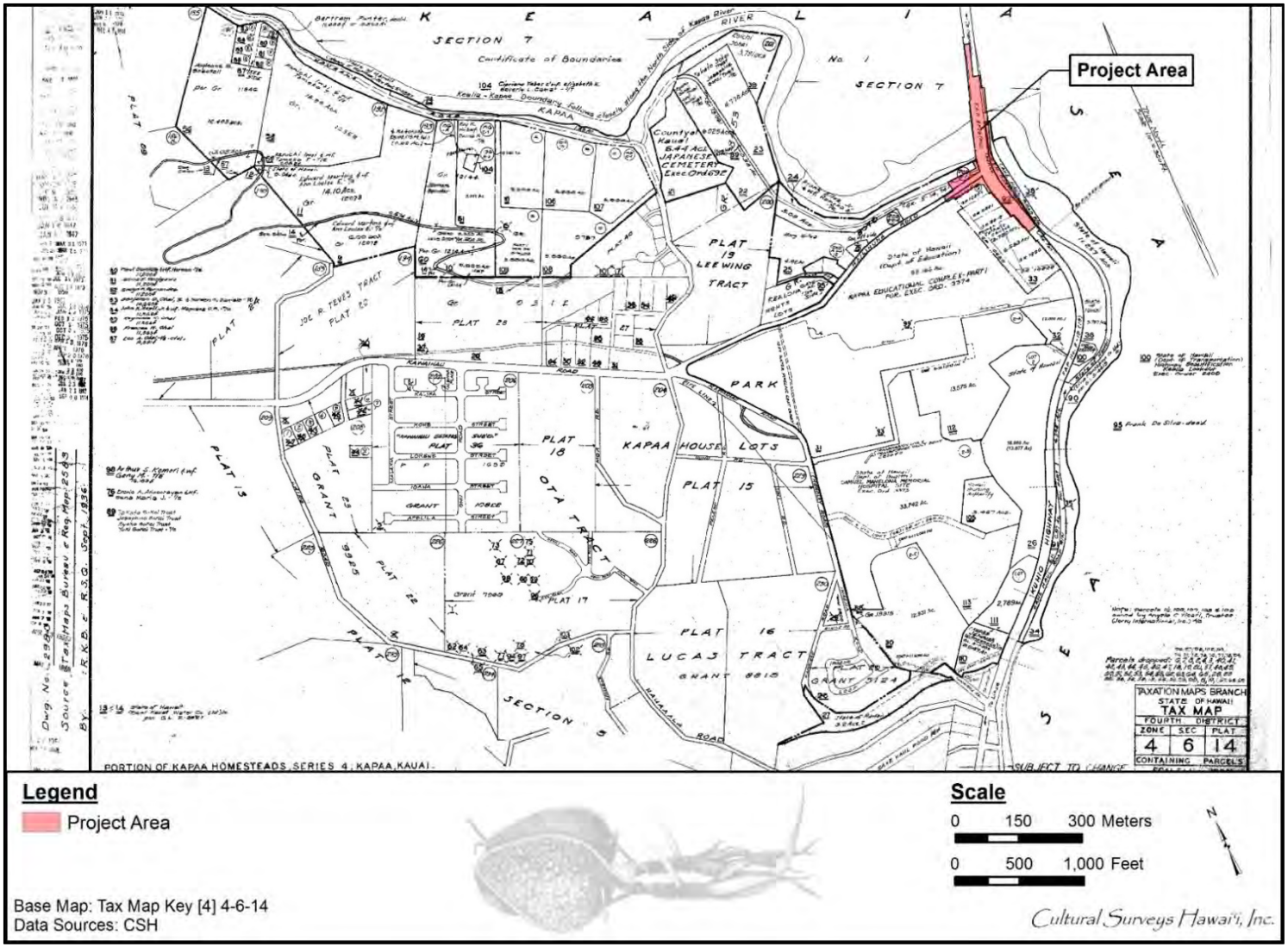

Figure 12. TMK: [4] 4-6-14, showing the location of the project area for the Kapa‘a Stream Bridge Replacement project (Hawai‘i TMK Service 2012)

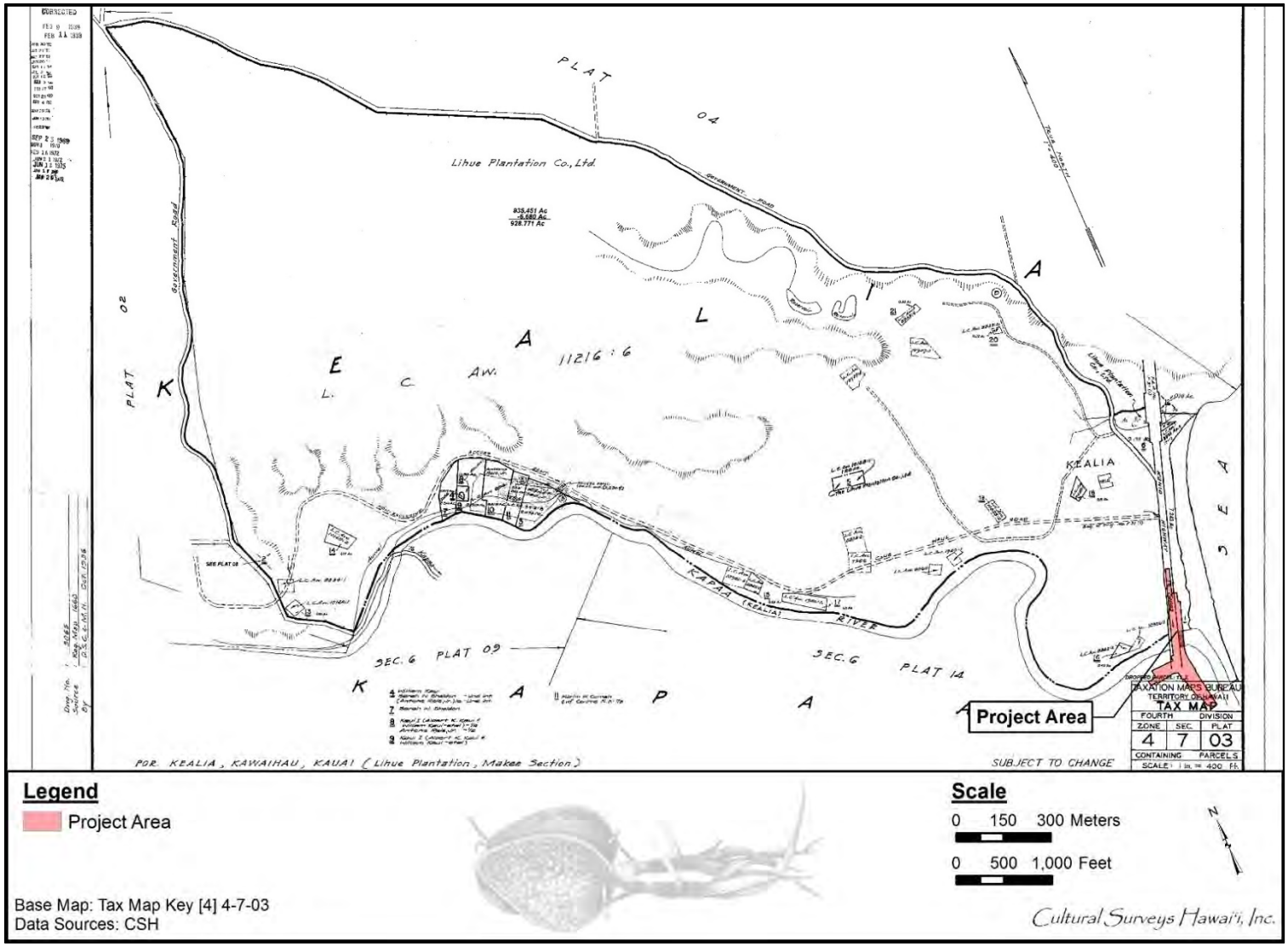

Figure 13. TMK: [4] 4-7-03, showing the location of the project area for the Kapa‘a Stream Bridge Replacement project (Hawai‘i TMK Service 2012)

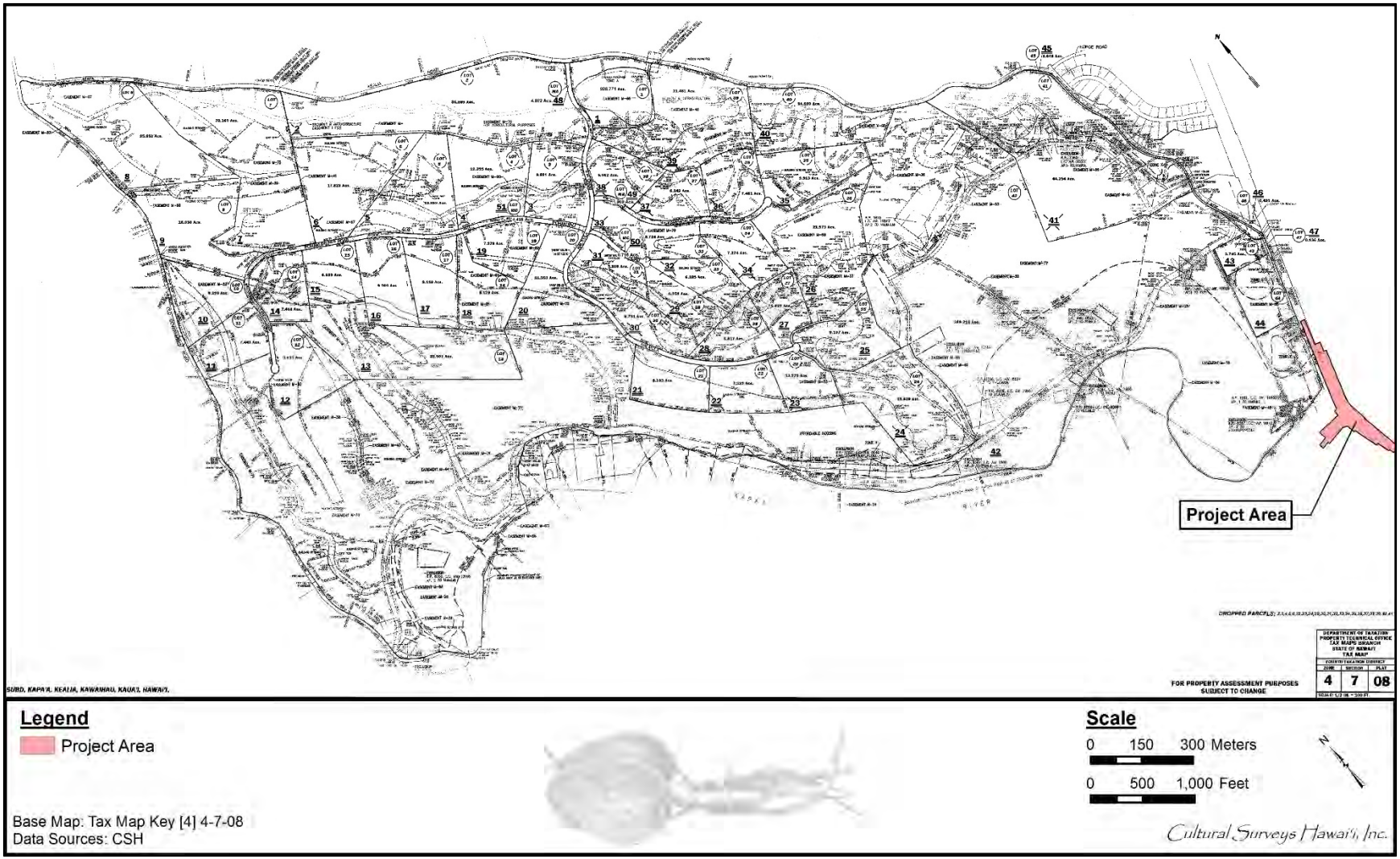

Figure 14. TMK: [4] 4-7-08, showing the location of the project area for the Kapa‘a Stream Bridge Replacement project (Hawai‘i TMK Service 2012)

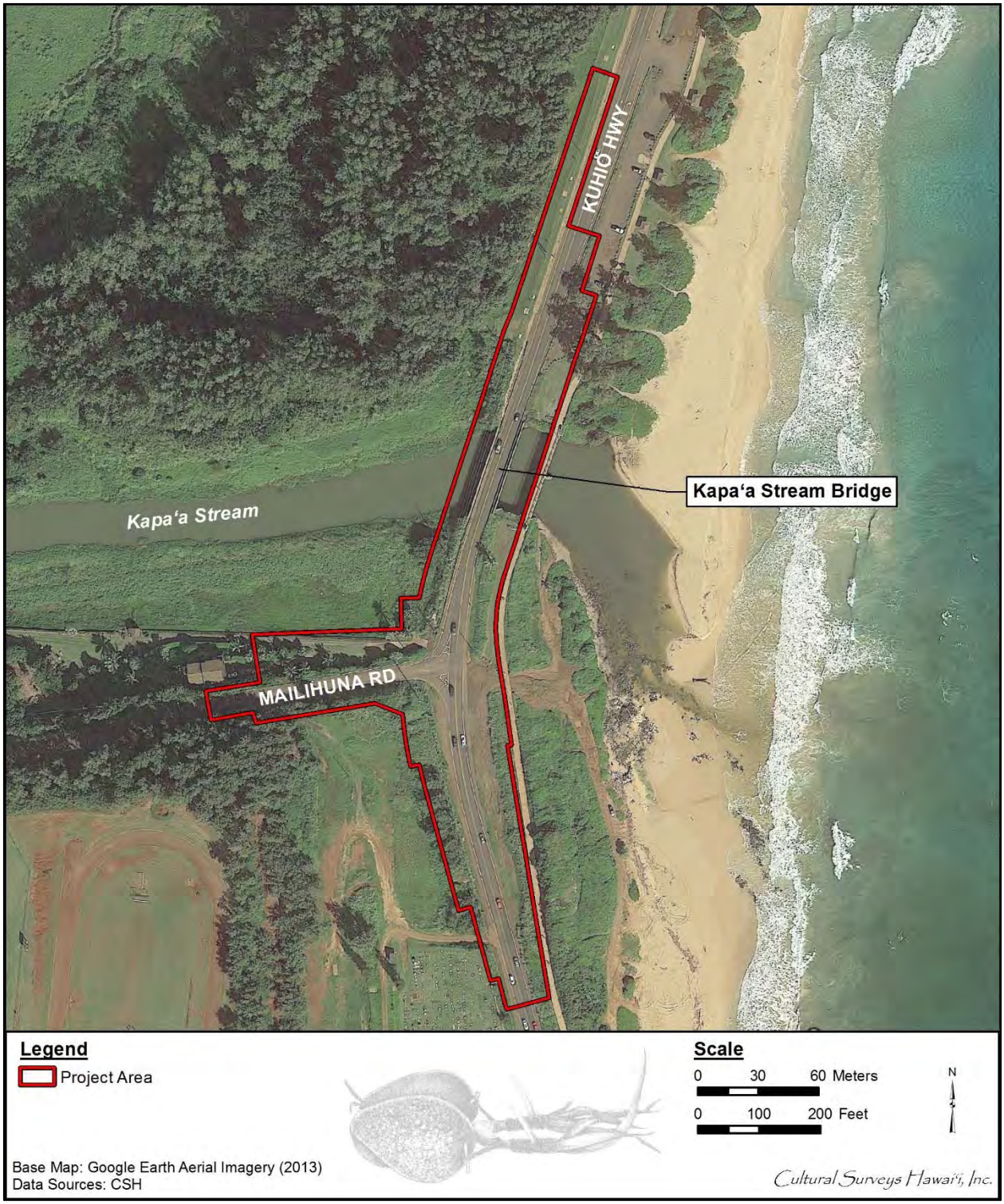

Figure 15. 2013 aerial photograph showing the location of the project area for the Kapa‘a Stream Bridge Replacement project (Google Earth 2013)

signalized intersection and the second is a roundabout intersection. The traffic signalized intersection would provide a 170-ft northbound left turn lane and a 145-ft southbound right turn lane to Malihuna Road from HI-56. The roundabout would be a single lane circle providing access to HI-156 and Malihuna Road. Marked crosswalks and devices would be provided on all approaches, and improved signage and street lighting would be installed to improve safety and mobility for non-motorized modes crossing HI-56. Drainage improvements would also be installed to prevent flooding at the intersection.

The existing Kapa‘a Bridge does not meet the current roadway standards for width and bridge standards for live loading and seismic requirements, and the existing bridge railings and approach railings do not meet current crash test requirements. Therefore, the bridge will be demolished and replaced with a single-span 190-ft long bridge. The new structure would be approximately 4 ft wider, accommodating two 12-ft travel lanes, two 8-ft shoulders, and guardrails on both sides. The bridge is a typical post-World War II bridge and is not considered eligible for inclusion in the NRHP.

During construction, Kapa‘a Bridge would be closed to traffic, and a temporary bypass road and bridge would be constructed *makai* of the existing bridge, between the existing bridge and the adjacent pedestrian trail, to maintain traffic over Kapa‘a Stream. The adjacent pedestrian bridge would not be impacted.

The proposed improvements at the HI-56 and Mailihuna Road intersection would occur within HDOT ROW and adjacent private property. The Kapa‘a Bridge replacement would occur entirely within HDOT ROW. Construction parcels (temporary easements) would be needed for the temporary bypass road, construction zone, and staging areas.

1.3.2 Environmental Setting

1.3.2.1 Natural Environment

The project area, within Kapa‘a and Keālia Ahupua‘a, is located on the windward side of Kaua‘i and is exposed to the prevailing tradewinds and their associated weather patterns. Rainfall on the coastal plains and plateaus of Kapa‘a and Keālia averages approximately 40 inches per year (Juvik and Juvik 1998:56). Kapa‘a can be characterized as fairly flat, with irregularly shaped gulches and small valleys in the uplands through which small tributary streams run including Kapahi, Makaleha, and Moalepe. While some of these streams combine with other tributaries in neighboring Keālia to form Kapa‘a Stream (often referred to as Keālia River), which empties into the ocean at the northern border of the *ahupua‘a*, others flow directly into the lowlands of Kapa‘a creating a large (approximately 170-acre) swamp area that has been mostly filled in modern times (Handy and Handy 1972:394, 423). Two canals have been constructed to drain the marshy areas behind Kapa‘a Town, Waika‘ea Canal (known to most local people as Waiakea Canal) and Moikeha Canal. Kapa‘a Town is built upon a sand berm which forms the *makai* buffer to the inland swamp. To the north of Kapa‘a, Keālia Ahupua‘a shows more characteristics of a typical stream valley with a good sized alluvial plain dissected by a major stream, the Kapa‘a Stream (Keālia River) in addition to a plateau land dissected by a few small drainages including Kumukumu and Hōmaikawa‘a Streams.

According to the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972), soils within the project area include Mokuleia fine sandy loam (Mr), Mokuleia clay loam (Mta), and Lihue silty clay (LhE2) (Figure 16).

Soils of the Mokuleia Series are described as follows:

> This series consists of well-drained soils along the coastal plains on the islands of Oahu and Kauai. These soils formed in recent alluvium deposited over coral sand. They are shallow and nearly level. Elevations range from nearly sea level to 100 feet. The annual rainfall amounts to 15 to 40 inches on Oahu and 50 to 100 inches on Kauai. The mean annual soil temperature is 74° F. Mokuleia soils are geographically associated with Hanalei, Jaucas, and Keaau soils.
>
> The soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of kiawe, klu, koa haole, and bermudagrass in the drier areas and napiergrass, guava, and joee in the wetter areas. [Foote et al. 1972:95]

Soils of the Lihue Series are described as follows:

> This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amount to 40 to 60 inches. The mean annual soil temperature is 73° F. Lihue soils are geographically associated with Ioleau and Puhi soils.
>
> These soils are used for irrigated sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, woodland, and homesites. The natural vegetation consists of lantana, guava, koa haole, joee, kikuyugrass, molassesgrass, guineagrass, bermudagrass, and Java plum. [Foote et al. 1972:82]

1.3.2.2 Built Environment

The project area’s built environment includes a portion of Route 56 (Kūhiō Highway) including the intersection of Mailihuna Road and Kapa‘a Stream Bridge. Portions of the Kapa‘a to Keālia bike path and the entry to St. Catherine’s Cemetery are also located within the project area. The land surrounding the project area is not significantly developed. The largest establishment near the bridge site is Kapa‘a High School soccer field, track, and baseball diamond, which are located approximately 300 m (984.3 ft) to the southwest. To the north and northwest of the project area the land is primarily utilized for agricultural and residential purposes.

1.4 Historic Preservation Regulatory Context and Document Purpose

This mitigation plan complies with Federal and Hawai‘i State historic preservation review legislation and was prepared in consideration of the *Secretary of the Interior’s Standards for Archaeology and Historic Preservation* and fulfills the requirements of Hawai‘i Administrative Rules (HAR) §13-279-4.

Due to Federal funding, the bridge replacement projects are a Federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA), and Section 4(f) of the Department of Transportation Act. As an HDOT project within a State ROW, the projects

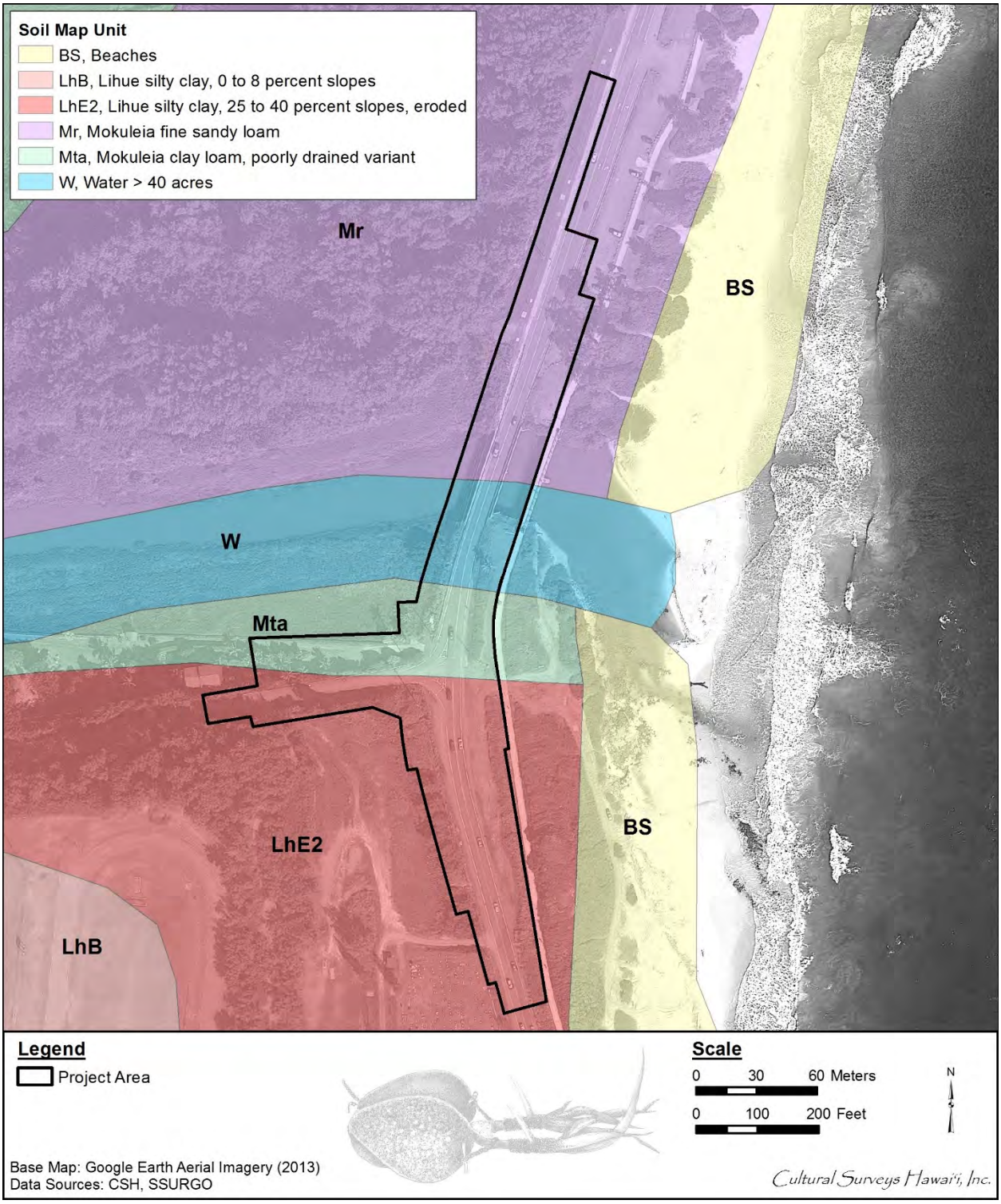

Figure 16. Aerial photograph (Google Earth 2013), showing project area along Kūhiō Highway crossing Kapa‘a Stream, with overlay of soil series (soil boundaries from Foote et al. 1972)

are also subject to Hawai‘i State historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §6E-8 and HAR §13-13-275, respectively).

If human skeletal remains are discovered during the monitoring program, their identification and treatment will comply with Hawai‘i State burial law (HRS §6E-43 and HAR §13-13-300) and Federal burial legislation (Native American Graves Protection and Repatriation Act [NAGPRA]). An archaeological inventory survey (AIS) was conducted by CSH for the Bridge 7E Replacement project (Yucha et al. 2016).

An AIS was conducted by CSH for the Hanapēpē River Bridge Replacement project (Belluomini et al. 2016a).

An AIS was conducted by CSH for the Kapa‘a Stream Bridge Replacement project (Belluomini et al. 2016b).

At the request of the project proponent, precautionary archaeological monitoring is proposed for the three Kaua‘i bridge replacement projects part of FHWA/CFLHD Contract: DTFH68-13-R-00027 (Bridge 7E, Hanapēpē River Bridge, and Kapa‘a Stream Bridge).

1.4.1 Bridge 7E

One significant historic property was identified during the AIS for the Bridge 7E Replacement project and evaluated as eligible for inclusion in NRHP (Yucha et al. 2016) (Figure 17):

State Inventory of Historic Places (SIHP) # 50-30-10-2286, an earthen ditch, is assessed as significant under HAR §13-275-6 Criterion d (Have yielded, or is likely to yield, information important for research on prehistory or history) and recommended eligible for inclusion in both the NRHP and the HRHP under Criterion D. The historic property possesses integrity of setting, location, design, and materials.

No further archaeological work is recommended for the Bridge 7E Replacement project. Each of the significant historic properties has been adequately documented. At the request of the project proponent, precautionary archaeological monitoring is planned as a good faith effort, based on community consultation.

1.4.2 Hanapēpē River Bridge

Four significant historic properties were identified during the AIS for the Hanapēpē River Bridge Replacement project (Belluomini et al. 2016a) (Figure 18). Two historic properties, SIHP # 50-30-09-2280 (Hanapēpē River Bridge) and SIHP # 50-30-09-2283 (earthen/basalt berm), were evaluated as eligible for inclusion in the NRHP:

SIHP # -2280 is the Hanapēpē River Bridge. SIHP # -2280 is assessed as significant pursuant to HAR §13-275-6 under Criterion a (be associated with events that have made an important contribution to the broad patterns of our history) for its associations with the development of Kaua‘i’s Belt Road system and the significant role the bridge played in the history of Hanapēpē town, and Criterion c (embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value) as an excellent example of later developments in concrete bridge construction on Kaua‘i and represents the “work of a master.” Ruzicka (2016) evaluated SIHP # -2280 as eligible for inclusion in the NRHP and the HRHP under Criterion A (associated with events that have made a significant contribution to the

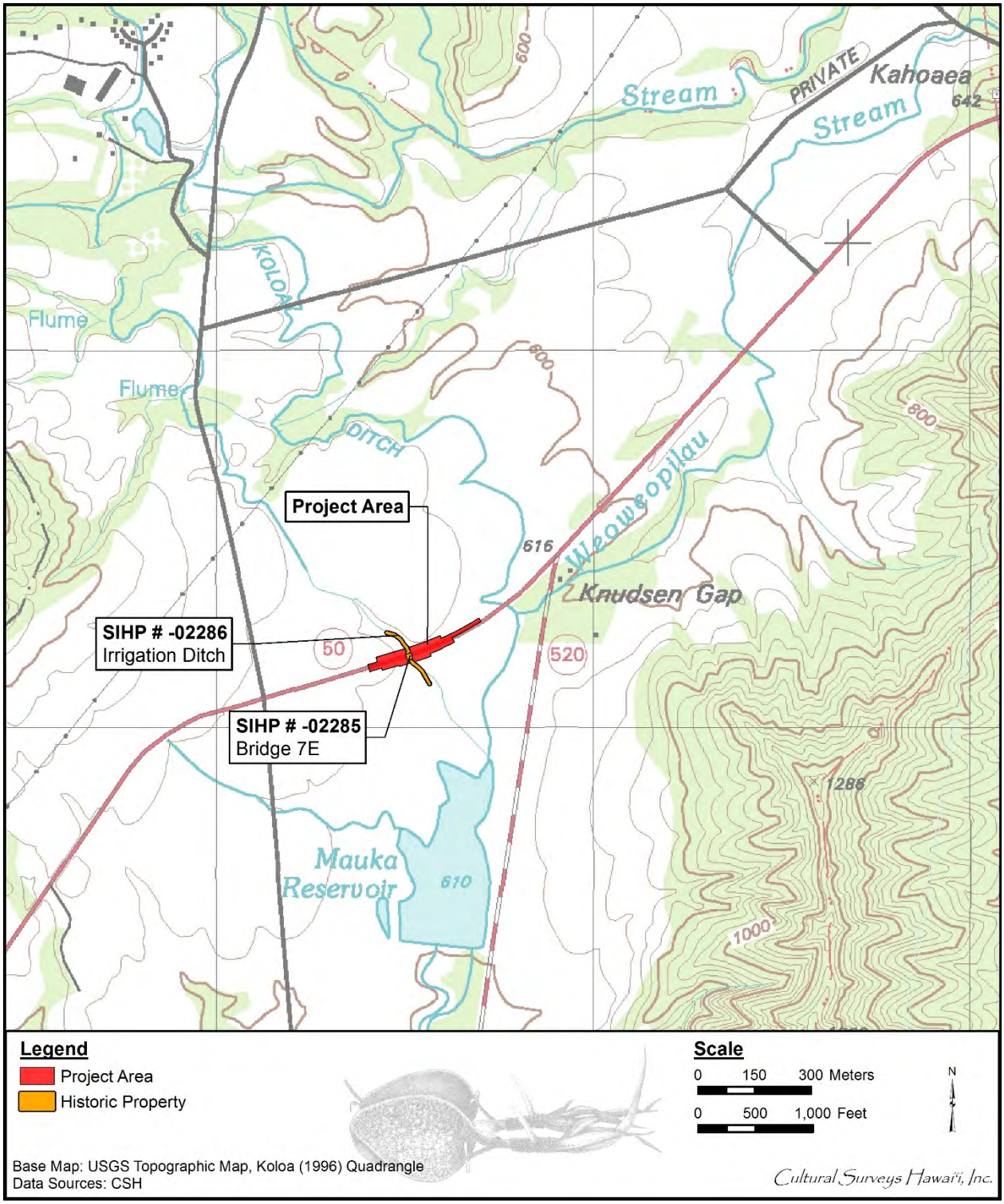

Figure 17. Portion of the 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of historic properties within the project area

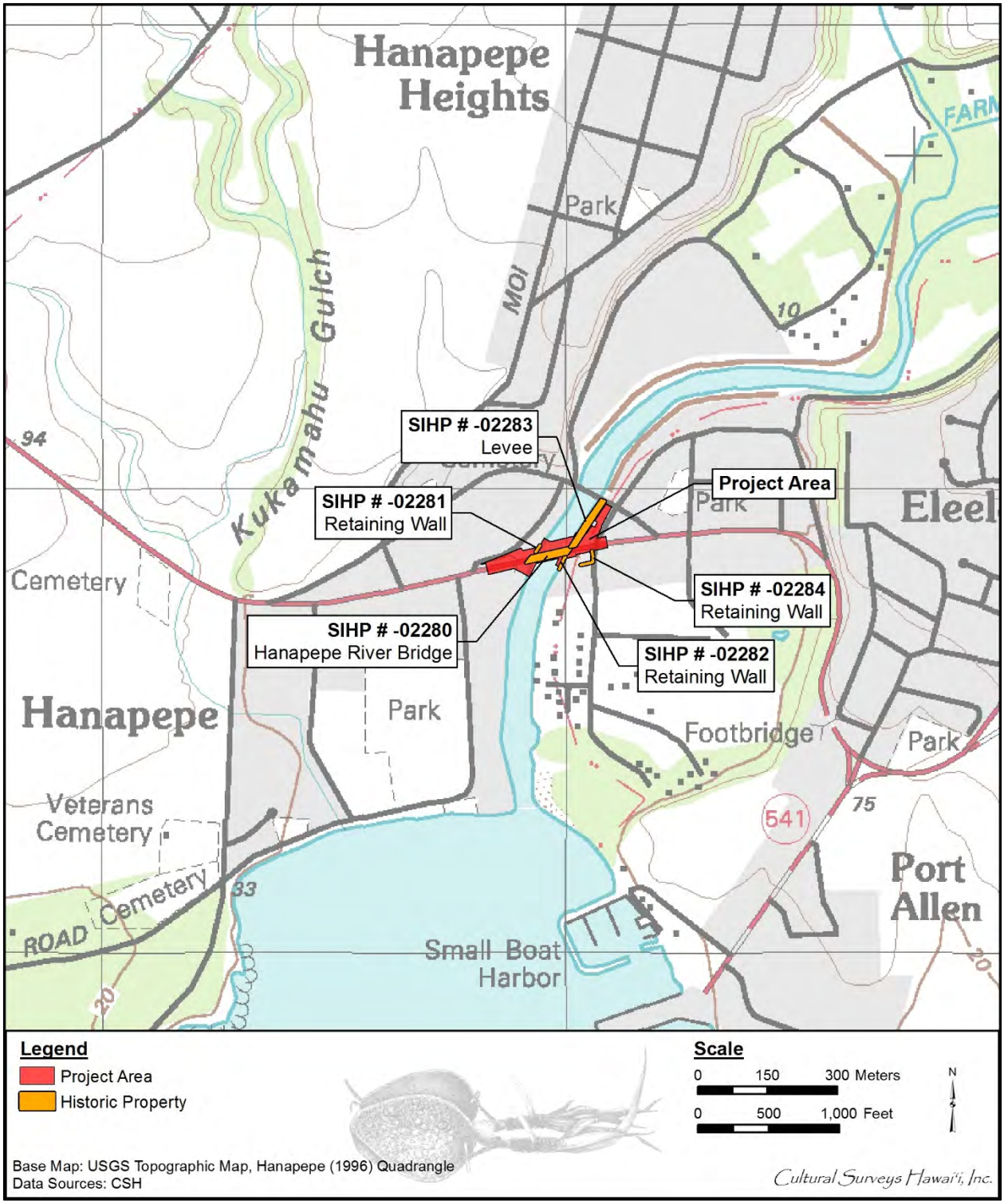

Figure 18. Portion of the 1996 Hanapepe USGS topographic quadrangle showing the locations of historic properties within the project area (SIHP # -2284 is located outside the project APE)

broad patterns of our history), for its associations with the development of Kaua‘i’s Belt Road system and the significant role the bridge played in the history of Hanapēpē town, and Criterion C (embodies the distinctive characteristics of a type, period, or method of construction, or that represent that work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction) as an excellent example of later developments in concrete bridge construction on Kaua‘i and represents the “work of a master” (William R. Bartels, Chief Highway Bridge Engineer for the Territorial Highway Department in Ruzicka 2016).

SIHP # 50-30-09-2281 is a concrete-capped basalt and mortar retaining wall. SIHP # -2281 was assessed as significant pursuant to HAR §13-275-6 under Criterion d only (have yielded, or is likely to yield, information important for research on prehistory or history). It retains integrity of location, setting, and materials. SIHP # -2281 has been adequately documented. Ruzicka (2016) evaluated SIHP # -2281 as not eligible for inclusion in the NRHP or in the HRHP pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.

SIHP # 50-30-09-2282 is a concrete-capped, dry-stacked basalt stone retaining wall. SIHP # -2282 was assessed as significant under HAR §13-275-6 Criterion d only (have yielded, or is likely to yield, information important for research on prehistory or history). It retains integrity of location, setting, and materials. SIHP # -2282 has been adequately documented. Ruzicka (2016) evaluated SIHP # -2282 as not eligible for inclusion in the NRHP and in the HRHP pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.

SIHP # 50-30-09-2283 is a large earthen and piled basalt stone berm. SIHP # -2283 was assessed as significant pursuant to HAR §13-275-6 under Criterion a (be associated with events that have made an important contribution to the broad patterns of our history) for its association with community planning, the development of Hanapēpē and with federal flood control projects. It retains integrity of location, design, setting, materials, feeling, and association. Ruzicka (2016) evaluated SIHP # -2283 as eligible for inclusion in the NRHP and the HRHP under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history) “for its association with community planning and the development of Hanapepe as well as with federal flood control projects” (Ruzicka 2016).

Architectural recordation in the form of Historic American Engineering Record (HAER) documentation is recommended for the two historic properties evaluated as eligible for inclusion in the NRHP, SIHP # -2280 (Hanapēpē River Bridge) and SIHP # -2283 (earthen/basalt berm). This will be done in consultation with the National Park Service HABS/HAER/HALS Coordinator in the Pacific West Regional Office, and will be completed by architects, historians, photographers and/or other professionals meeting the Secretary of the Interior’s Professional Qualifications Standards (36 CFR Part 61).

Interpretive materials are to be installed in consultation with the SHPD for SIHP # -2280 (bridge) and SIHP # -2283 (earthen/basalt berm). Character defining features of SIHP # -2280 will be salvaged for use in the interpretive signage/kiosk area.

During the removal of the small portion of the berm (SIHP # -2283), best management practices (BMP) will be used to avoid compromising the existing integrity of this historic property by ensuring the area where material is removed is left structurally stable and repaired with in-kind

materials. Any historic properties directly adjacent to the APE shall be avoided and appropriately protected in place with construction fencing for the duration of the replacement project.

No further archaeological historic preservation work was recommended. SIHP # -2281 and SIHP # -2282 have been adequately documented. At the request of the project proponent, precautionary archaeological monitoring is planned as a good faith effort, based on community consultation.

1.4.3 Kapa‘a Stream Bridge

Four significant historic properties were identified during the AIS for the Kapa‘a Stream Bridge Replacement project (Belluomini et al. 2016b) (Figure 19). No historic properties were evaluated as eligible for inclusion in the NRHP:

In consultation with the SHPD architecture branch, it was determined that the Kapa‘a Stream Bridge (SIHP # 50-30-08-2278) is not eligible for inclusion in the NRHP or the HRHP pursuant to 36 CFR 60.4 and HAR §13-198-8. The bridge is significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history). The SHPD architecture branch determined the bridge had been adequately documented. Thus, no architectural recordation was conducted.

SIHP # -2279, a possibly historic water control complex, was assessed as significant under HAR §13-275-6 Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history), and is evaluated as not eligible for inclusion in both the NRHP and the HRHP under Criterion D. This historic property possesses integrity of location, design, and materials.

SIHP # -0789A, Sub-Feature 1 consists of the remnant portions of the original Keālia Stream Bridge Crossing initially documented by Perzinski et al. (2000) and further documented by Bushnell et al. (2003). Perzinski et al. (2000) and Bushnell et al. (2003) assessed the bridge crossing remnants (SIHP # -789A, Feature 1) as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. The bridge crossing remnants lack integrity of design, workmanship, setting, feeling, and association. Thus, the bridge crossing remnants (SIHP # -789A, Feature 1) are evaluated as not eligible for inclusion in the NRHP or in the HRHP pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.

SIHP # -2075 consists of the remnant abutments of the former Kaua‘i Belt Road, Keālia Bridge initially documented by Bushnell et al. (2003). Bushnell et al. (2003) assessed SIHP # -2075 as significant under Criterion d (have yielded, or is likely to yield, information important for research on prehistory or history) of the State of Hawai‘i significance criteria. The bridge remnants lack integrity of design, materials, workmanship, feeling, and association. Thus, the old belt highway bridge remnants (SIHP # -2075) are evaluated as not eligible for inclusion in the NRHP or the HRHP pursuant to 36 CFR 60.4 and HAR §13-198-8, respectively.

No further archaeological work was recommended. Each of the significant historic properties have been adequately documented. At the request of the project proponent, precautionary archaeological monitoring is planned as a good faith effort, based on community consultation.

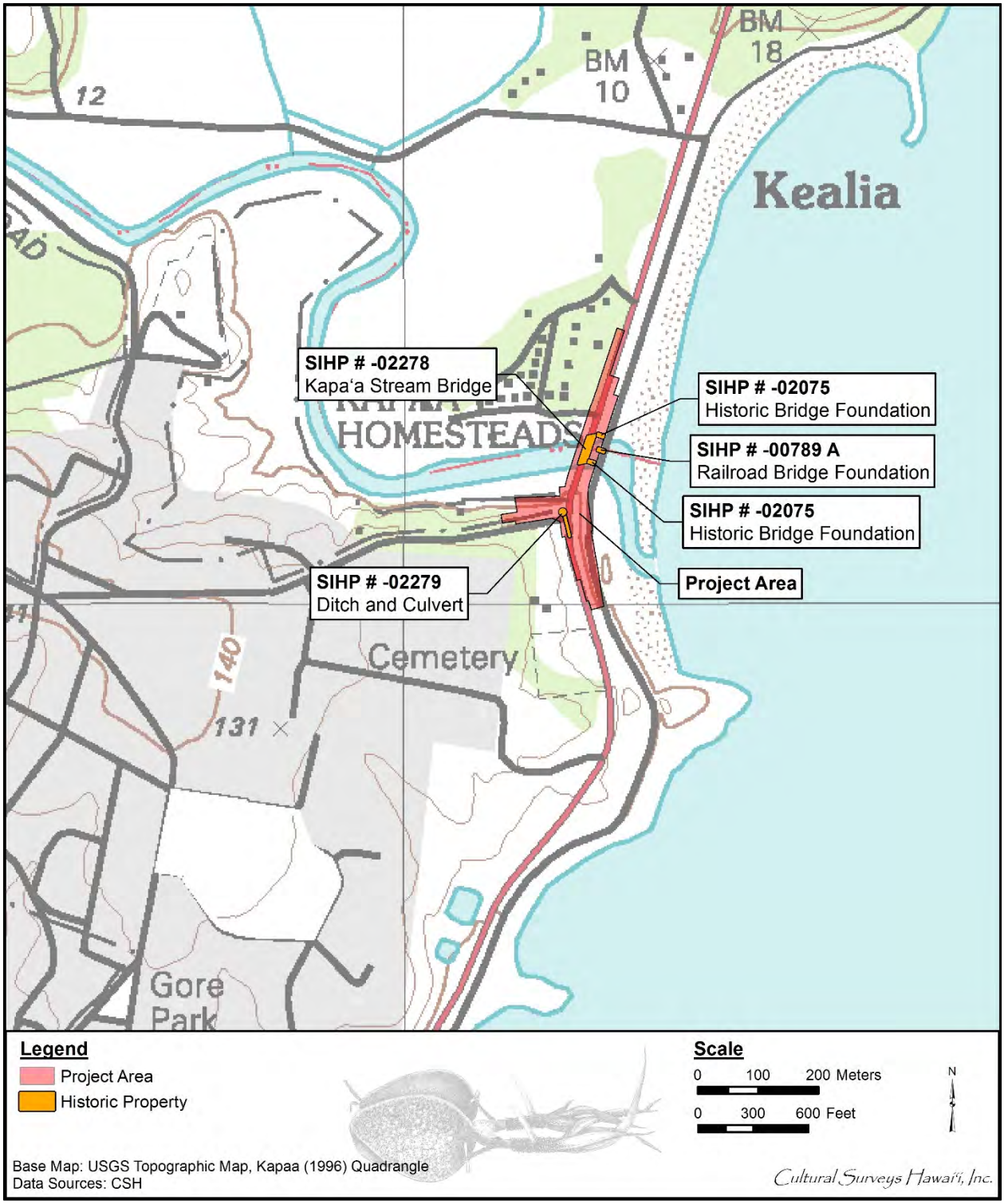

Figure 19. Portion of 1996 Kapaa USGS topographic quadrangle showing the location of historic properties within the project area

Section 2 Archaeological Monitoring Provisions

Precautionary archaeological monitoring, a form of data recovery, is being conducted as a good faith effort to identify any potentially unidentified subsurface historic properties. This will include on-site monitoring at all three projects (Bridge 7E Replacement project, Hanapēpē River Bridge Replacement project, and Kapa‘a Stream Bridge Replacement project) within their entire project areas during all ground disturbing activities. This recommendation is based on the results of community consultation.

The following research objective will guide the fieldwork and laboratory analysis during archaeological monitoring:

1) To determine whether unidentified potentially significant subsurface historic properties, including human remains, are located within the project area and, if present, to sufficiently document these historic properties to mitigate any affect the projects' undertaking may have.

Under Hawai‘i State historic preservation legislation, "Archaeological monitoring may be an identification, mitigation, or post-mitigation contingency measure. Monitoring shall entail the archaeological observation of, and possible intervention with, on-going activities, which may adversely affect historic properties" (HAR §13-279-3).

Hawai‘i State historic preservation legislation governing archaeological monitoring programs requires that each monitoring plan discuss eight specific items (HAR §13-279-4). The monitoring provisions below address these eight requirements in terms of archaeological monitoring for the excavations within the current project area.

1) <u>Anticipated Historic Properties:</u>

   The project areas have the potential for subsurface pre-Contact and post-Contact cultural deposits as well as human burials. Three NRHP-eligible historic properties were identified during the AIS projects for the three bridges (see Section 1.4).

2) <u>Locations of Historic Properties:</u>

   Unidentified subsurface historic properties may be encountered anywhere within the project areas.

3) <u>Fieldwork:</u>

   On-site archaeological monitoring is recommended for all ground disturbing activities within the project area. Any departure from this will occur only following consultation with and written concurrence from the SHPD. The monitoring fieldwork will likely encompass the documentation of subsurface archaeological deposits (e.g., trash pits, structural remnants) and will employ current standard archaeological recording techniques. This will include drawing and recording the stratigraphy of excavation profiles where cultural features or artifacts are exposed as well as representative profiles. These exposures will be photographed, located on project area maps, and sampled. Photographs and representative profiles of excavations will be taken even if no historically significant sites are documented. As appropriate, sampling may include the collection of representative artifacts, bulk

sediment samples, and/or the on-site screening of measured volumes of feature fill to determine feature contents.

In the event of significant finds, the SHPD will be notified. If human remains are identified, construction activity in the vicinity will be stopped and no exploratory work of any kind will be conducted unless specifically requested by the SHPD. All human skeletal remains encountered during excavation will be handled in compliance with HAR §13-300 and HRS §6E-43.

4) Archaeologist’s Role:

The on-site archaeologist will have the authority to stop work immediately in the area of any findings so that documentation can proceed and appropriate treatment can be determined. In addition, the archaeologist will have the authority to slow and/or suspend construction activities in order to ensure the necessary archaeological sampling and recording can take place.

5) Coordination Meeting:

Before work commences on the project, the on-site archaeologist shall hold a coordination meeting to orient the construction crew to the requirements of the archaeological monitoring program. At this meeting the monitor will emphasize his or her authority to temporarily halt construction and state that all finds (including objects such as bottles) are the property of the landowner and may not be removed from the construction site. At this time, it will be made clear that the archaeologist must be on site during all subsurface excavations.

6) Laboratory Work:

Laboratory work will be conducted in accordance with HAR §13-279-5(6). Laboratory analysis of non-burial related finds will be tabulated and standard artifact and midden recording will be conducted as follows. Artifacts will be documented as to provenience, measurements, weight, type of material, and presumed function. Photographs of representative artifacts will be taken for inclusion in an archaeological monitoring report (AMR). Bone and shell midden materials will be sorted down to species, when possible, and then tabulated by provenience.

As appropriate, collected charcoal material obtained within intact cultural deposits will be analyzed for species identification. Charcoal samples ideal for dating analyses will be sent to Beta Analytic, Inc. for radiocarbon dating. If appropriate, artifacts may be sent to the University of Hawai‘i-Hilo Geoarchaeology Lab for Energy-Dispersive X-ray Fluorescence (EDXRF) analysis in order to identify and possibly geographically locate the source material. All analyzed samples, provenience information, and results will be presented in table form within the AMR.

7) Report Preparation:

The AMR will contain sections on monitoring methods, archaeological results, stratigraphy, and results of laboratory analyses, and it will present a synthesis of these results. The report will address the requirements of an AMR (pursuant to HAR §13-279-5). Photographs of excavations will be included in the monitoring report even if no historically significant sites are documented. Should burial treatment be completed as part of the monitoring effort, a

summary of this treatment will be included in the AMR. Should burials and/or human remains be identified, CSH will provide all appropriate additional written documentation (e.g., letters, memos, reports) that may be requested by the SHPD.

8) Archiving Materials:

All burial materials will be addressed in accordance with SHPD directives. Materials not associated with burials will be temporarily stored at CSH’s Līhu‘e office until an appropriate curation facility is selected, in consultation with the landowner and the SHPD. All data generated will be stored at the CSH offices.

Section 3 Interim Protection Measures

In addition to archaeological monitoring, additional measures are to be implemented for the Hanapēpē River Bridge Replacement project to mitigate/prevent adverse effects to historic properties within and adjacent to the project's APE as stipulated in the project's Memorandum of Agreement. The proposed mitigation shall apply to all phases of work within the APE. Mitigation to be implemented under this plan includes interim protection measures for SIHP #s 50-30-09-2283 (earthen/basalt berm) and 50-30-09-2284 (retaining wall) and HAER documentation for SIHP #s 50-30-09-2280 (Hanapēpē River Bridge) and 50-30-09-2283 (earthen/basalt berm).

Demolition of the historic Hanapēpē River Bridge (SIHP # -2280) does not meet the Secretary of the Interior's Standards for the Treatment of Historic Properties and 36 CFR 800 which call out an adverse effect as physical destruction of or damage to all or part of the property.

The earthen/basalt berm (SIHP # -2283) is eligible for inclusion in the NRHP for its association with community planning and the development of Hanapēpē under Criterion A. It is not considered eligible under Criterion C because it lacks significance associated with engineering distinction. Because this eligibility is based on the association with an event rather than engineering or structural qualities, the removal of a short, 6-ft-9-inch length of the historic property from its overall total length of 2,200 ft would not adversely affect the characteristics that qualify it for inclusion in the NRHP.

1. The following interim protection measures have been identified to protect the earthen/basalt berm (SIHP # -2283) and a retaining wall (SIHP # -2284) located adjacent to the project APE:
    a. Buffer Zone Demarcation: Interim buffer zones will be demarcated on the ground with orange construction fencing. The orange construction fencing will be placed along the project APE boundary at the location of the two historic properties.
    b. Construction Plan Specifications: Project Engineers shall place avoidance instructions on construction plans and specifications. Project electronic shape files and maps with clearly demarcated boundaries of the historic properties will be included with contract documents as limitations of operations, prohibiting any construction activity beyond the project's APE and interim protection fencing.
    c. Pre-Construction Meeting: An on-site, pre-construction briefing of construction personnel will be held to make them aware of the location and significance of the historic properties. The prime contractor will be responsible for informing all sub-contractors and workers under their direction of the importance of avoiding the interim preserve areas. Construction personnel will be made aware of the observable buffer zones and their limitations, including no storing of materials within or against the fence lines.
2. The project requires a small portion of the historic United States Army Corps of Engineers earthen/basalt berm (SIHP # -2283) to be removed. This action will be conducted using construction methods that would not compromise the overall integrity of the historic property by ensuring the area where material is removed is left structurally stable and repaired with in-kind materials.

a. The contractor will be required to bridge over SIHP # -2283 and not impact it. Other than the 6-ft-9-inch length of SIHP # -2283 to be removed, the existing bank of the historic property and the concrete topping wall are to be retained and protected in place. The contractors undertaking the bridge work and/or the bypass road will be responsible for protecting the berm.

b. Any incidental damage to the berm will be repaired by those contractors, using salvaged, original material in the case of the rip rap bank, or in the case of the concrete wall, repaired in kind.

3. Documentation of the Hanapēpē River Bridge (SIHP # -2280) and the earthen/basalt berm (SIHP # -2283) to be conducted within the APE. Documentation shall be equivalent to HAER Level II and shall preserve an accurate record of historic properties that can be used in research and other preservation activities and include information that permits assessment of its reliability. This includes

   a. Written data

   b. Drawings

   c. Photographs including the design and condition of the historic earthen/basalt berm (SIHP # -2283) before and after the conclusion of the project.

   Documentation shall be prepared by individuals meeting the National Park Service’s (NPS) professional qualifications for Archaeology and/or Historic Preservation (36 CFR 61) and submitted in accordance with NPS guidance for *Preparing HABS/HAER/HALS Documentation for Transmittal* (June 2015). Materials will be submitted to the SHPD for their records.

4. Interpretive materials are to be installed in consultation with the SHPD for SIHP # -2280 (bridge) and SIHP # -2283 (earthen/basalt berm). Character defining features of SIHP # -2280 will be salvaged for use in the interpretive signage/kiosk area.

5. Submission of proposed bridge design plans to SHPD for their records.

Further protection measures may be developed through the preparation and SHPD acceptance of the project’s mitigation plans by including appropriate use of buffer zones and interim protection measures as necessary, and as outlined in the HAR listed above.

Section 4 References Cited

Armstrong, R. Warwick (editor)

1983 *Atlas of Hawai‘i*. University of Hawaii Press, Honolulu.

Belluomini, Scott A., Trevor M. Yucha, and Hallett H. Hammatt

2016a *Archaeological Inventory Survey Report for the Hanapēpē River Bridge Replacement Project, Hanapēpē Ahupua‘a, Waimea District, Kaua‘i, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027, TMKs: [4] 1-9-007:001 por. Hanapēpē River, 013 por., 020 por., and 034 por., and 1-9-010:014 por., 015 por., 046 por. and 050 por., Kaumuali‘i Highway and Iona Road Rights-of-Way*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

2016b *Archaeological Inventory Survey Report for the Kapa‘a Stream Bridge Replacement Project, Kapa‘a and Keālia Ahupua‘a, Kawaihau District, Kaua‘i, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) contract DTFH68-13-R-00027, TMKs: [4] 4-6-014:024 por., 033 por., 090 por., 092 por. Kūhiō Highway and Mailihuna Road Rights-of-Way, 4-7-003:001 por., and 4-7-008:042 por. Kūhiō Highway Right-of-Way*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Bushnell, Kristina W., Melanie M. Mann, Douglas F. Borthwick, Anthony R. Bush, Todd Tulchin, David W. Shideler, and Hallett H. Hammatt

2003 *Archaeological Inventory Survey for the Proposed Kapa‘a-Keālia Bike and Pedestrian Path Kapa‘a and Keālia, Kawaihau District, Kaua‘i Island, Hawai‘i (TMK: 4-5, 4-6-14, 4-7-03 & 04)*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Clean Islands Council

2011 Island of Kaua‘i. Electronic document, http://www.cleanislands.com/kauai/index.html (accessed 11 August 2011).

Damon, Ethel M.

1931 *Koamalu*. 2 Vols. Privately printed at the Honolulu Star-Bulletin Press, Honolulu.

Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.* U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawai‘i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

Giambelluca, T., M. Nullet, and T. Schroeder

1986 *Rainfall Atlas of Hawaii Report R76*. State of Hawai‘i, Department of Land and Natural Resources, Division of Water and Land Development, Honolulu.

Google Earth

2012 Aerial photographs of Hawai‘i. Google Inc., Mountain View, California. Available online at www.google.com/earth.html.

2013 Aerial photographs of Hawai‘i. Google Inc., Mountain View, California. Available online at www.google.com/earth.html.

Handy, E.S. Craighill and Elizabeth G. Handy

1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum Bulletin 233. Bernice Pauahi Bishop Museum, Honolulu.

Hawai‘i TMK Service

2012 Tax Map Key [4] 2-7-01 and 02, 1-9-07 and 10, 4-6-14, 4-7-03 and 08. Hawai‘i TMK Service, Honolulu.

Juvik, Sonia P. and James O. Juvik (editors), Thomas R. Paradise (chief cartographer)

1998 *Atlas of Hawai‘i*. Third edition. University of Hawai‘i Press, Honolulu.

Macdonald, Gordon A. and Agatin T. Abbot

1970 *Volcanoes in the Sea*. University of Hawaii Press, Honoulu.

National Park Service

2015 *Preparing HABS/HAER/HALS Documentation for Transmittal.* National Park Service, Washington, D.C.

Perzinski, David, Matthew McDermott, and Hallett H. Hammatt

2000 *Archaeological Inventory Survey and Sub-Surface Testing of the Approximately 300 Acre Keālia Makai Parcel, Ahupua‘a of Keālia, Kawaihau District, Kaua‘i Island (TMK 4-7-04:6).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Ruzicka, Dee

2015 *SHPD Historic Recourse Inventory Form – Reconnaissance Level for Hanapēpē River Bridge.* Mason Architects, Inc., Honolulu.

USDA (U.S. Department of Agriculture)

2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas. http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/ (accessed March 2005).

USGS (U.S. Geological Survey)

1996 Hanapepe USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

1996 Koloa USGS Survey 7.5-Minute Series Topographic Quadrangle. USGS Information Services, Denver, Colorado.

1996 Kapaa USGS Survey 7.5-Minute Series Topographic Quadrangle. USGS Information Services, Denver, Colorado.

Yucha, Trevor M., Scott A. Belluomini, and Hallett H. Hammatt

2016 *Archaeological Inventory Survey Report for the Bridge 7E Replacement Project, Kōloa Ahupua‘a, Kōloa District, Kaua‘i, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) Contract DTFH68-13-R-00027, TMKs: [4] 2-7-001:004 por., and 2-7-002:001 por. Kaumuali‘i Highway Right-of-Way.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Appendix H
Public Information Meeting Summary, September 17, 2015

MEETING SUMMARY

Kuhio Highway/Mailihuna Road Intersection and Kapaa Stream Bridge Public Meeting Summary

ATTENDEES: HDOT: Mike Hinazumi, Ray McCormick, Donald Smith, Fred Reyes
FHWA-CFLHD: Mike Will, Nicole Winterton
CH2M: Kathleen Chu, Nancy Nishikawa, Kim Nokes

COPY TO: Ed Hammontree, Bill Lang

PREPARED BY: Nancy Nishikawa

MEETING DATE: September 17, 2015

PROJECT: Hawaii Bridge Program: Kuhio Hwy/Mailihuna Rd Intersection and Kapaa Stream Bridge

Meeting Objectives

I. Provide an overview of the project:
   - The purpose and need for the bridge
   - The purpose and need for the intersection improvements at Kuhio Highway and Mailihuna Rd.
   - The proposed design and construction schedule
   - How we plan to manage traffic during construction

II. Obtain community feedback

Meeting Summary

Ray McCormick opened the meeting by thanking the public for attending and emphasizing the importance of public feedback.

Kathleen Chu gave a short presentation of the Kuhio Highway/Mailihuna Road Intersection and Kapaa Stream Bridge Project. The meeting then proceeded to comments and questions.

Comments/Questions

The public information meeting was attended by 10 people. Their primary concerns related to intersection performance under the signalization and roundabout alternatives; pedestrian accommodation through the roundabout and on the bridge and continuation of the sidewalk on the mauka side of the highway; potential impacts on the shared use path; railing design and view planes; and narrow highway shoulders

Attendees raised the following questions and comments:

1. Is this project funded yet?
2. What about people walking on the bridge?

3. There is a worn path on the mauka side of the highway. Without a mauka sidewalk on the bridge, students who live on Kealia Road (and using the shared use path) would have to cross the highway twice. The sidewalk on the mauka side should be extended between Mailihuna and Kealia Roads because it's an important connection.
4. How will pedestrians and bicyclists get across the roundabout?
5. The bridge railing should not cut the visual plane for those crossing the bridge. I like the metal railing that you can see through. Keep in mind that we want to see water when crossing the bridge.
6. People speed southbound on Kuhio Highway, especially trucks. It's hard to turn left onto the highway from Mailihuna Road to get to Kealia Beach.
7. How far is the path from the roundabout?
8. Have you estimated the speed of flow through the roundabout compared to the traffic signal?
9. If you are trying to slow down traffic, then the roundabout works better.
10. At the Wilcox roundabout, I've heard that traffic comes to a stop when parents pick up their children.
11. The Wilcox pick up/drop off area is close to the roundabout, which is a different situation from Kapaa High School. At the Mailihuna intersection, there isn't the same kind of driveway nearby.
12. How does the Olohena roundabout work for fire trucks? *[Firefighters in attendance said that the Olohena roundabout is fine, but the Wilcox roundabout is tight for their equipment.]*
13. A roundabout is safe for pedestrians who only cross one lane at a time (about 15 feet) with pedestrian refuges and motorists having to slow down. At a traffic signal, pedestrians have a protected crossing.
14. For the signalized intersection, the crosswalk should be on the south side so it doesn't conflict with vehicles making a left turn from Mailihuna Road onto the highway. Although on the south side, there would be potential conflicts with right-turning vehicles.
15. Were other alternatives considered?
16. Is it possible to have a pedestrian signal with a roundabout?
17. Either alternative is an improvement over the existing intersection. A consideration is how much room on the shoulders is available for cars to pull over so emergency vehicles can pass. Fire trucks use this stretch of highway a lot, and it's a long distance through the curve in the highway where it can be difficult to get past other vehicles.
18. What's the schedule for other public meetings and opportunities for involvement?

The key points to the responses were:

- Thanking the public for sharing their input and concerns.
- The project has been funded through design. Construction funds would depend on HDOT's fiscal analysis and evaluation of statewide priorities.
- The Olohena and Chiefess Middle School roundabouts are similar in size—on the order of 125-130 feet in diameter. The Wilcox roundabout is smaller, closer to 100 feet in diameter. In general, larger roundabouts seem to operate better since there's more capacity with greater distance between entering and exiting vehicles.

- In terms of travel speed, highway vehicles would be able to travel through a signalized intersection at the 40 mph speed limit when the light is green. If there is a roundabout, motorists would need to slow down to 15-20 mph to go through. *[Don Smith mentioned that, independent of this project, HDOT is evaluating a reduction in the highway speed limit to 35 mph in the vicinity of Kealia Beach.]*
- Level of service improvements at the Kuhio Highway/Mailihuna Road intersection are expected to be comparable (LOS B) under either alternative once motorists adjust to the changes. However, with increased traffic volumes over the long term, level of service is expected to decline for motorists entering the roundabout from Mailihuna Road.
- Installing pedestrian signals within the roundabout can be evaluated if there is a history of accidents.
- The proposed roundabout is within 20 feet from the shared use path. One of the challenges is vehicle storage from the beach access.
- In addition to the signalized intersection and roundabout alternatives, the project team considered turn lanes without a traffic signal.
- The project team will consider input regarding a mauka sidewalk on Kapaa Stream Bridge.
- Public outreach has included letters requesting input for the Draft Environmental Assessment (EA) and notifications about this public information meeting. Based on feedback, CFLHD will consider a need for additional meetings. Public outreach would also occur as part of the construction phase. The public will have an opportunity to review and comment on the Draft EA.

Next Steps

- CH2M will compile a stakeholder list of who wants to remain informed.
- A copy of this public meeting summary will be posted on the CFL project site.
- The Draft Environmental Assessment is scheduled for release before the end of 2015. Members of the public will have an opportunity to review and comment on the document.

Attachments

- Powerpoint Presentation
- Pdf of the Display Boards
- Sign-in Sheet
- Comment forms

U.S. Department of Transportation
Federal Highway Administration

SIGN-IN SHEET
Kuhio Hwy/Mailihuna Rd Intersection Improvements and Kapaa Stream Bridge Replacement Project
Public Meeting – September 17, 2015

Name & Agency or Jurisdiction	Mailing Address	City / State	Zip Code	Phone	Email
Marge Freeman	4-820 Kuhio Hwy	Kapaa	96746		freemanmargery@gmail.com
Gabriela Taylor	5620 Kapana Rd	Kapaa	96746		gabriela@kapana.net
Michael Moule				241-4891	MMoule@kauai.gov
Fred Reyes	1170 Haleukana St L1	Lihue	96766	241-3017	fred.reyes@hawaii.gov
Lee Steinmetz	County of Kauai	"	96766	241-[illegible]	lsteinmetz@kauai.gov
Sheri Kuniola-Volz	4810 Iwi Rd	Kapaa	96746	482-1597	kalivolz@yahoo.com
Micah Mokuahi	6675 Puupilo Place	Kapaa	96746		
Albert Kaui	4444 Rice St. Lihue, Hi	Lihue	96766	241-6577	akaui@kauai.gov
Sean Kitamura	1734 Mei Pl. Kapaa, HI	Kapaa/HI	96746		
Daniel S Hamada	466 Malihuna Rd Kapaa, Hi	Kapaa	96746	821-4400	daniel_hamada@notes.k12.hi.us

U.S. Department of Transportation
Federal Highway Administration

SIGN-IN SHEET
Kuhio Hwy/Mailihuna Rd Intersection Improvements and Kapaa Stream Bridge Replacement Project
Public Meeting – September 17, 2015

Name & Agency or Jurisdiction	Mailing Address	City / State	Zip Code	Phone	Email
Rep. Derek Kawakami (Gini Kapali-OM)	415 S. Beretania St. Rm 314 Honolulu, HI 96813			586-8435	repkawakami@capitol.hawaii.gov

Appendix I
Pre-Assessment Comments and Responses

REQUEST FOR PRE-ASSESSMENT COMMENTS

Template Letter with Project Sheet (attachment)

Comments Received

- Hawaii Department of Health, Clean Water Branch
- Hawaii Department of Health, Environmental Planning Office
- Hawaii Department of Land and Natural Resources, Commission on Water Resource Management
- Office of Planning
- Hawaii Department of Education, Office of the Complex Area Superintendent, Kauai Schools
- Kauai Department of Public Works

DAVID Y. IGE
GOVERNOR

DOUGLAS MURDOCK
Comptroller

AUDREY HIDANO
Deputy Comptroller

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

RECEIVED

APR 17 2015

APR 20 2015

(P)1093.5

Ms. Kathleen Chu
CH2M Hill, Inc.
1132 Bishop Street, Suite 1100
Honolulu, Hawaii 96813

Dear Ms. Chu:

Subject: Pre-Assessment Consultation for
Hawaii Bridge Program for the State of Hawaii
Federal Highway Administration, Central Federal Lands Highway Division
Chapter 343, HRS and National Environmental Policy

Thank you for the opportunity to comment on the subject project. The locations of the bridges do not impact any of the Department of Accounting and General Services' facilities, and we have no comments or any environmental concerns in the areas of the project locations at this time.

If you have any questions, your staff may call Ms. Gayle Takasaki of the Public Works Division at 586-0584.

Sincerely,

for DOUGLAS MURDOCK
Comptroller

c: Mr. J. Michael Will, P.E., Program Engineering Manager, US Department of Transportation

DAVID Y. IGE
GOVERNOR

KATHRYN S. MATAYOSHI
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
OFFICE OF THE COMPLEX AREA SUPERINTENDENT
KAUAI SCHOOLS
3060 Eiwa Street, Room 305
Lihue, Hawaii 96766

RECEIVED
JUL 02 2015

June 26, 2015

Ms. Kathleen Chu, Program Manager
CH2M Hill, Inc.
1132 Bishop Street, Suite 1100
Honolulu, Hawaii 96813

Dear Ms. Chu:

Subject: Program for Kapaa Stream, Kapaa, Kauai

The Department of Education (DOE) has received your letter of May 19, 2015. It is unclear from your letter whether you are soliciting early comments in preparation for an environmental review or whether the letter itself is serving as a review.

The DOE is certain this project will impact Kapaa Elementary and Kapaa High School's during construction. The specific plan needs to be discussed in a meeting with me and the school principals regarding construction schedules, road closures and possible dust and noise mitigation measures.

In addition, the DOE must have more information on the plans for the Mailihuna Road intersection, particularly the extent of the planned sidewalks, crosswalks, and traffic control improvements. It would be very advantageous to know if any signage is considered as part of the project.

Environmental documents should be sent to my attention at 3060 Eiwa Street, Room 305, Lihue, Hawaii 96746 and to the DOE Facilities Development Branch at 4680 Kalanianaole Highway, Building TB1A, Honolulu, Hawaii 96821. Should you have any additional facility questions, please call Heidi Meeker of the Facilities Development Branch at (808) 377-8301.

I look forward to meeting with you and an appointment can be arranged with my secretary Jan Ishida at 808-274-3502.

Sincerely,

William N. Arakaki
Complex Area Superintendent

HM:ji

cc: Heidi Meeker, Facilities Development Branch
Jason Kuloloia, Kapaa Elementary Principal
Daniel Hamada, Kapaa High School Principal
Gail Nakaahiki, Complex Area Business Manager

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

December 7, 2015

In Reply Refer To:
HFPM-16

TO: WILLIAM N. ARAKAKI
OFFICE OF THE KAUAI COMPLEX AREA SUPERINTENDENT
DEPARTMENT OF EDUCATION
3060 EIWA STREET, SUITE 305
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
HAWAII BRIDGE PROGRAM, KAUAI PROJECTS
MAILIHUNA ROAD INTERSECTION AND KAPAA STREAM BRIDGE

Dear Mr. Arakaki:

Thank you for pre-assessment comments on the subject project transmitted by letter dated June 26, 2015.

The design process for this project is ongoing. The project team will coordinate with your office and individual school principals through the environmental review process as additional information becomes available. As noted in the initial fact sheet, proposed improvements are intended to increase safety for everyone using the intersection. We are working to minimize and manage impacts to the schools and others in the surrounding area during the construction period.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office, Kapaa Elementary School, Kapaa High School, and the Department of Education Facilities Development Branch when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
EMD/CWB

05028PNN.15

May 18, 2015

Mr. J. Michael Will, P.E.
Program Engineering Manager
Central Federal Lands Highway Division
U.S. Department of Transportation
12300 West Dakota Avenue, Suite 380
Lakewood, Colorado 80228

Dear Mr. Will:

SUBJECT: Comments on the Pre-Assessment Consultation for the Hawaii Bridge Program State of Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated March 24, 2015, requesting comments on your project. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee ($1,000 for an individual NPDES permit or $500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: https://eha-cloud.doh.hawaii.gov/epermit/. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

   Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:

   a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters, like

community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g., minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.

c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.

d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.

e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

ALEC WONG, P.E., CHIEF
Clean Water Branch

NN:ay

c: Ms. Kathleen Chu, CH2M Hill [via e-mail kathleen.chu@ch2m.com only]
DOH-EPO #15-094 [via e-mail only]
Mr. Gary Ueunten, CWB, Kauai District Health Office [via e-mail only]
Mr. Neil Mukai, CWB, Hawaii District Health Office [via e-mail only]

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

December 7, 2015

In Reply Refer To:
HFPM-16

TO: ALEC WONG, P.E.
CHIEF, CLEAN WATER BRANCH
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HI 96801

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
HAWAII BRIDGE PROGRAM
KAUAI PROJECTS: BRIDGE 7E, HANAPEPE, KAPAA
OAHU PROJECTS: HALONA, ROOSEVELT, KAWELA, NANAHU
HAWAII ISLAND PROJECTS: HILEA, NINOLE

Dear Mr. Wong:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated May 18, 2015.

The project team is aware that certain projects may require certification or permits under the Clean Water Act. We have been engaged in early consultation with your staff and greatly appreciate their assistance.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:
HFPM-16

EPO 15-094

May 12, 2015

Mr. J. Michael Will, P.E.
Program Engineering Manager
Central Federal Lands Highway Division
U.S. Department of Transportation
12300 West Dakota Avenue, Suite 380
Lakewood, Colorado 80228
Via email: Michael.will@dot.gov

Dear Mr. Will:

SUBJECT: Pre- Assessment Consultation (PC) for Hawaii Bridge Program for State of Hawaii

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your PC to our office on March 24, 2015. Thank you for allowing us to review and comment on the proposed project. The PC was routed to the Clean Water Branch, and the District Health Offices on Kauai and Hawaii. They will provide specific comments to you if necessary. EPO recommends that you review the standard comments and available strategies to support sustainable and healthy design provided at: http://health.hawaii.gov/epo/home/landuse-planning-review-program. Projects are required to adhere to all applicable standard comments.

We encourage you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at: https://eha-cloud.doh.hawaii.gov

You may also wish to review the revised Water Quality Standards Maps that have been updated for all islands. The Water Quality Standards Maps can be found at:
http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards

The University of Hawaii has examined potential sea level rise changes in Hawaii. You may find it useful to review their studies at: http://www.soest.hawaii.edu/coasts/sealevel

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design.

Mahalo nui loa,

Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

c: Kathleen Chu, CH2M Hill program manager – kahtleen.chu@ch2m.com {via email only}
CWB, DHO Kauai, DHO Hawaii {via email only}

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

December 7, 2015

In Reply Refer To:
HFPM-16

TO: LAURA LEIALOHA PHILLIPS McINTYRE, AICP
PROGRAM MANAGER, ENVIRONMENTAL PLANNING OFFICE
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HI 96801

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
HAWAII BRIDGE PROGRAM
KAUAI PROJECTS: BRIDGE 7E, HANAPEPE, KAPAA
OAHU PROJECTS: HALONA, ROOSEVELT, KAWELA, NANAHU
HAWAII ISLAND PROJECTS: HILEA, NINOLE

Dear Ms. McIntyre:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated May 12, 2015.

We acknowledge the information provided on the Hawaii Environmental Health Portal, Water Quality Standard Maps, and University of Hawaii studies related to sea level rise.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL

DAVID Y. IGE
GOVERNOR OF HAWAII

CARTY S. CHANG
ACTING CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

FIRST DEPUTY

WILLIAM M. TAM
INTERIM DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 15, 2015

U. S. Department of Transportation
Federal Highway Administration
Central Federal Lands Highway Division
Attn: J. Michael Will, Program Engineering Manager via email: michael.will@dot.gov
12300 West Dakota Avenue, Suite 330
Lakewood, CO 80228

Dear Mr. Will,

SUBJECT: Notification of Intent to Construct the Hawaii Bridge Program, Request for Information, HFPM-16

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments sent to you dated December 18, 2014, and January 9, 2015, enclosed are additional comments from the Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to call Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED
LAND DIVISION
2015 JAN 14 PM 1:19
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 2, 2014

MEMORANDUM

TO: **DLNR Agency:**

X Div. of Aquatic Resources
__ Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
__ Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands

X Land Division – Oahu District
X Land Division – Kauai District
__ Land Division – Maui District
X Land Division – Hawaii District
X Historic Preservation

FR

TO:

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Notification of Intent to Construct the Hawaii Bridge Program, Request for Information
LOCATION: Various (see cover letter) including all Districts except Maui
APPLICANT: Federal Highway Administration, Central Federal Lands Highway Division, in cooperation with the Hawaii Department of Transportation

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by December 18, 2014. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed: _____
Print Name: WILLIAM M. TAM, Deputy Director
Date: January 7, 2015

FILE ID: RFO. 4095.0
DOC ID: 11897

DAVID Y. IGE
GOVERNOR OF HAWAII

CARTY S. CHANG
ACTING CHAIRPERSON

DENISE ANTOLINI
KAMANA BEAMER
MICHAEL G. BUCK
MILTON D. PAVAO
VIRGINIA PRESSLER, M.D.
JONATHAN STARR

WILLIAM M. TAM
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

January 7, 2015

REF: RFD.4095.0

TO: Russell Tsuji, Administrator
Land Division

FROM: William M. Tam, Deputy Director
Commission on Water Resource Management

SUBJECT: Notification of Intent to Construct Hawaii Bridge Program, Request for Information

FILE NO.: HFPM-16
TMK NO.: Various including all Districts except Maui

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://www.hawaii.gov/dlnr/cwrm.

Our comments related to water resources are checked off below.

☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

☐ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/.

☐ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

☐ 6. We recommend the use of alternative water sources, wherever practicable.

☐ 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program

☐ 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf

☐ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM:
Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/info_permits.htm.

☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☐ 11. A Well Construction Permit(s) is (are) required before any well construction work begins.

☐ 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 14. Ground water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☒ 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration(s) can be made to the bed and/or banks of a stream channel.

☐ 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is (are) constructed or altered.

☐ 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☐ OTHER:

If there are any questions, please contact Dean Uyeno at 587-0234.

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

December 7, 2015

In Reply Refer To:
HFPM-16

TO: ROY HARDY
DEPUTY DIRECTOR
COMMISSION ON WATER RESOURCE MANAGEMENT
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. BOX 621
HONOLULU, HI 96809

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
HAWAII BRIDGE PROGRAM
KAUAI PROJECTS: BRIDGE 7E, HANAPEPE, KAPAA
OAHU PROJECTS: HALONA, ROOSEVELT, KAWELA, NANAHU
HAWAII ISLAND PROJECTS: HILEA, NINOLE

Dear Mr. Hardy:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated January 7, 2015.

We acknowledge that projects may require a Stream Channel Alteration Permit, and will initiate the application process as needed.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL

OFFICE OF PLANNING
STATE OF HAWAII

DAVID Y. IGE
GOVERNOR

LEO R. ASUNCION
ACTING DIRECTOR
OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http://planning.hawaii.gov/

Ref. No. P-14732

RECEIVED
MAY 4 2015

May 1, 2015

Ms. Kathleen Chu
Program Manager
CH2M Hill, Inc.
1132 Bishop Street, Suite 1100
Honolulu, Hawaii 96813

Dear Ms. Chu:

Subject: Hawaii Bridge Program for the State of Hawaii
Federal Highway Administration, Central Federal Lands Highway Division, Pre-Assessment Consultation
Chapter 343, Hawaii Revised Statutes and National Environmental Policy Act; TMK: Various

Thank you for the opportunity to provide comments on the pre-consultation request for a Draft Environmental Assessment (Draft EA) being developed for the Hawaii Bridge Program. The pre-consultation review material was transmitted to our office by letter dated March 24, 2015.

It is our understanding that the Federal Highway Administration, Central Federal Lands Highway Division, in partnership with the Hawaii Department of Transportation, is conducting this environmental study for nine bridges on the islands of Kauai, Oahu, and Hawaii. The purpose of this bridge improvement project is the rehabilitation or replacement of identified bridges to create a safer and more functional stream, river, and canal crossing network for roadway users. The bridge improvements will focus on getting these bridges up to current design standards, increase load capacity, allow for safer pedestrian traffic, and improve on railings, transitions, and bridge approaches.

The Office of Planning (OP) has reviewed the transmitted material and has the following comments to offer:

1. Some of the bridge sites listed in the Draft EA review material contain incorrect Tax Map Key (TMK) numbers. TMK's generally have a nine digit number and are listed by island designation, plat, and parcel locations. The island of Oahu is classified by the number (1), Maui County by (2), Hawaii County by (3), and Kauai County by (4). The review material, for example, lists the Hanapepe River Bridge with the correct TMK: (4) 1-9-007:001. The bridges on the island of Oahu have an insufficient

amount of TMK numerals. The East Hawaii County locations list the wrong island designation (it should be listed with island designation of (3), rather than the island designation of (4)). The Draft EA should correct these errors and provide TMK locations with a nine digit format.

2. OP provides technical assistance to state and county agencies in administering the statewide planning system in Hawaii Revised Statutes (HRS) Chapter 226, the Hawaii State Plan. The Hawaii State Plan provides goals, objectives, priorities, and priority guidelines for growth, development, and the allocation of resources throughout the State. The Hawaii State Plan includes diverse policies and objectives of state interest including but not limited to the economy, agriculture, the visitor industry, federal expenditure, the physical environment, facility systems, socio-cultural advancement, climate change adaptation, and sustainability.

   The Draft EA should include an analysis that addresses whether the proposed project conforms or is in conflict with the objectives, policies, and priority guidelines listed in the Hawaii State Plan.

3. The coastal zone management area is defined as "all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" see HRS § 205A-1 (definition of "coastal zone management area").

   HRS Chapter 205A requires all State and county agencies to enforce the coastal zone management (CZM) objectives and policies. The Draft EA should include an assessment as to how the proposed project conforms to the CZM objectives and its supporting policies set forth in HRS § 205A-2. The assessment addressing compliance with HRS Chapter 205A is an important component for satisfying the requirements of HRS Chapter 343. These objectives and policies include: recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, managing development, public participation, beach protection, and marine resources.

4. Because of the proximity to the shoreline, some of the bridge sites may lie within areas designated as Special Management Areas (SMA). Please confirm with the City and County of Honolulu's Department of Planning and Permitting, the County of Kauai Planning Department, and the County of Hawaii Planning Department on the location of these bridges in relation with the SMA boundaries and whether SMA permits are required.

5. The national Coastal Zone Management Act requires direct federal activities and development projects to be consistent with approved state coastal programs to the maximum extent practicable. OP is the lead state agency to conduct this Federal Consistency evaluation.

   Because at least one of the proposing agencies for this Draft EA is a federal agency, and federal funding will be used to finance this endeavor, this project may require compliance with Federal Consistency requirements. The Draft EA should list all applicable permits needed for this project. Any federal permits required for this project may have implications on the federal consistency evaluation conducted by OP.

6. Our review indicates that these bridge improvement projects lie within proximity to perennial streams, canals, wetlands, and are within numerous watersheds. The project areas are adjacent to a range of human activities from agriculture, urban development, and activity along coastlines or upstream from the coastline. The Draft EA should consider inclusion of a section addressing watershed protection and management.

   OP has created the Hawaii Watershed Guidance to provide direction on methods to safeguard Hawaii's watersheds and implement watershed plans. This guidance provides a number of management measures that address polluted runoff. OP's watershed guidance provides a number of management measures that address polluted runoff from urban activities, and a summary and links to management measures that may be implemented to minimize coastal nonpoint pollution impact. Specifically please examine, Section B – Roads, Highways, and Bridges pages 132-135. The document can be viewed or downloaded from the Office of Planning website at http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI Watershed Guidance Final.pdf.

7. We have reviewed the location maps of the bridge improvement projects and compared them to known coastal resources in the area. Many of these parcels are located in flood hazard zones, tsunami evacuation areas, and as noted above, land zoned for agriculture or urban uses, or are located near perineal streams, canals, wetlands, seasonal river gulches, or pass close to coastal areas and beaches. Therefore, inclusion of a stormwater impact evaluation would be beneficial to the Draft EA. Development and land use activities can create erosion, increased stormwater runoff, and coastal pollution that cause direct, secondary, and cumulative impacts to Hawaii's resources.

Please consider OP's Stormwater Impact Assessment in your stormwater impact evaluation for this project. This document can be used to identify and evaluate information on hydrology, stressors, sensitivity of aquatic and riparian resources, and management measures to control runoff occurrences. Mitigation measures and best management practices (BMP) listed in this document can be applied to water runoff strategies to prevent damage to coastal ecosystems. This document will assist in integrating stormwater impact assessment within the planning and environmental review process of a project. The document can be found at http://files.hawaii.gov/dbedt/op/czm/initiative/stomwater_imapct/final_stormwater_impact_assessments_guidance.pdf.

8. Construction of widened roadways, new bridge approaches, increased support structures for bridge spans, and pedestrian crossing will introduce hardened impervious surfaces, secondary development, and may require additional drainage infrastructure to be built. Please consider Low-Impact Development (LID) design practices in the planning process for this project. LID techniques promote a range of structural BMP's for stormwater control management, roadway development, and urban layout that minimizes negative environmental impact.

   LID design concepts and BMP's that should be considered include: the preservation of natural features and conservation design; the reduction of impervious cover; and utilizing natural features and source control for stormwater management. These methods are listed in OP's Low Impact Development, A Practitioners Guide. For more information on LID – BMP's, please examine Section 1.7, pgs. 1-4 to 1-11. This guidance can be viewed or downloaded from the OP website at: http://files.hawaii.gov/dbedt/op/czm/initiative/lid/lid_guide_2006.pdf

If you have any questions regarding this comment letter, please contact Josh Hekekia of our office at 587-2845.

Sincerely,

Leo R. Asuncion
Acting Director

c: J. Michael Will, P.E., Program Engineering Manager

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

December 7, 2015

In Reply Refer To:
HFPM-16

TO: LEO R. ASUNCION
DIRECTOR
OFFICE OF PLANNING
235 SOUTH BERETANIA STREET, 6TH FLOOR
HONOLULU, HI 96813

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
HAWAII BRIDGE PROGRAM
KAUAI PROJECTS: BRIDGE 7E, HANAPEPE, KAPAA
OAHU PROJECTS: HALONA, ROOSEVELT, KAWELA, NANAHU
HAWAII ISLAND PROJECTS: HILEA, NINOLE

Dear Mr. Asuncion:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated May 1, 2015. We offer the following responses in the order presented in your letter:

1. Tax Map Key numbers will be verified.

2. The Draft Environmental Assessment (DEA) will discuss consistency with the Hawaii State Plan.

3. The DEA will discuss consistency with Coastal Zone Management objectives.

4. Where relevant, the Special Management Area permit will be listed as a potential requirement.

5. Federal Consistency Review will be listed as a potential requirement.

6. The DEA will assess potential impacts on water resources.

7. We acknowledge the availability of the Office of Planning's Stormwater Impact Assessment as an environmental planning resource.

8. Stormwater management measures are being considered in project design and will be addressed in the DEA.

We appreciate your participation in the environmental review process. A copy of the DEA will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL

Bernard P. Carvalho, Jr.
Mayor

Nadine K. Nakamura
Managing Director

Larry Dill, P.E.
County Engineer

Lyle Tabata
Deputy County Engineer

DEPARTMENT OF PUBLIC WORKS
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite 275, Līhu'e, Hawai'i 96766
TEL (808) 241-4992 FAX (808) 241-6604

May 6, 2015

Kathleen Chu
CH2M Hill, Inc.
1132 Bishop Street, Suite 100
Honolulu, Hawai'i 96813

Subject Hawai'i Bridge Program for Island of Kaua'i
Federal highway Administration, Central Federal Lands Highway Division
Pre-Assessment Consultation
Chapter 343, Hawaii Revised Statutes and National Environmental Policy Act
PW 04.15.050

Dear Ms. Chu:

Thank you for the opportunity to review the fact sheets and to provide input on three projects to improve three bridges on the island of Kaua'i. We have the following comments on the projects:

Hanapēpē River Bridge on Kaumualii Highway
Kōloa and Waimea Districts, TMK (4) 1-9-007: 001

1. The Hanapēpē River Bridge lies within Zone AEF of Flood Insurance Rate Map (FIRM) Panel 287F. Zone AEF is the floodway area of Zone AE. Where development is proposed in a floodway, a registered engineer will need to certify that the work will not cause an increase in the base flood elevation during the occurrence of the base flood discharge.

2. Included in the Project Description for Hanapēpē River Bridge is "Develop a traffic management plan with appropriate construction-period detours". The short term impacts of construction on traffic in the Hanapēpē area should be fully discussed and evaluated in the Environmental Assessment.

Bridge 7E on Kaumualii Highway
Kōloa District, TMK (4) 2-7-001

1. The fact sheet states that Bridge 7E was built in 1933, but later it states that "HDOT's 2013 Historic Bridge Inventory identified that Bridge 7E is a common post-war bridge constructed after 1945." The environmental document should clarify this discrepancy.

Intersection Improvements at Kuhio Highway and Ma'ilihuna Road and Kapaa Stream Bridge on Kuhio Highway
Kawaihau District, TMK: (4) 4-6-014 and 4-7-003

1. The Kapaa Stream Bridge lies within Zone AEF on Flood Insurance Rate Map (FIRM) Panel 210F. Zone AEF is the floodway area of Zone AE. Where development is proposed in a floodway, a registered engineer will need to certify that the work will not cause an increase in the base flood elevation during the occurrence of the base flood discharge.

2. Included in the Project Description for Kapaa Stream Bridge is "Develop a traffic management plan with appropriate construction-period detours". The short term impacts of construction on traffic in the area of the Ma'ilihuna Road Intersection should be fully discussed and evaluated in the Environmental Assessment.

3. A roundabout should be evaluated as one of the alternatives for improving the Ma'ilihuna Road intersection in the Environmental Assessment. We believe that a roundabout could have many benefits over both signalized and stop-controlled alternatives; including:
   - Better overall safety, especially given the curvilinear alignment of Kuhio Hwy.;
   - Improved safety and convenience of crossing for pedestrians and bicyclists to and from Ke Ala Hele Makalae (shared use path); and
   - Possible reduced bridge width due to there being no need to provide left turn and right turn storage lanes and associated tapers.

4. Due to the presence of Ke Ala Hele Makalae (shared use path), there is no need for sidewalks on this bridge. Therefore, the existing deck width may be sufficient to provide adequate travel lanes and shoulders, if it is structurally feasible to remove the sidewalks and replace them with shoulders. We recognize that the structure may be nearing the end of its service life, but it might be useful to evaluate an option that retains the existing structure and converts the sidewalks to paved shoulders.

Thank you for the opportunity to review and comment on the Fact Sheets for these three projects. We wish to remain on your mailing list to continue participating in the environmental review process. If you have any questions or need additional information, please feel free to contact Stanford Iwamoto, Engineering Division at (808) 241-4896.

Sincerely,

MICHAEL MOULE, P.E.
Chief, Engineering Division

SI/MM
Copy to: J. Michael Will, FHWA, Central Federal Lands Highway Division
Design and Permitting
County Engineer

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

December 7, 2015

In Reply Refer To:
HFPM-16

TO: MICHAEL MOULE, P.E.
CHIEF, ENGINEERING DIVISION
DEPARTMENT OF PUBLIC WORKS
4444 RICE STREET, SUITE 275
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
HAWAII BRIDGE PROGRAM, KAUAI PROJECTS
HANAPEPE RIVER BRIDGE
BRIDGE 7E
KAPAA STREAM BRIDGE

Dear Mr. Moule:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated May 6, 2015. We offer the following responses in the order presented in your letter:

Hanapepe

1. Hydraulic analysis is being conducted for Hanapepe River Bridge. Project engineers will coordinate with the County to ensure that the project complies with requirements of the floodplain management program.

2. The Draft Environmental Assessment (DEA) will discuss construction-related traffic impacts.

Bridge 7E

1. Bridge 7E was constructed in 1933.

Kapaa

1. Hydraulic analysis is being conducted for Kapaa Stream Bridge. Project engineers will coordinate with the County to ensure that the project complies with requirements of the floodplain management program.

2. The DEA will discuss construction-related traffic impacts.

3. The roundabout option is being evaluated. Alternatives are being assessed from multiple perspectives, including safety, performance, environmental impacts, constructability, operations and maintenance, and cost.

4. We acknowledge your comment about using the shared use path for pedestrian travel. In evaluating rehabilitation of the existing structure, we note that the bridge is nearing the end of its service life. It is functionally obsolete, has substandard load carrying capacity, does not meet current seismic requirements, and is identified as scour critical. Therefore, we are leaning toward replacing the bridge as rehabilitation would necessitate modifying bridge substructure, superstructure, and railings to meet current AASHTO design standards.

We appreciate your participation in the environmental review process. A copy of the DEA will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL

Bernard P. Carvalho, Jr.
Mayor

Nadine K. Nakamura
Managing Director

Larry Dill, P.E.
County Engineer

Lyle Tabata
Deputy County Engineer

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January 8, 2016

Mr. J. Michael Will, PE, Project Manager
Federal Highway Administration
Central Federal Lands Highway Division
12300 W. Dakota Ave., Suite 380
Lakewood CO 80228

Subject: Kūhiō Highway – Kapa'a Stream Bridge and Ma'ilihuna Road Improvements

Dear Mr. Will,

Thank you for your email of December 9, 2015 regarding the progress on the above mentioned project for Hawai'i Department of Transportation (HDOT). We appreciate being kept "in the loop" on projects affecting the County of Kaua'i.

Prior to addressing the issue of relocating the existing driveway, we would like to respond to the larger issue of the decision to proceed with a signal at the intersection of Kūhiō Highway and Ma'ilihuna Road. We respectfully disagree with the statement in your email that there was "no notable preference favoring the roundabout alternative." The two County staff who were present at the meeting, Michael Moule and Lee Steinmetz, both recollect that, while turnout was small, most of those present had a preference for the roundabout and the remainder indicated no preference between the two alternatives. No one present stated a preference for the signalized intersection. Therefore, it was our understanding that the consensus at the meeting was a preference for the roundabout alternative. In addition to the recent public meeting held by HDOT and CFL/FHWA, in 2013 the County of Kaua'i conducted a series of meetings and workshops (a charrette) for the general area near Kapa'a Elementary School and Kapa'a High School. The installation of a roundabout at this intersection was one of the long term recommendations from the public.

Along with the community preference for a roundabout, there are several other reasons that the County strongly recommends that the roundabout solution be selected for this project.

First and foremost is safety. We believe that a roundabout is safer than a signalized intersection, especially for semi-rural highway intersections like this one. This opinion is supported by FHWA, which recommends roundabouts as a "Proven Safety Countermeasure." (http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_005.cfm) At this intersection, a roundabout would likely yield improved safety over a signalized intersection due to the slower speeds at the roundabout (while maintaining good traffic operations), the elimination of direct left turn movements, and better motorist expectations given the limited sight distance created by the curvilinear alignment of Kūhiō Highway.

Second, overall traffic operations would likely be better with a roundabout. The County has not been provided the results of the traffic analysis conducted by CFL/FHWA and/or its consultants. However, we

have been told that the analysis evaluated peak hour traffic operations and concluded that overall intersection operations are similar for the roundabout and the signalized intersection. When comparing roundabouts to signalized intersections, we believe that it is not appropriate to simply compare Level of Service (LOS) letter ratings, since the delay criteria are different for signals versus roundabouts. For example, a roundabout that experiences 51 seconds of average automobile delay would be given LOS F, while a signal that experiences 51 seconds of average automobile delay would be given LOS D. In addition, during the off-peak, a roundabout would likely have better operations than a signal; for example, with a signal a single car waiting to turn left from Mailihuna Road would stop all traffic on Kūhiō Highway.

Third, we are concerned about the long-term maintenance implications of a signalized intersection versus a roundabout, especially in this corrosive shoreline environment. One need only look at the recent traffic congestion caused by the malfunction of the Kūhiō Highway/Kuamoo Road intersection traffic signal to understand the concerns of signal maintenance.

Lastly, an important goal frequently stated by the community and embedded in our planning documents, including our General Plan, is the strong desire to retain our rural character. We feel a signal at this location will have a significant and lasting negative impact on the County's rural character, in conflict with our General Plan.

With these comments in mind, the County would like to understand in detail the "comparison of potential impacts between the two intersection types." With a greater understanding and further discussion, perhaps there are ways that the County can assist to reduce the impacts of the roundabout alternative.

We understand and appreciate that timely project delivery is an important goal of FHWA and HDOT. However, we also feel it is important to make the best decision for the long-term benefit of Kaua'i County residents and visitors. The solution chosen and constructed with this current project will likely remain in place unchanged for many years or decades. We hope you will give us the opportunity to have more input on this important decision.

Please feel free to contact me to discuss further. We look forward to continuing our partnership and a healthy dialog with HDOT and FHWA.

Yours truly,

Larry Dill, P.E.
County Engineer

MM/LS

cc: Donald Smith, HDOT Kaua'i District

Bernard P. Carvalho, Jr.
Mayor

Nadine K. Nakamura
Managing Director

Larry Dill, P.E.
County Engineer

Lyle Tabata
Deputy County Engineer

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February 4, 2016

Mr. J. Michael Will, PE, Project Manager
Federal Highway Administration
Central Federal Lands Highway Division
12300 W. Dakota Ave., Suite 380
Lakewood CO 80228

Subject: Kūhiō Highway – Kapa'a Stream Bridge and Ma'ilihuna Road Improvements

Dear Mr. Will,

As a follow-up to our letter dated January 7, 2016, we would also like to comment on the pedestrian facilities associated with this project. It is our understanding that the project as currently designed does not include pedestrian facilities across the proposed bridge, nor a pedestrian connection from the bridge to the Ma'ilihuna intersection on the mauka side. It has been explained that the justification for this is that pedestrians will use the existing shared use path on the makai side. We have several concerns about this approach based on the following conditions:

- There is a residential subdivision off of Keālia Road on the mauka side of the highway. Based on the current General Plan and anticipated General Plan Update (in progress), 100 additional homes may be located in this area in the future, with a focus on workforce housing. Currently many families with children and youth live in this neighborhood, and we anticipate that this neighborhood will grow in the future with a similar demographic.
- Existing and potential future residents off of Keālia Road access schools, churches, and medical facilities located off of Ma'ilihuna Road.
- Residents of the neighborhoods off of Ma'ilihuna Road access commercial activities (including a farmer's market) and the post office located on Keālia Road.
- There is frequent pedestrian travel between these two neighborhoods, as evidenced by the worn footpath on Kūhiō Highway (mauka side) near Ma'ilihuna Road.
- There is an existing paved sidewalk from Keālia Road to the existing bridge on the mauka side of Kūhiō Highway.
- There is an existing pedestrian facility on the existing bridge on the mauka side, as evidenced by the concrete ramps between the bridge sidewalk and the highway sidewalk.

Given the existing pedestrian activity and facilities on the mauka side of Kūhiō Highway between Keālia Road and Ma'ilihuna Road, we feel it is important to provide continuous pedestrian facilities on the mauka side as a part of the proposed project for the following reasons:

- As currently proposed, rather than improving pedestrian conditions, there would be a *degradation* in existing pedestrian facilities. This is not consistent with either Kaua'i County's Complete Streets Resolution nor the State of Hawai'i's Complete Streets Law. It is also counter to our General Plan and Multimodal Land Transportation Plan which call for the development of walkable neighborhoods and pedestrian connections between neighborhoods. A degradation in pedestrian facilities may also have implications for the NEPA and HEPA environmental processes.
- Encouraging pedestrians to cross the highway twice in order to travel between the Keālia neighborhood and the Ma'ilihuna neighborhood is unsafe, especially at the high-speed and uncontrolled Keālia Road intersection, which is also the main entry to Keālia Beach.
- If pedestrians traveling from Keālia Road to Mailihuna Road choose not to cross the highway and instead walk on the bridge shoulder, they would be forced to walk in the same direction as vehicle traffic, which is at best discouraged and at worst illegal, per State Law (HRS §291C-76).

The project as currently proposed simply places pedestrians in either unsafe or illegal conditions, or both. For these reasons we strongly urge HDOT/FHWA to include a sidewalk on the proposed bridge, and complete a pedestrian connection to Ma'ilihuna Road on the mauka side. Based on the current bridge section, there is adequate space to do this. The current proposed bridge section includes 12-foot travel lanes and 8-foot shoulders. If the travel lanes were reduced to 11 feet, and the shoulders reduced to six feet, this would provide for a six-foot sidewalk on the mauka side of the bridge. We feel these suggested lane and shoulder widths are consistent with existing Kūhiō Highway conditions, the desire to reduce speeds in the Keālia Beach corridor, and with AASHTO guidelines for urban highways. Given that this location is at Keālia Beach and serves as the northern gateway to Kapa'a, we feel that application of AASHTO urban arterial standards is appropriate (AASHTO Green Book Section 7.3.3, Cross Sectional Elements for Urban Arterials). Please note that the use of an urban arterial standard is related to engineering standards only as defined by AASHTO. From a context-sensitive perspective, it is still important to retain the County's rural character as described in our previous letter.

Please feel free to contact me to discuss further. We look forward to continuing our partnership and a healthy dialog with HDOT and FHWA.

Yours truly,

Larry Dill, P.E.
County Engineer

MM/LS

cc: Michael Moule, Chief of Engineering
Lee Steinmetz, Transportation Planner
HDOT Kaua'i District Engineer
Ed Sniffen, Deputy Director HDOT Highways

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

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Michael.Will@dot.gov

June 24, 2016

In Reply Refer To:
HFPM-16

TO: LYLE TABATA
ACTING COUNTY ENGINEER
DEPARTMENT OF PUBLIC WORKS
4444 RICE STREET, SUITE 275
LIHUE, HI 96766

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
KUHIO HIGHWAY
KAPAA STREAM BRIDGE AND MAILIHUNA INTERSECTION

Dear Mr. Tabata:

Thank you for pre-assessment comments on the subject project transmitted by letters dated January 8 and February 4, 2016.

At the public information meeting referenced in your January 8 letter, we reviewed the project purpose and need, which—for the intersection improvements—is to improve traffic operations and safety. We are in agreement on the criteria for selecting a design solution. The roundabout alternative and signalized alternatives were reviewed at the meeting and we received useful feedback from meeting participants. Both alternatives are being advanced in the Draft EA document to evaluate and compare the potential environmental impacts of the two intersection configurations and to elicit further comments through the HRS 343 public review process.

Your February 4 letter raised the need for a pedestrian facility on the mauka side of Kuhio Highway between the Mailihuna Road intersection and the existing sidewalk on the north side of Kapaa Stream Bridge. We appreciate the rationale you provided for such a facility. A mauka walkway is being considered as a component of this project and is discussed further in the Draft EA.

Notice of availability of the Draft EA will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

c:
Christine Yamasaki, HDOT
Nicole Winterton, Thomas Parker, CFLHD
Kathleen Chu, CH2M HILL

From: Michael.Will@dot.gov [mailto:Michael.Will@dot.gov]
Sent: Tuesday, September 22, 2015 11:56 AM
To: RAYNEREGUSH@aol.com
Cc: Chu, Kathleen/HNL <Kathleen.Chu@CH2M.com>; Nicole.Winterton@dot.gov; Nokes, Kim/BOI <Kim.Nokes@CH2M.com>; raymond.j.mccormick@hawaii.gov; donald.l.smith@hawaii.gov
Subject: RE: Kapaa Stream Bridge Project, Kauai

Aloha Rayne,
I apologize for the delay in returning your prior message. As requested, attached are the presentation and display board files presented at the meeting. One item I would like to draw your attention to, In addition to the bridge, is the alternatives addressing the Malihuna Road Intersection. If you have additional comments you wish to share, please feel free to fill out the attached comment form and return to me at your earliest convenience. Your input is valuable to us. We would appreciate all comments be returned to me no later than 10/2/15.

Additionally, we do maintain a webpage for this project where updated project information is shared no later than the 1st day of each month. This can be accessed through the below web link:

http://flh.fhwa.dot.gov/kapaa-stream

In response to the comments previously sent, I would like to offer the following:

a) Can the Bridge be a 3R (resurfacing, restoration, rehabilitation) project? And if so, employ design criteria that are lower than those contained in the AASHTO Green Book.

The existing deficient two span bridge is classified as being functionally obsolete, has a substandard load carrying capacity, does not meet current seismic requirements, and has been identified as being scour critical. We are leaning towards replacing the bridge as effort to rehabilitate would necessitate modification to bridge substructure , superstructure and railings.

Design Criteria lower than AASHTO can be considered for exception on a case by case basis as warranted.

b) As the gateway between the ahupuaa of Kealia and Kapaa, and a location with significant scenic value, we want to see the bridge design preserve the sense of place and rural character.

Thank you for the input. Your comment will be considered and documented.

c) Residents have a deep appreciation for the environment & the "old days". Therefore, retaining the look, size and feel of this 1952 bridge is important.

Thank you for the input. Your comment will be considered and documented.

d) Are two 8-foot shoulders necessary for such a short span bridge?

8-foot shoulders are proposed based on current/project traffic volumes and design speeds of the roadway corridor.

e) Will the new guard rail height be low enough to retain existing makai & mauka views?

The Bridge Railing is proposed to be concrete post and beam 2'-8" in height capped with a 10" high metal railing for a total height of
3'-6" for bicyclist's safety. A rendering of the rail is provided in the attachment and should provide improvement from existing conditions.

f) As a low-volume, rural highway, could designation as a "scenic highway" be proposed?

The purpose of this project is to address the deficiencies with the bridge while addressing safety concerns with the Malihuna Road Intersection. We do recognize the interest in preserving the aesthetic features associated with the bridge and value any input you can provide. See attached renderings.

Mahalo for your input and interest in this project,
Mike

J. Michael Will, P.E.: Project Manager / Construction Operations Engineer
Federal Highway Administration
Central Federal Lands Highway Division: 12300 W. Dakota Avenue, Suite 380; Lakewood CO 80228
office: 720.963.3647 : cell: 303-956-5054 : fax: 720.963.3596 : email: michael.will@dot.gov : web: http://www.cflhd.gov

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From: RAYNEREGUSH@aol.com [mailto:RAYNEREGUSH@aol.com]
Sent: Tuesday, September 22, 2015 12:12 PM
To: Will, Michael (FHWA)
Cc: kathleen.chu@ch2m.com; Winterton, Nicole (FHWA); Kim.Nokes@CH2M.com; raymond.j.mccormick@hawaii.gov; donald.l.smith@hawaii.gov
Subject: Re: Kapaa Stream Bridge Project, Kauai

Aloha Mike,

I'm still awaiting the meeting presentation materials from the session on 9/17. And, although Kathleen said they'd be on the website, a Google search produced no results. What website?

I'd also appreciate a response to the questions I posed in my email below.

And, please send me whatever information was provided to the community related to the Section 106 Consultation...

mahalo,
rayne

In a message dated 9/21/2015 3:48:04 A.M. Hawaiian Standard Time, Michael.Will@dot.gov writes:

> Aloha Rayne,
> It was a pleasure speaking with you as well. We appreciate and value your input. The intent of the meeting is to gain local input into the design considerations you mentioned below.
> We continue to work on preparation of the meeting materials. We will send them to you

along with a comment form should you wish to provide any additional input once the meeting materials are finalized.

Mahalo,

Mike

J. Michael Will, P.E.: Project Manager / Construction Operations Engineer
Federal Highway Administration
Central Federal Lands Highway Division: 12300 W. Dakota Avenue Suite 380; Lakewood CO 80228
office: 720.963.3647 : cell: 303-956-5054 : fax: 720.963.3596 : email: michael.will@dot.gov : web: http://www.cflhd.gov

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From: RAYNEREGUSH@aol.com [mailto:RAYNEREGUSH@aol.com]
Sent: Thursday, September 10, 2015 8:45 PM
To: Will, Michael (FHWA)
Cc: kathleen.chu@ch2m.com
Subject: Kapaa Stream Bridge Project, Kauai

Aloha Mike and Kathleen,

It was good speaking with you yesterday, Mike, about the Kapa`a Stream Bridge project. I noted today that the website states as of 7/1/2015, 30% preliminary design phase has been completed. This raised several questions and comments – particularly, how to ensure that context sensitive design is used:

a) Can the Bridge be a 3R (resurfacing, restoration, rehabilitation) project? And if so, employ design criteria that are lower than those contained in the AASHTO Green Book.
b) As the gateway between the ahupuaa of Kealia and Kapaa, and a location with significant scenic value, we want to see the bridge design preserve the sense of place and rural character.
c) Residents have a deep appreciation for the environment & the "old days". Therefore, retaining the look, size and feel of this 1952 bridge is important.
d) Are two 8-foot shoulders necessary for such a short span bridge?
e) Will the new guard rail height be low enough to retain existing makai & mauka views?
f) As a low-volume, rural highway, could designation as a "scenic highway" be proposed?

I strongly hope that the presentation on the 17th will incorporate options to design bridge so that it's similar to its original construction. We know that design exceptions can meet the necessary safety and load capacity requirements.

Wailua-Kapaa Neighborhood Association (W-KNA) will continue to circulate the meeting information and we hope the turnout will be good. If there are future opportunities for DOT to meet with the public, W-KNA would gladly host a meeting.

Unfortunately, I have a conflict on the 17th and therefore would like to receive materials in advance, as well as a copy of the CD that was provided to some (related to the Section 106 consultation?).

Mahalo!

Rayne Regush, W-KNA Chair
5591 Kaapuni Road

Kapaa, HI 96746
www.wkna.org