Appendix A
Determination and Delineation of Wetlands and Other Waters of the U.S. for the Bridge 7E Project, March 2015

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Determination and Delineation of Wetlands and Other Waters of the U.S. for the Bridge No. 7E Project

Kaumualiʻi Highway, Route 50
Kōloa, Kauaʻi Island, Hawaiʻi

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 BRIDGE NO. 7E PROJECT

KAUMUALIʻI HIGHWAY, ROUTE 50
KŌLOA, KAUAʻI ISLAND, HAWAIʻI

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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: Bridge No. 7E

SITE LOCATION: Kōloa, Kaua‘i Island, Hawai‘i
21°56'54.04"N, 159°28'10.20"W

OWNER: Hawai‘i 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. (WoUS) governed by the Clean Water Act and the Rivers and Harbors Act (RHA) at nine bridge projects throughout the state of Hawai‘i. This report summarizes the findings of the WoUS delineation conducted at Bridge No. 7E along Kaumuali‘i Highway, Route 50, located in Kōloa, Kaua‘i, on September 29, 2014.

The proposed project involves changes to the existing Bridge No. 7E 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. Construction easements may be needed for a temporary detour or staging of the construction. A temporary bridge and detour may be required during construction on the mauka (landward) side of the highway. It is unknown if the project will require a water diversion (e.g., cofferdam, pumping) to complete construction. The survey was conducted to support the environmental compliance efforts for the project.

The survey area encompasses approximately 4.4 acres (1.8 hectares). Elevations range from approximately 635 to 645 feet (194 to 197 meters) above mean sea level. The National Wetlands Inventory program identifies one wetland/water type in the survey area: Riverine, Intermittent, Streambed, Seasonally Flooded, Excavated (R4SBCx). Geospatial data from the State of Hawai‘i and the U.S. Geological Survey identify an intermittent stream in the survey area.

One sampling point was evaluated in the survey area. A detailed field-based determination indicates that the sampling point does not meet the three-criterion test for wetlands pursuant the 1987 *Corps of Engineers Wetland Delineation Manual* (U.S. Army Corps of Engineers [USACE] 1987) and the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai‘i and Pacific Islands Region* (USACE 2012). This sampling point was used to determine wetland vs. non-wetland status above the ordinary high water mark (OHWM). The boundaries of potential non-wetland WoUS (ephemeral or intermittent streams) were delineated by recording the location of the OHWM, as defined in the USACE Regulatory Guidance Letter 05-05 (USACE 2005). SWCA delineated approximately 0.21 acre (0.08 hectare) of non-tidal, non-wetland waters. This conclusion is subject to confirmation by the USACE.

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ABBREVIATIONS

CFR	Code of Federal Regulations
CWA	Clean Water Act
CWRM	Commission on Water Resource Management
FAC	Facultative
FACW	Facultative Wetland
m	meter(s)
MHW	mean high water
MHHW	mean higher high water
mm	millimeter(s)
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
RHA	Rivers and Harbors Act
SCAP	Stream Channel Alteration Permit
SWCA	SWCA Environmental Consultants
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
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 (RHA) of 1899 and 2) Section 404 of the Clean Water Act (CWA) of 1972. The RHA 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), mean higher high water (MHHW) line, or high tide line.

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 they are determined to have a "significant nexus" with a traditional navigable water or interstate water (U.S. Environmental Protection Agency [EPA] 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) the MHW/MHHW line in tidal waters or below the ordinary high water mark (OHWM) for non-tidal, non-wetland waters.

The USACE (33 CFR 230.3) and EPA (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), 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: Hawai'i and Pacific Islands Region* (USACE 2012).

CH2M HILL is reviewing the proposed project for Bridge 7E (hereafter *project*) pursuant to Section 10 of the RHA and Section 404 of the CWA. The project involves replacing the existing Bridge 7E 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. A temporary bridge and detour may be required during construction. The basic assumption is to detour traffic with one lane in each direction on the existing roadway. Alternatives to this option would be to provide a two-way temporary bridge to detour traffic. A potential detour route will be further investigated and coordinated with the appropriate agencies of the County of Kaua'i. It is unknown if the project will require a water diversion (cofferdam, pumping, etc.) to complete construction. The survey 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 Bridge No. 7E survey area is in the district of Kōloa on the south side of the Island of Kaua‘i along Kaumuali‘i Highway (Route 50) at milepost 7. The survey area runs along Kaumuali‘i Highway for approximately 1,250 feet (380 meters [m]), and encompasses roughly 4.4 acres (1.8 hectares) (Figure 1). The surrounding area is predominantly undeveloped and agricultural land (timber cultivation).

2.2 Topography and Soils

Most of the survey area follows a shallow slope gradient from east to west, with marked depressions in topography attributed to streamflow from the intermittent stream. Elevations in the survey area range from roughly 635 to 645 feet (194 to 197 m) above mean sea level. The Natural Resources Conservation Service (NRCS) identifies two soil types in the survey area: Hali‘i gravely silty clay (HfB) 3%–8% slopes and Kapa‘a silty clay, 3%–8% slopes (KkB) (Foote et al 1972; NRCS 2013) (Figure 2). Neither soil type is listed as hydric (NRCS 2012).

2.3 Hydrology

Mean annual rainfall for this area is approximately 84.5 inches (2147 millimeters [mm]). Rainfall is typically highest in November–December and lowest in June (Giambelluca et al. 2013). The closest rainfall gage to the site has 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 U.S. Geological Survey (USGS) and the State of Hawai‘i Division of Aquatic Resources identify an intermittent stream bisecting the survey area (Figure 1). USGS, including the National Hydrography Dataset, show the un-named stream as a small, non-permanent tributary flowing into Mauka Reservoir, which connects to a series of streams, ditches, and reservoirs (e.g., Puu O Hewa Reservoir, Waita Reservoir, Pia Mill Reservoir) before flowing into the Waikomo Stream (Figure 3). The Waikomo Stream, within the Waikomo Watershed, is approximately 21.6 miles (34.7 kilometers) long and flows south, terminating in Hanaka‘ape Bay in Po‘ipū (Parham et al. 2008). The State of Hawai‘i names the feature under Bridge No. 7E as the Weoweopilau tributary, part of Hulē‘ia Stream (Parham et al. 2008). Hulē‘ia Stream is within the Hulē‘ia Watershed and flows east into Nawiliwili Bay in Līhu‘e, Kaua‘i. However, based on aerial imagery, the stream under the bridge appears to flow south as a minor tributary within the Waikomo Watershed.

The National Wetlands Inventory (NWI) program identifies one wetland/water type in the survey area: Riverine, Intermittent, Streambed, Seasonally Flooded, Excavated (R4SBCx) (Figure 4).

2.4 Flora and Fauna

SWCA conducted a flora and fauna survey on the same date as the WoUS survey. Vegetation types identified during that survey include ruderal weedy vegetation, guinea grass grassland, and forestry plantings. The site is dominated by non-native plants, and no listed plant species were seen (SWCA 2015).

Finally, the endangered Hawaiian hoary bat or ‘ōpe‘ape‘a (*Lasiurus cinereus semotus*) may use the site by passing through, foraging, or roosting in the survey area (SWCA 2015).

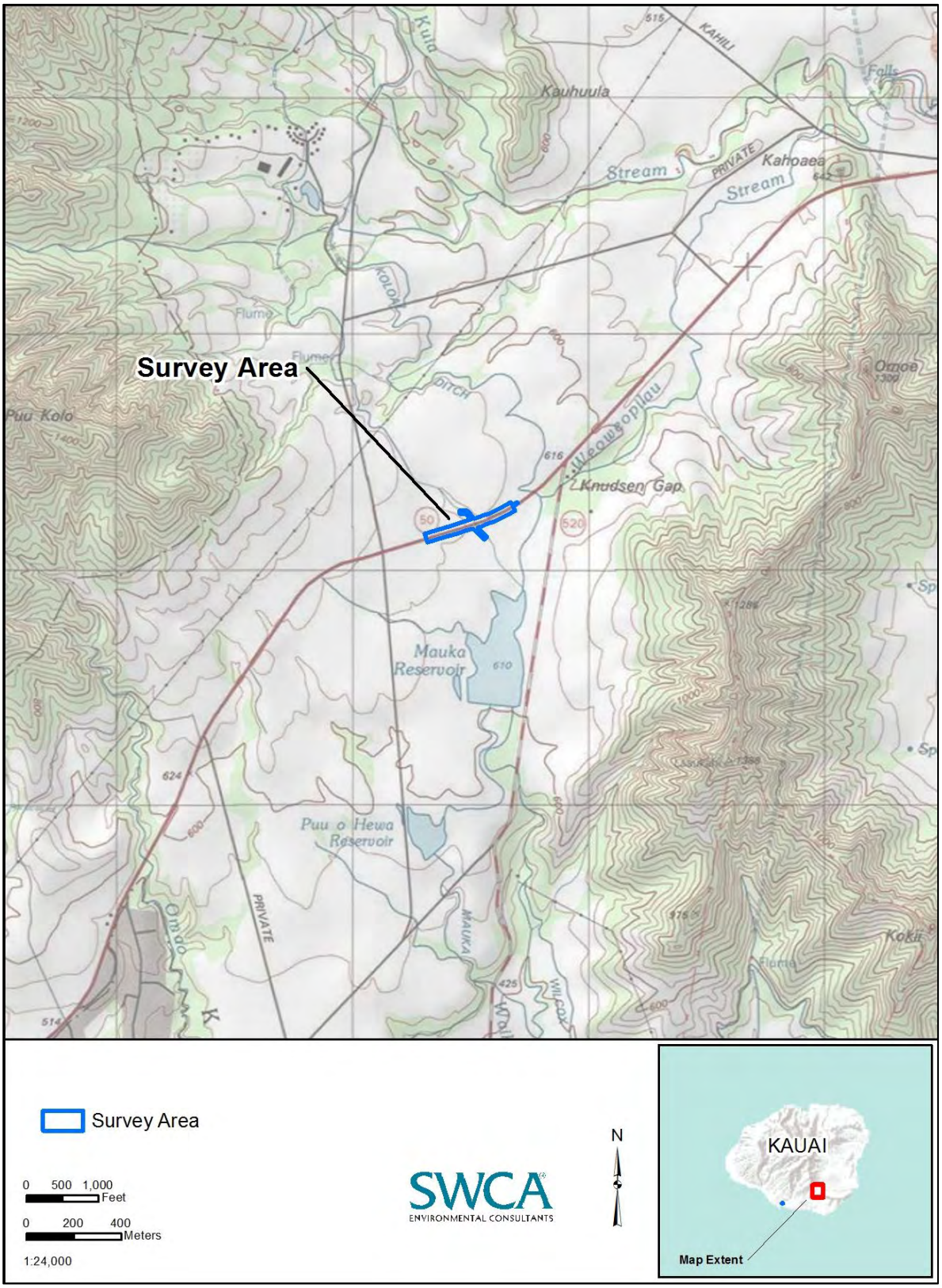

Figure 1. Location of survey area.

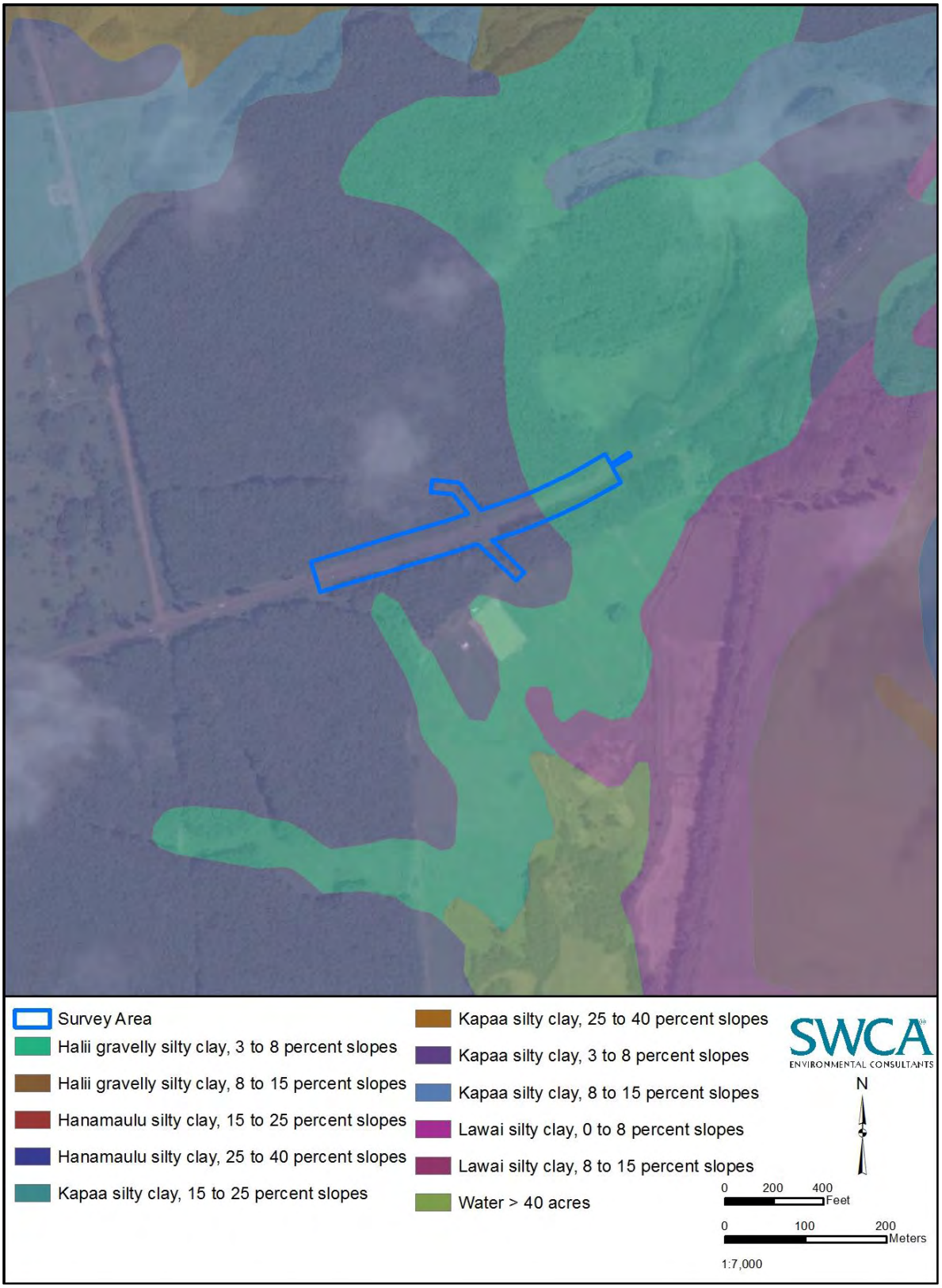

Figure 2. Soil types in the survey area.

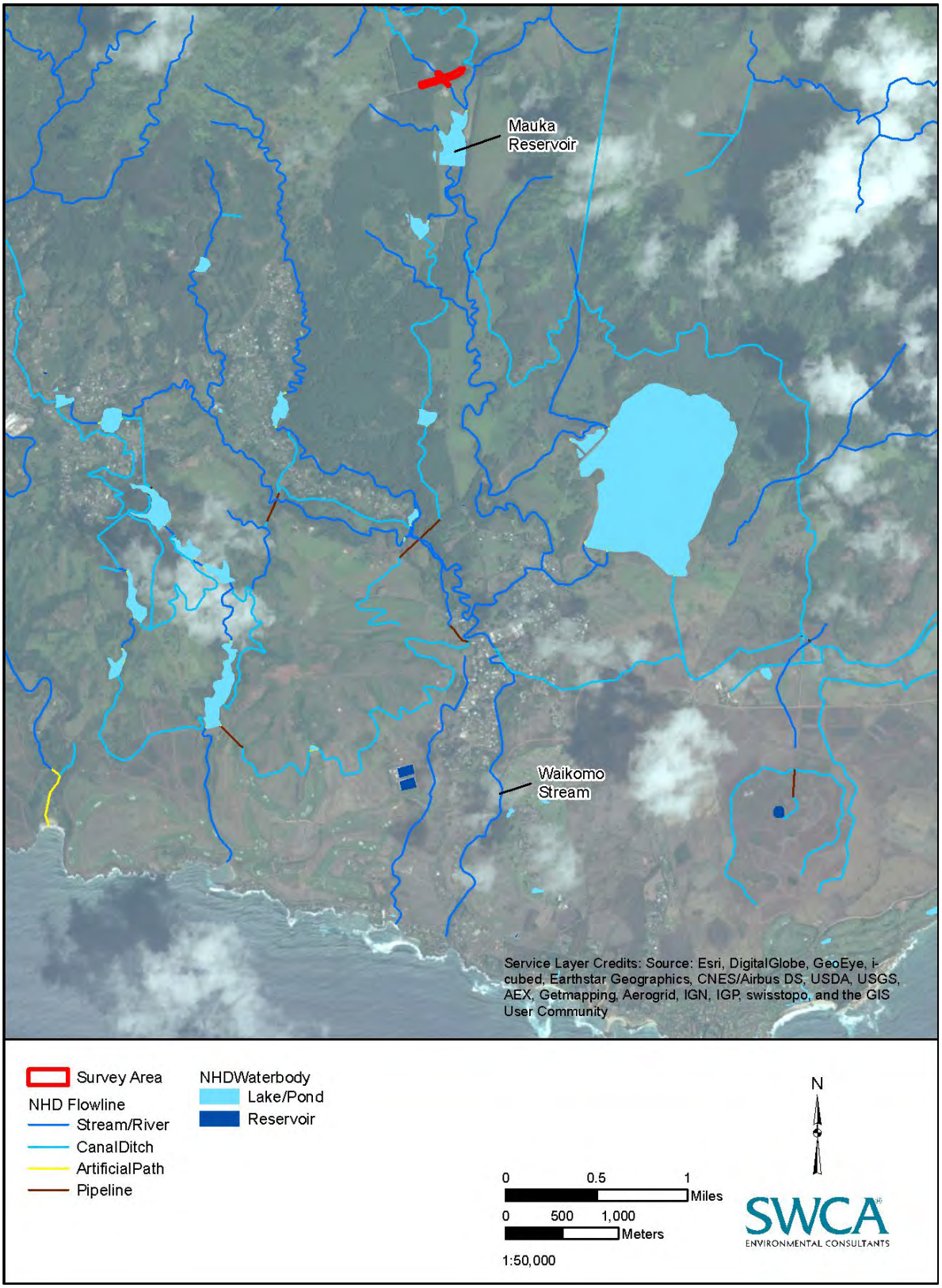

Figure 3. National Hydrographic Dataset in and near the survey area.

Figure 4. National Wetland Inventory classifications in and near the survey area.

3.0 METHODOLOGY

Before visiting the survey area, SWCA examined aerial photographs and topographic maps to identify potential wetlands or WoUS in or near the survey area. Information was also gleaned from the NWI program, NRCS hydric soil data, as well as from 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 Hawai‘i 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 in sections 3.1–3.3. A wetland determination data form prepared during the survey is included in Appendix A. The boundaries of potential non-wetland WoUS (ephemeral or intermittent streams) were delineated by recording the location of the OHWM (see section 3.4).

The geographic coordinates of the sampling point and non-wetland feature were collected in the field with a 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 of the feature was calculated by projecting these point and line data files in a geographic information system.

An initial assessment of connectivity of the feature to downstream waters was based on aerial imagery, as well as USGS and NWI data. SWCA did not conduct a field-based assessment of connectivity.

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 the one sampling point, the absolute percentage cover was estimated for each plant species within each vegetation strata (i.e., tree, shrub, herb, and 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 2013 State Wetland Plant List* (Lichvar 2013). 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 Kaua‘i Island includes 12 hydric soils for the island. SWCA compared the NRCS National List of Hydric Soils with soils mapped in the survey 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 Hawai‘i 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 the sampling point.

3.4 Boundaries of Non-Wetland Waters

The boundaries of potential non-wetland WoUS (ephemeral or intermittent streams) were delineated by recording the location of the OHWM, as defined in the USACE Regulatory Guidance Letter 05-05 (USACE 2005). Indicators of OHWM can be physical or vegetative and include benches, shelving, drift lines, natural lines impressed on the bank, changes in the character of soil, transitions in vegetation type and density, destruction of terrestrial vegetation (matted-down vegetation), sediment deposition, presence of litter and debris, presence of a wrack line, bed and banks, multiple observed flow events, scour, sediment sorting, and water staining (USACE 2005, 2008). Contours provided to SWCA by ControlPoint Surveying were also referenced.

4.0 FINDINGS

4.1 Non-Wetland Waters

A single non-tidal, non-wetland water was delineated in the survey area (Figure 5). During the survey, a steady trickling flow of water was observed under the bridge, moving south. The water feature appears intermittent with a slightly modified channelization (i.e., rip-rap and concrete vertical walls at bridge site along the right-of-way) (Figure 6).

SWCA documented the presence of OHWMs at various points along the stream, primarily using clear impressions along banks with distinct topographic indicators (e.g., vertical cut banks as high as 15 feet [4.5 m] in some places). Approximately 470 linear feet (143 m) of non-wetland waters were delineated on the east side of the streambank, and 388 linear feet (118 m) were delineated on the west side.

Downstream of the survey area, the stream appears to flow into Mauka Reservoir, roughly 0.33 mile (0.52 kilometer) from Bridge 7E. SWCA did not conduct a field-based assessment of this connection, but connectivity of the stream to the Mauka Reservoir is shown on information from the National Hydrography Dataset and NWI program. Connectivity of the intermittent stream to Mauka Reservoir was also reported by Glenn Higashi of Hawai‘i Division of Aquatic Resources (Glenn Higashi, personal communication, March 13, 2015). Based on the National Hydrography Dataset, Mauka Reservoir connects to a series of streams, ditches, and reservoirs before terminating in Hanaka‘ape Bay (see Figure 3).

4.2 Wetlands

The single sampling point (P1) evaluated by SWCA does not meet the three-criterion test indicative of wetland conditions pursuant to the USACE 1987 Manual and the Hawai‘i and Pacific Island Regional Supplement. It serves to illustrate that no wetlands are found above the OHWM along the stream in the survey area. Guinea grass (*Urochloa maxima*) (FAC) was the dominant plant species in the sampling point (Figure 7); no hydric soil indicators or wetland hydrology were observed. A wetland determination data form for the sampling point is included in Appendix A.

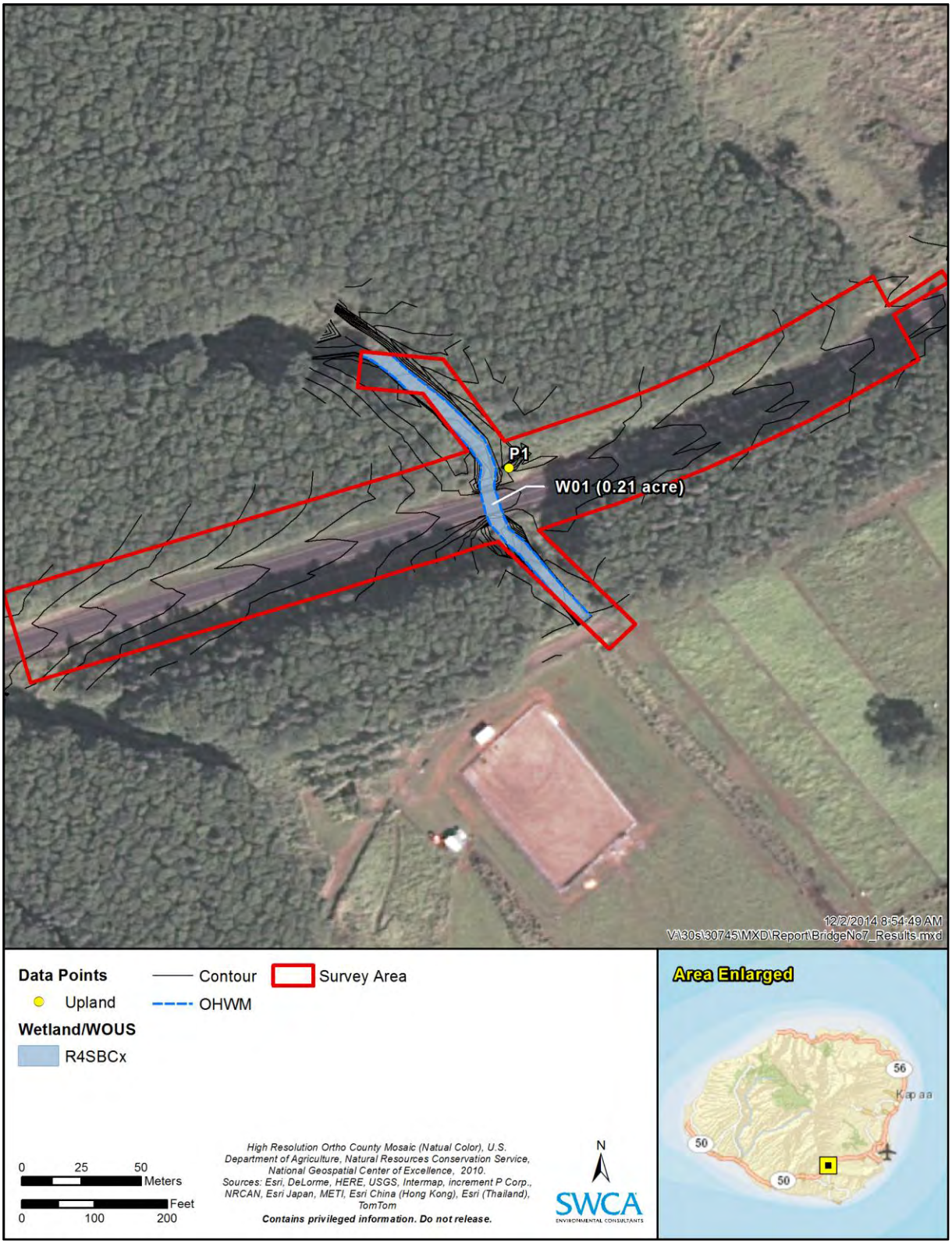

Figure 5. Survey results and delineated non-wetland waters.

Figure 6. Bridge No. 7E, with concrete vertical walls, and low stream flow. Photo by CH2M HILL.

Figure 7. Guinea grass (*Urochloa maxima*) was the dominant species at sampling point.

5.0 CONCLUSIONS

SWCA surveyed and delineated a single non-perennial, non-tidal non-wetland water in the survey area. Based on the National Hydrography Dataset and NWI data, this feature may eventually connect to the Pacific Ocean and has potential to be a WoUS.

If the project is designed to avoid placement of dredged or fill material either temporarily or permanently below the delineated OHWM, SWCA recommends requesting a preliminary jurisdictional determination and a No Permit Required letter from the Honolulu USACE (under the condition that fill is not placed below the OHWM).

If the proposed project intends to place dredged or fill material within the delineated feature (such as a bridge foundations or pillars), it could be subject to Section 404 of the CWA. A Section 404 permit is not valid without a State 401 Water Quality Certification permit from the Clean Water Branch, which 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 from CWRM. If a SCAP is required, the permit timeframe is 90 days. These conclusions are subject to confirmation by the USACE Honolulu District.

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Appendix A

Data Form

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: Milemarker 7E, Kaumualii Hwy City: Lihue Sampling Date: 9.29.2014 Time: 13:45

Applicant/Owner: HDOT State/Terr/Comlth.: HI Island: Kauai Sampling Point: P1

Investigator(s): B Nicholson / B Luke / T Agostini TMK/Parcel: _____

Landform (hillslope, coastal plain, etc.): Slope Local relief (concave, convex, none): none

Lat: _____ Long: _____ Datum: _____ Slope (%): _____

Soil Map Unit Name: _____ 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:

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. Megathyrsus maximus	60	Y	FAC
2. Coix lacryma-jobi	10	N	FACW
3. Ageratum conyzoides	15	N	FAC
4. Crotalaria incana	5	N	UPL
5. Euphorbia hypericifolia	2	N	FACU
6. Eleusine indica	1	N	FACU
7.			
8.			
	93 = 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	10	x 2 = 20
FAC species	75	x 3 = 225
FACU species	3	x 4 = 12
UPL species	5	x 5 = 25
Column Totals:	93 (A)	282 (B)

Prevalence Index = B/A = 3.03

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 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:
Johnson Grass

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
0-14	10 YR 4/4	100					Sandy Loam	
14-24	10 YR 6/6	100					Sand	No 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)
- ___ 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:

Appendix B
Summary of EDR Radius Map Report™ with GeoCheck®, May 13, 2015

7E Bridge
Kaumualii Highway/Highway520
Koloa, HI 96756

Inquiry Number: 4293168.2s
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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Detail Map	3
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Map Findings	7
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GEOCHECK ADDENDUM

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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

KAUMUALII HIGHWAY/HIGHWAY520
KOLOA, HI 96756

COORDINATES

Latitude (North):	21.9484000 - 21˚ 56' 54.24''
Longitude (West):	159.4696000 - 159˚ 28' 10.56''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	451508.8
UTM Y (Meters):	2427047.5
Elevation:	638 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	21159-H4 WAIALEALE, HI
Most Recent Revision:	Not reported

MAPPED SITES SUMMARY

Target Property Address:
KAUMUALII HIGHWAY/HIGHWAY520
KOLOA, HI 96756

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

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 - equivalent CERCLIS

SHWS ..... Sites List

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

EXECUTIVE SUMMARY

CDL ..... Clandestine Drug Lab Listing
US HIST CDL ..... National Clandestine Laboratory Register

Local Land Records

LIENS 2 ..... CERCLA Lien Information

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

EXECUTIVE SUMMARY

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
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 not identified.

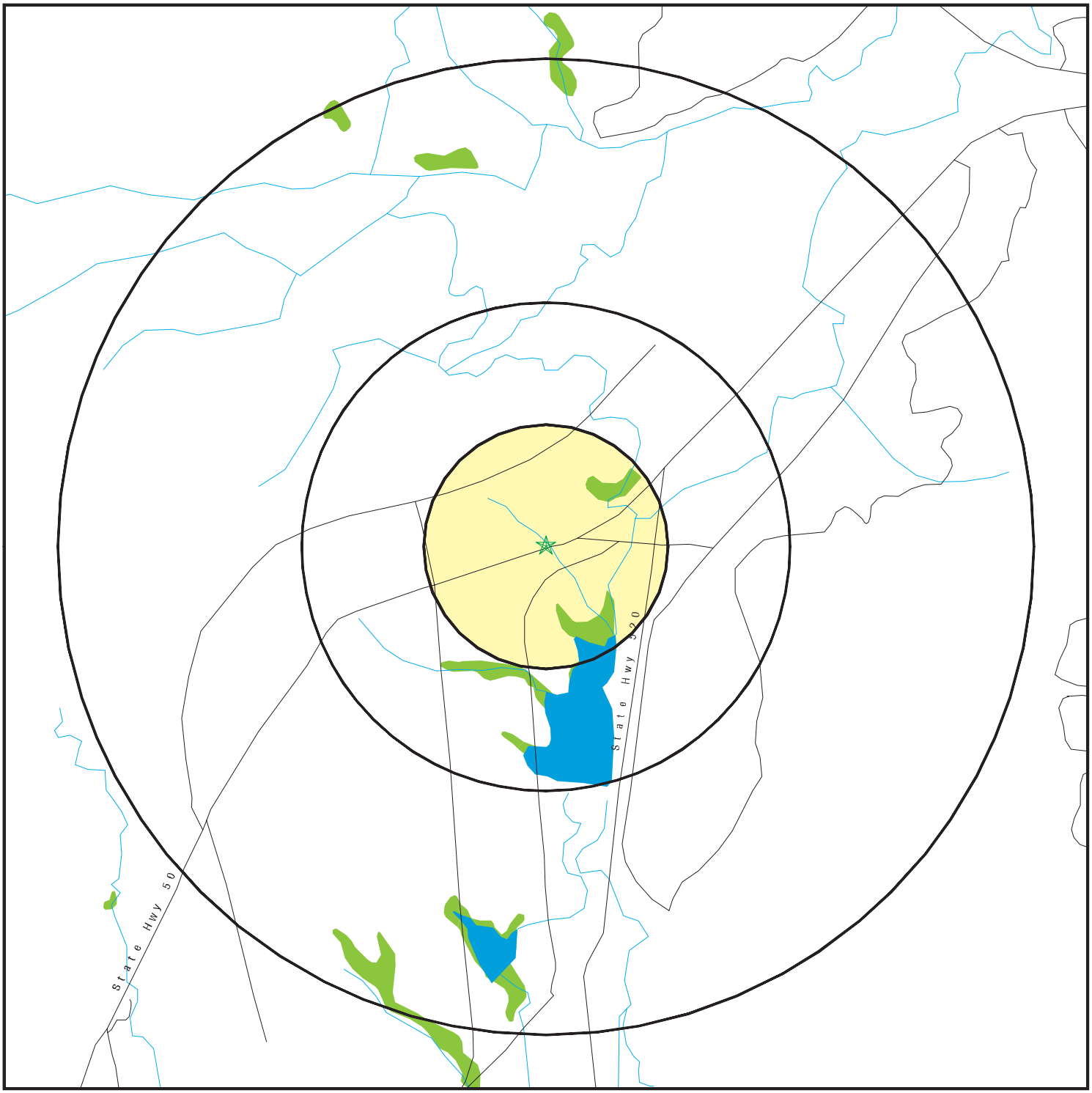
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 3 records.

Site Name	Database(s)
KAUMUALII HIGHWAY RESURFACING, LIH	FINDS
KAUMUALII HIGHWAY RESURFACING, KIP	FINDS
PHASE 1 - KAUMUALII HIGHWAY IMPROV	FINDS

OVERVIEW MAP - 4293168.2S



- 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
- Indian Reservations BIA
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

0 1/4 1/2 1 Miles

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: 7E Bridge	CLIENT: CH2M Hill Corporation
ADDRESS: Kaumualii Highway/Highway520	CONTACT: Lyna Black
Koloa HI 96756	INQUIRY #: 4293168.2s
LAT/LONG: 21.9484 / 159.4696	DATE: May 13, 2015 5:14 pm

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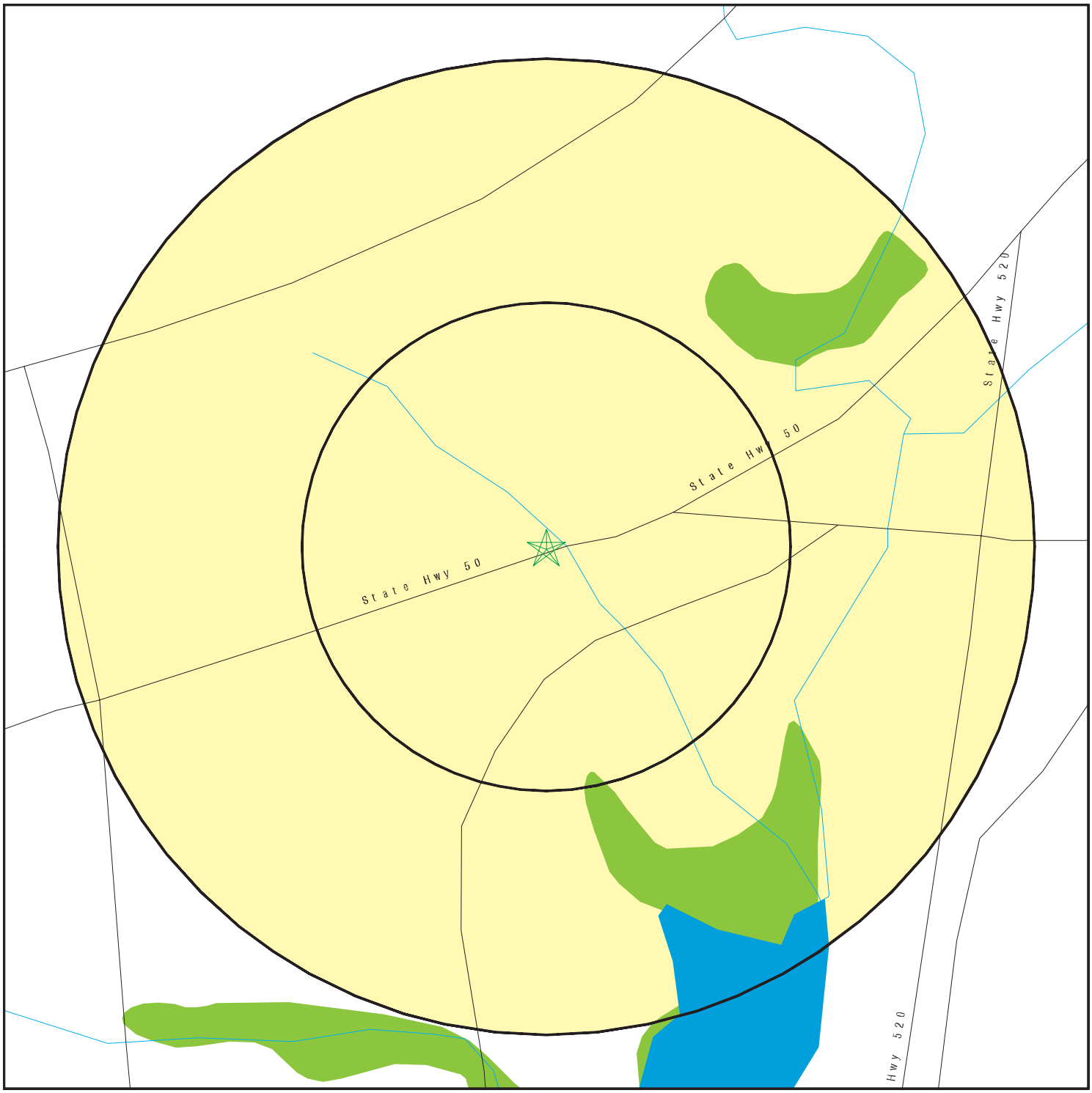
DETAIL MAP - 4293168.2S



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
- 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: 7E Bridge	CLIENT: CH2M Hill Corporation
ADDRESS: Kaumualii Highway/Highway520 Koloa HI 96756	CONTACT: Lyna Black INQUIRY #: 4293168.2s
LAT/LONG: 21.9484 / 159.4696	DATE: May 13, 2015 5:14 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	0	0	NR	0
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	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 3 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LIHUE	1008918832	KAUMUALII HIGHWAY RESURFACING, LIH	ROUTE 50, KAUMUALII HIGHWAY	96766	FINDS
LIHUE	1016871547	KAUMUALII HIGHWAY RESURFACING, KIP	KAUMUALII HIGHWAY RESURFACING,	96766	FINDS
LIHUE	1017381802	PHASE 1 - KAUMUALII HIGHWAY IMPROV	KAUMUALII HIGHWAY (STATE ROUTE	96766	FINDS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/16/2014
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: EPA
Telephone: N/A
Last EDR Contact: 04/08/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/16/2014
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: EPA
Telephone: N/A
Last EDR Contact: 04/08/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/16/2014	Source: EPA
Date Data Arrived at EDR: 01/08/2015	Telephone: N/A
Date Made Active in Reports: 02/09/2015	Last EDR Contact: 04/08/2015
Number of Days to Update: 32	Next Scheduled EDR Contact: 07/20/2015
	Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/25/2013	Source: EPA
Date Data Arrived at EDR: 11/11/2013	Telephone: 703-412-9810
Date Made Active in Reports: 02/13/2014	Last EDR Contact: 05/01/2015
Number of Days to Update: 94	Next Scheduled EDR Contact: 06/08/2015
	Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 07/21/2014	Source: Environmental Protection Agency
Date Data Arrived at EDR: 10/07/2014	Telephone: 703-603-8704
Date Made Active in Reports: 10/20/2014	Last EDR Contact: 04/08/2015
Number of Days to Update: 13	Next Scheduled EDR Contact: 07/20/2015
	Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 10/25/2013	Source: EPA
Date Data Arrived at EDR: 11/11/2013	Telephone: 703-412-9810
Date Made Active in Reports: 02/13/2014	Last EDR Contact: 05/01/2015
Number of Days to Update: 94	Next Scheduled EDR Contact: 06/08/2015
	Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/09/2014
Date Data Arrived at EDR: 12/29/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 31

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/09/2014
Date Data Arrived at EDR: 12/29/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/09/2014
Date Data Arrived at EDR: 12/29/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/09/2014
Date Data Arrived at EDR: 12/29/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/09/2014
Date Data Arrived at EDR: 12/29/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 09/18/2014
Date Data Arrived at EDR: 09/19/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/26/2015
Next Scheduled EDR Contact: 06/15/2015
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 09/18/2014
Date Data Arrived at EDR: 09/19/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/26/2015
Next Scheduled EDR Contact: 06/15/2015
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/03/2014
Date Data Arrived at EDR: 12/12/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 48

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/16/2015
Next Scheduled EDR Contact: 06/01/2015
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/29/2014
Date Data Arrived at EDR: 09/30/2014
Date Made Active in Reports: 11/06/2014
Number of Days to Update: 37

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

SHWS: Sites List

Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 02/27/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Permitted Landfills in the State of Hawaii
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/17/2012
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 37

Source: Department of Health
Telephone: 808-586-4245
Last EDR Contact: 04/02/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 03/02/2015
Date Data Arrived at EDR: 03/04/2015
Date Made Active in Reports: 03/17/2015
Number of Days to Update: 13

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 02/26/2015
Next Scheduled EDR Contact: 06/15/2015
Data Release Frequency: Semi-Annually

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 01/30/2015
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 32

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/10/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 31

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/26/2015
Next Scheduled EDR Contact: 05/11/2015
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/30/2014
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 10

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 184

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/03/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 01/28/2015
Date Data Arrived at EDR: 01/30/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 42

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/08/2015
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/08/2015
Next Scheduled EDR Contact: 05/11/2015
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 29

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Quarterly

State and tribal registered storage tank lists

UST: Underground Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 03/02/2015
Date Data Arrived at EDR: 03/04/2015
Date Made Active in Reports: 03/17/2015
Number of Days to Update: 13

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 02/26/2015
Next Scheduled EDR Contact: 06/15/2015
Data Release Frequency: Semi-Annually

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/14/2014
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 28

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/26/2015
Next Scheduled EDR Contact: 05/11/2015
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 01/29/2015
Date Data Arrived at EDR: 01/30/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 42

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 28

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/26/2015
Next Scheduled EDR Contact: 05/11/2015
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/30/2015
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 36

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/30/2014
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 10

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 01/27/2014
Number of Days to Update: 271

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 29

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Quarterly

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/13/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Control Sites
A listing of sites with engineering controls in place.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 404-586-4249
Last EDR Contact: 02/27/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Varies

INST CONTROL: Sites with Institutional Controls
Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 02/27/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/29/2014
Date Data Arrived at EDR: 10/01/2014
Date Made Active in Reports: 11/06/2014
Number of Days to Update: 36

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/02/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Response Program Sites
Sites participating in the Voluntary Response Program. The purpose of the VRP is to streamline the cleanup process in a way that will encourage prospective developers, lenders, and purchasers to voluntarily cleanup properties.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 02/27/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Sites
With certain legal exclusions and additions, the term 'brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 02/27/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/22/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 38

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/24/2015
Next Scheduled EDR Contact: 07/06/2015
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/23/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/01/2015
Next Scheduled EDR Contact: 08/17/2015
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/25/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 15

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/03/2015
Next Scheduled EDR Contact: 06/15/2015
Data Release Frequency: Quarterly

CDL: Clandestine Drug Lab Listing
A listing of clandestine drug lab site locations.

Date of Government Version: 08/04/2010
Date Data Arrived at EDR: 09/10/2010
Date Made Active in Reports: 10/22/2010
Number of Days to Update: 42

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 02/26/2015
Next Scheduled EDR Contact: 06/15/2015
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/25/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 15

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/03/2015
Next Scheduled EDR Contact: 06/15/2015
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/29/2014
Date Data Arrived at EDR: 12/30/2014
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 69

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Annually

SPILLS: Release Notifications
Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/28/2015
Number of Days to Update: 37

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 02/27/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Varies

SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 03/10/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/11/2013
Number of Days to Update: 39

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/09/2014
Date Data Arrived at EDR: 12/29/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/05/2015
Next Scheduled EDR Contact: 08/17/2015
Data Release Frequency: Varies

DOD: Department of Defense Sites
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/14/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 06/06/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 09/18/2014
Number of Days to Update: 8

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/13/2015
Next Scheduled EDR Contact: 06/22/2015
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 24

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/30/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/10/2015
Next Scheduled EDR Contact: 06/22/2015
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/27/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Varies

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 12/30/2014
Date Data Arrived at EDR: 12/31/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 29

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/06/2015
Next Scheduled EDR Contact: 06/15/2015
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/31/2013
Date Made Active in Reports: 09/13/2013
Number of Days to Update: 44

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 01/29/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/27/2015
Next Scheduled EDR Contact: 07/06/2015
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 02/23/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 02/23/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/10/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/06/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/09/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 33

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/17/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 12/29/2014
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 21

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/09/2015
Next Scheduled EDR Contact: 06/22/2015
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 02/27/2015
Date Data Arrived at EDR: 02/27/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/09/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 01/18/2015
Date Data Arrived at EDR: 02/27/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 26

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/09/2015
Next Scheduled EDR Contact: 06/22/2015
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2015
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/24/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Biennially

UIC: Underground Injection Wells Listing

A listing of underground injection well locations.

Date of Government Version: 02/07/2013
Date Data Arrived at EDR: 02/12/2013
Date Made Active in Reports: 04/09/2013
Number of Days to Update: 56

Source: Department of Health
Telephone: 808-586-4258
Last EDR Contact: 02/26/2015
Next Scheduled EDR Contact: 06/15/2015
Data Release Frequency: Varies

DRYCLEANERS: Permitted Drycleaner Facility Listing
A listing of permitted drycleaner facilities in the state.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 01/09/2015
Date Made Active in Reports: 02/11/2015
Number of Days to Update: 33

Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 04/06/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Varies

AIRS: List of Permitted Facilities
A listing of permitted facilities in the state.

Date of Government Version: 04/08/2015
Date Data Arrived at EDR: 04/10/2015
Date Made Active in Reports: 04/30/2015
Number of Days to Update: 20

Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 04/06/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/14/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing
The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/18/2015
Next Scheduled EDR Contact: 06/01/2015
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/13/2015
Next Scheduled EDR Contact: 06/22/2015
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information
All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/09/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 02/16/2015
Next Scheduled EDR Contact: 06/01/2015
Data Release Frequency: Quarterly

Financial Assurance: Financial Assurance Information Listing

A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/13/2015
Date Data Arrived at EDR: 03/17/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 8

Source: Department of Health
Telephone: 808-586-4226
Last EDR Contact: 03/13/2015
Next Scheduled EDR Contact: 06/29/2015
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/14/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: N/A

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 11/25/2014
Date Data Arrived at EDR: 11/26/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/10/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Varies

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 02/13/2015
Next Scheduled EDR Contact: 05/25/2015
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/13/2015
Next Scheduled EDR Contact: 05/25/2015
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/01/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/07/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/15/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Varies

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/16/2014
Date Data Arrived at EDR: 10/31/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 17

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/30/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Annually

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/16/2014
Date Data Arrived at EDR: 10/31/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 17

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/30/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Annually

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/08/2014
Number of Days to Update: 191

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List
The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/17/2014
Number of Days to Update: 200

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

7E BRIDGE
KAUMUALII HIGHWAY/HIGHWAY520
KOLOA, HI 96756

TARGET PROPERTY COORDINATES

Latitude (North):	21.9484 - 21˚ 56’ 54.24’’
Longitude (West):	159.4696 - 159˚ 28’ 10.56’’
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	451508.8
UTM Y (Meters):	2427047.5
Elevation:	638 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	21159-H4 WAIALEALE, HI
Most Recent Revision:	Not reported

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

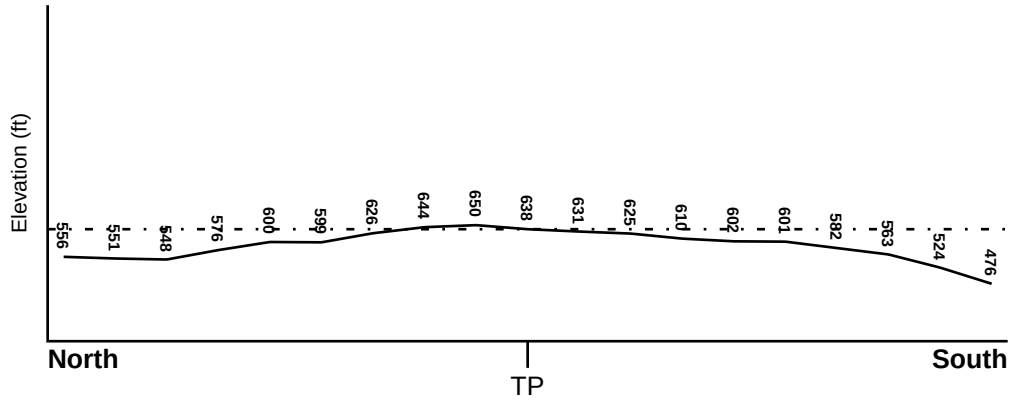
TOPOGRAPHIC INFORMATION

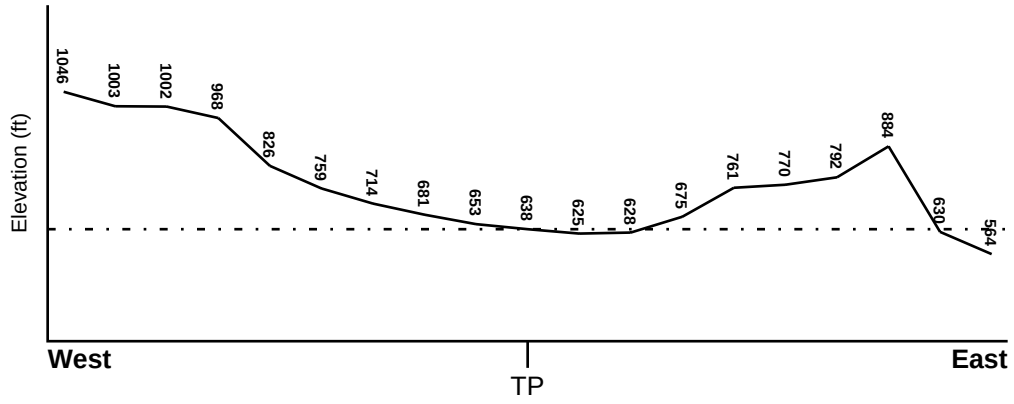
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ESE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 638 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' 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.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
KAUAI, HI	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 1500020185C - FEMA Q3 Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
KOLOA	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

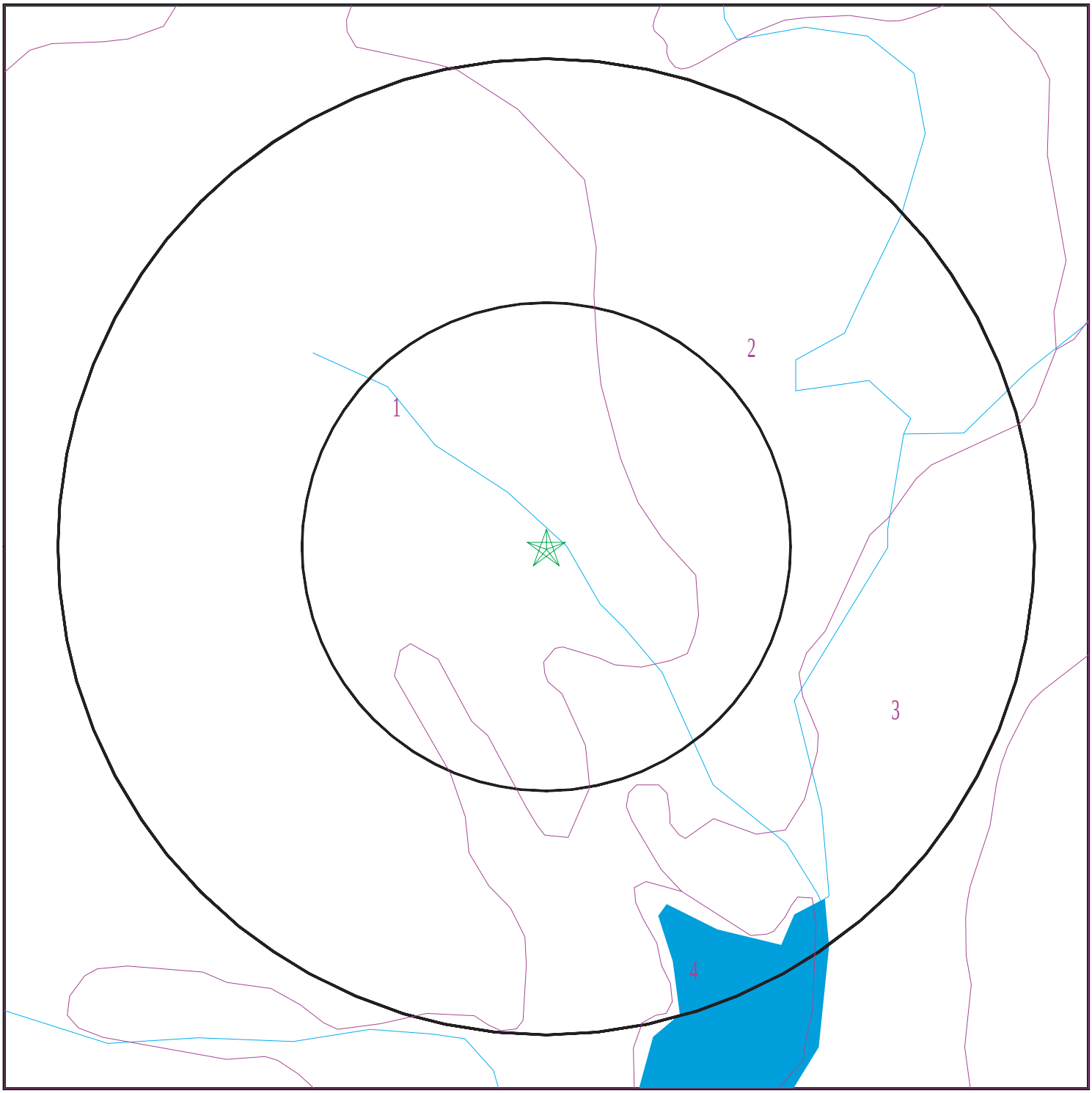
Era:	-
System:	-
Series:	-
Code:	N/A *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 4293168.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME: 7E Bridge ADDRESS: Kaumualii Highway/Highway520 Koloa HI 96756 LAT/LONG: 21.9484 / 159.4696	CLIENT: CH2M Hill Corporation CONTACT: Lyna Black INQUIRY #: 4293168.2s DATE: May 13, 2015 5:16 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Kapaa

Soil Surface Texture: silty clay

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 42 Min: 4.23	Max: 5.5 Min: 4.5
2	14 inches	59 inches	paragravelly silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 14.11 Min: 1.41	Max: 6.5 Min: 5.1

Soil Map ID: 2

Soil Component Name: Halii

Soil Surface Texture: gravelly silty clay

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	gravelly silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	MH-O (proposed)	Max: 141.14 Min: 14.11	Max: 5 Min: 3.6
2	5 inches	59 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	MH-O (proposed)	Max: 4.23 Min: 1.41	Max: 5 Min: 3.6

Soil Map ID: 3

Soil Component Name: Lawai

Soil Surface Texture: silty clay

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 42.34 Min: 4.23	Max: 6 Min: 5.1
2	14 inches	59 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	MH-O (proposed)	Max: 4.23 Min: 1.41	Max: 6 Min: 5.6

Soil Map ID: 4

Soil Component Name: Water > 40 acres

Soil Surface Texture: silty clay

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class:
Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000271539	1/2 - 1 Mile South

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

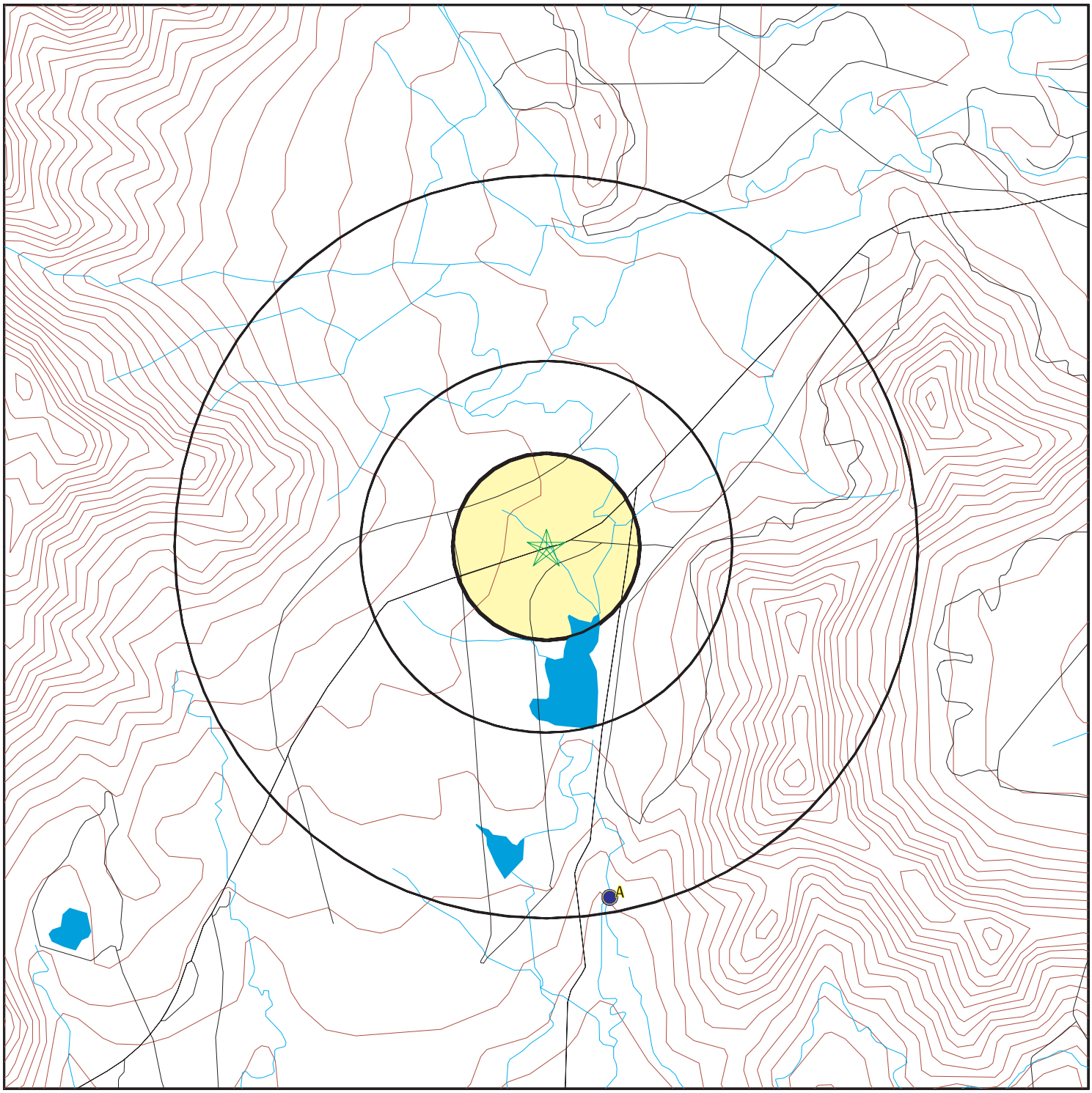
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	HI9000000000412	1/2 - 1 Mile South

PHYSICAL SETTING SOURCE MAP - 4293168.2s



County Boundary
Major Roads
Contour Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location

N

SITE NAME:	7E Bridge	CLIENT:	CH2M Hill Corporation
ADDRESS:	Kaumualii Highway/Highway520 Koloa HI 96756	CONTACT:	Lyna Black
		INQUIRY #:	4293168.2s
LAT/LONG:	21.9484 / 159.4696	DATE:	May 13, 2015 5:16 pm

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Map ID Direction Distance Elevation	Database	EDR ID Number
A1 **South** **1/2 - 1 Mile** **Lower**	**HI WELLS**	**HI9000000000412**

Wid:	2-5628-001	Island:	Kauai
Well name:	Koloa 610 K-55	Old name:	Not Reported
Yr drilled:	1967		
Driller:	Not Reported		
Quad map:	8		
Long83dd:	-159.466944		
Lat83dd:	21.934722		
Gps:	0	Utm:	-1
Owner user:	McBryde Sugar Co. Ltd.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	Not Reported
Casing dia:	20	Ground el:	439
Well depth:	910		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	IRR - Irrigation (non-domestic, non-agriculture)		
Use year:	Not Reported		
Init head:	49	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	3750		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Twnl		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-471
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	5.36		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(4) 2-8-001:002
Aqui code:	20101		
Latest hd:	Not Reported	Wcr:	01-JAN-67
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000412

A2 **South** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS40000271539**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-215616159281101		
Monloc name:	2-5628-01 KOLOA		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20070000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.9346432
Longitude:	-159.4669265	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	438.46
Vert measure units:	feet	Vertacc measure val:	.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for KAUAI County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 96756

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.000 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

STREET AND ADDRESS INFORMATION

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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

December 8, 2015

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 Bridge 7E Replacement Project, Kaumualii Highway (Route 50), Island of Kauai, 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 the replacement of Bridge 7E on Kaumualii Highway (Route 50), in the Koloa District on the island of Kauai, Hawaii. The purpose of the project is to improve Bridge 7E and its approaches to maintain the Kaumualii Highway as a safe and functional component of the regional transportation system for highway users and to alleviate maintenance issues in the channel caused by the deteriorated culvert. FHWA is the lead federal agency for this consultation.

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*]), and the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*). 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 *may affect, but is not likely to adversely affect* the Hawaiian petrel and Newell's shearwater. The proposed project is *not likely to jeopardize the continued existence* of the band-rumped storm petrel, which is proposed for listing.
- 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 project would have *no effect* on five endangered species (Hawaiian coot [*Fulica alai*], Hawaiian moorhen [*Gallinula chloropus sandvicensis*], Hawaiian stilt [*Himantopus mexicanus knudseni*], Hawaiian duck [*Anas wyvilliana*], and Hawaiian goose [*Branta* sandvicensis]) as no suitable habitat for these species is present in the action area.
- No designated or proposed critical habitat for threatened or endangered species occurs in the action area.

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 on the Hawaiian petrel, Newell's shearwater and the Hawaiian hoary bat, as well as the proposed endangered band-rumped storm petrel.

If you require further information or have questions, please contact Nicole Winterton, Environmental Protection Specialist, by email at Nicole.winterton@dot.gov or by phone at (720) 963-3689. We appreciate your assistance with this project.

Sincerely,

Nicole Winterton

for Michael Will
Project Manager

Enclosure:
Biological Assessment for the Proposed Bridge No. 7E Project, Kaumualii Highway, Route 50, Koloa, Kauai Island, Hawaii

SWCA®
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.®

Biological Assessment for the Proposed Bridge No. 7E Project, Kaumualiʻi Highway, Route 50 Kōloa, Kauaʻi Island, Hawaiʻi

Prepared for

Federal Highway Administration, Central Federal Lands Highway Division

and

CH2M HILL

Prepared by

SWCA Environmental Consultants

November 2015

BIOLOGICAL ASSESSMENT FOR THE PROPOSED BRIDGE NO. 7E PROJECT, KAUMUALIʻI HIGHWAY, ROUTE 50 KŌLOA, KAUAʻI ISLAND, HAWAIʻI

Prepared for

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SWCA Project No. 27166

Revised November 20, 2015

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1. INTRODUCTION

The Federal Highway Administration, Central Federal Lands Highway Division (FHWA), in partnership with the Hawaiʻi Department of Transportation (HDOT), is proposing to replace Bridge No. 7E (project) to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches. CH2M HILL contracted SWCA Environmental Consultants (SWCA) on behalf of FHWA to complete a biological assessment (BA) for the project. Bridge No. 7E is on Kaumuali'i Highway (Route 50), approximately 800 feet west of the Maluhia Road (Route 520) intersection at milepost 6.95 in Kōloa District, Island of Kauaʻi (Figure 1). Kaumuali'i Highway is a rural minor arterial that serves as the primary route between Lihue and both Koloa and Waimea Districts.

The purpose of this BA is to evaluate the proposed project in sufficient detail to determine its potential effects on federally listed threatened and endangered species, proposed species, and candidate species for listing. No proposed species potentially occur in the project action area, and no proposed or designated critical habitat is present in the project action area.

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. This project will be federally funded and FHWA is the lead agency for the Section 7 consultation.

1.1. Consultation to Date

Project Manager Michael Will from the U.S. Department of Transportation, FHWA–Central Federal Lands Highway Division, 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. The USFWS replied to the letter on December 22, 2014, listing the species that may occur on Kauaʻi along with recommended measures that the USFWS believes will reduce impacts on each species (USFWS 2014a). Conservation measures that will be incorporated into the proposed project are listed in section 2.5.

CH2M HILL hosted a meeting in their Honolulu Office on March 13, 2015, to discuss the Hawaiʻi Bridges Program with the FHWA–Central Federal Lands Highway Division, USFWS, CH2M HILL, State of Hawaiʻi Division of Aquatic Resources, National Oceanic and Atmospheric Administration (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. 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.

2. PROPOSED ACTION AND PROJECT DESCRIPTION

The proposed action consists of replacing the existing Bridge No. 7E to address structural and functional deficiencies. The highway section at the bridge will be closed during the construction period, and a two-way bypass route and temporary stream crossing will be provided immediately mauka of the highway.

Components of the project, construction considerations, a description of the survey area and action area, as well as conservation measures to be incorporated into the project are described below.

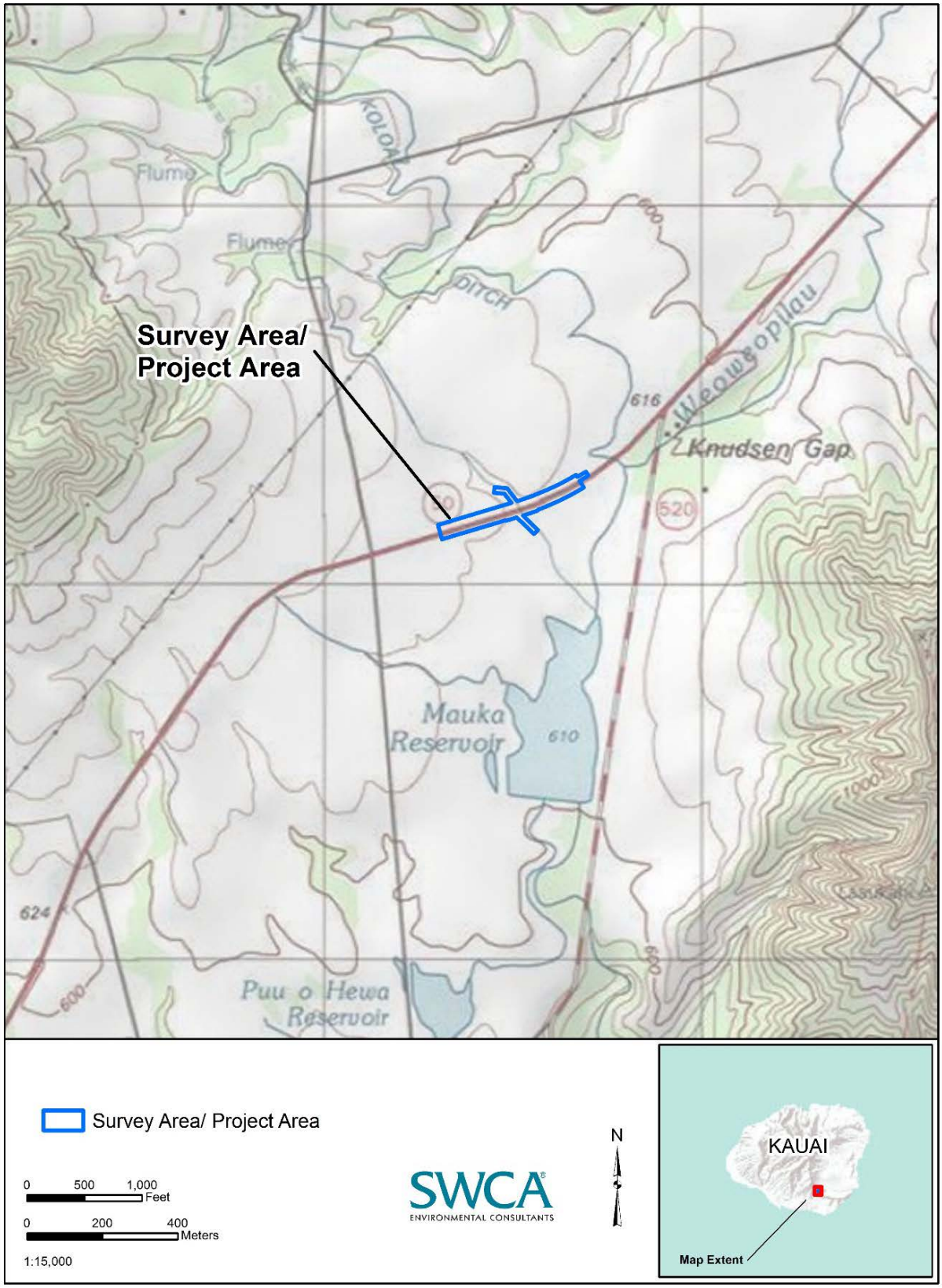

Figure 1. Kaumualiʻi Bridge No. 7E survey area and project area.

2.1. Replacement Structure

The existing structure was built in 1933 and is a two-cell box culvert, with a concrete bottom and wing wall abutments. The existing structure is approximately 32 feet wide. The structure currently accommodates two, 10-foot-wide travel lanes with 2-foot shoulders on both sides. The existing structure is considered both structurally deficient and functionally obsolete. In addition, HDOT has also had maintenance challenges with soil deposition and vegetation overgrowth in the culvert bottom. The project will also aim to address this issue.

Preliminary design anticipates a single-cell box culvert replacing the existing structure on the current highway alignment, with minor adjustments needed only to accommodate a wider bridge. The new structure is being designed to current standards for roadway width, load capacity, crash-tested barrier railing and transitions, and approach roadways. The anticipated proposed typical section of the new culvert would be 44 feet wide and consist of two, 12-foot-wide travel lanes, with two 8-foot-wide shoulders on each side, and two 2-foot-wide crash-tested barrier rails. As bridge design proceeds, project features will be studies and developed to further minimize impacts. Upon project completion, there would be no changes in highway operations (that is, the posted speed limit of 50 miles per hour [mph] will remain).

Adjustments to the roadway profile and alignment may be needed to accommodate the transitions and the new wider structure within the existing 60-foot right-of-way. The roadway approaches on each side would need to transition from the 2-foot-wide shoulders along the highway to the full 8-foot-wide shoulders on the new structure. The structure and roadway approaches are on generally flat terrain, but some fill and a widened embankment are anticipated on the approaches.

Preliminary geotechnical analyses indicate that soils at the structure transition to relatively soft and moderately compressible conditions at depths below 9 feet; therefore, deep foundations would be used to support the replacement structure. A new deep foundation system, either driven piles or drilled shafts, would support the replacement culvert. If piles are used, they would consist of concrete piles under each of the culvert walls. If drilled shafts are used, a large-diameter shaft (up to 60 inches) would be used to minimize the potential of drilling difficulty. The culvert's depth would be similar to the existing structure so the hydraulic capacity of the stream would remain unchanged. The structure would be reinforced concrete and either precast or cast-in-place structures.

The current culvert is sized to accommodate irrigation flows; natural storm events are smaller than those flows. The proposed culvert is sized to match the existing culvert size, in accordance with HDOT Design Criteria for Highway Drainage (HDOT 2010). To address the accumulation of sedimentation and debris, the bottom of the new structure would have a concrete lining and be sloped to facilitate downstream flows. Grouted rubble paving aprons are anticipated to be constructed at the inlet and outlet of the drainage area for scour protection and vegetation control.

Utility relocations (temporary or permanent) may be required for this project and will be confirmed during final design. Activities may include relocation of a utility pole and associated overhead electrical lines or fiber optic lines on the mauka side of the highway. There is currently no highway lighting within the project limits, and none proposed by this project. The proposed project by FHWA includes only the road improvement activities. Operation and maintenance of the road are the responsibility of HDOT.

2.2. Construction Activities

A temporary bypass road is proposed to maintain traffic during construction. The temporary bypass will be adjacent to and mauka of the highway to minimize utility impacts. It provides a 10-foot-wide lane in

each direction, 2-foot-wide shoulders, and barriers, as needed. Temporary traffic control measures would be in place as needed throughout construction. Water flowing through the culvert would be routed through a pipe during removal of the existing culvert and construction of the new culvert and the associated wing walls.

The temporary bypass road would cross the stream using a vented low-water crossing. This type of crossing uses temporary pipes or culverts that would be placed at the bottom of the stream channel and be sized to accommodate the 5-year flood flow. The pipe would be covered with fill material to create a driving surface. The total duration of construction is anticipated to last approximately 11 months.

Personnel and equipment will be staged within the project area, potentially in a grassy area along the eastern approach to the structure, mauka of the highway. This potential staging area is approximately 20 feet wide and 350 feet long. Standard construction equipment would be used, such as track-mounted dozers, loaders, excavators, cranes, compactors, dump trucks, and pickup trucks. Demolition debris would require disposal at an approved landfill offsite.

Night work is generally not anticipated. However, for traffic control reasons, some phases of construction—for example, tying the temporary bypass road into the highway or bringing the new structure on line—may be performed at night when traffic volumes are lower. No night work will be scheduled during periods that would have an adverse effect on biological resources.

It is unknown if the contractor will install temporary fencing on the project site; if so, the fence's design will adhere to conservation measures listed in section 2.5. The project does not include permanent fencing.

Project improvements would occur within the existing HDOT right-of-way and on private property. The proposed project would require permanent easements on private properties located outside the existing 60-foot right-of-way. HDOT would execute a construction parcel agreement to use adjacent lands during construction.

2.3. Survey Area and Project Area

The survey area is the area within which field observations were made during September 2014 site visits by SWCA biologists. The project area is defined as all areas where direct project impacts (permanent and temporary) are proposed to occur. The survey area and project area are nearly identical. The project area encompasses roughly 4.4 acres (1.8 hectares [ha]) and stretches approximately 1,400 feet (427 meters [m]) along Kaumualiʻi Highway (Figure 1). The existing right-of-way within the project area is approximately 60 feet (18 m) wide. Elevations in the project area range from roughly 635 to 645 feet (194 to 197 m) above mean sea level. Most of the project area follows a shallow slope gradient from east to west, with marked depressions in topography attributed to streamflow from the intermittent stream. The surrounding area is predominantly undeveloped and agricultural land, used predominantly for timber cultivation.

2.4. Action Area

The action area is defined in the ESA (50 CFR 402.02) as the area within which all of the direct and indirect effects of the project will occur. In other words, it is the geographic area that will be affected by construction and maintenance of the project. The Bridge No. 7E action area was determined based on potential for construction noise to travel through the surrounding area. This is because noise would be the most far-reaching impact resulting from the proposed action. The action area (Figure 2) extends 1,000

feet from the project area, covering 125.6 acres (50.8 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 due to quieter equipment being used and local topography and vegetation shielding the produced noise.

2.5. Conservation Measures

Implementation of the proposed action will 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:

- 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. All regular on-site staff will be trained to identify listed waterbirds that may be found on-site, and they will know the appropriate steps to take if listed waterbirds are present.
- Night work is not anticipated, but may be unavoidable. Construction activity will be restricted to daylight hours during the seabird peak fallout period (September 15–December 15) to avoid the use of nighttime lighting that could attract seabirds.
- No existing street lights occur in the project area, and none are expected as part of the project; however, if 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).
- No permanent fencing is expected; however, if any fences are erected as part of the project, they 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.

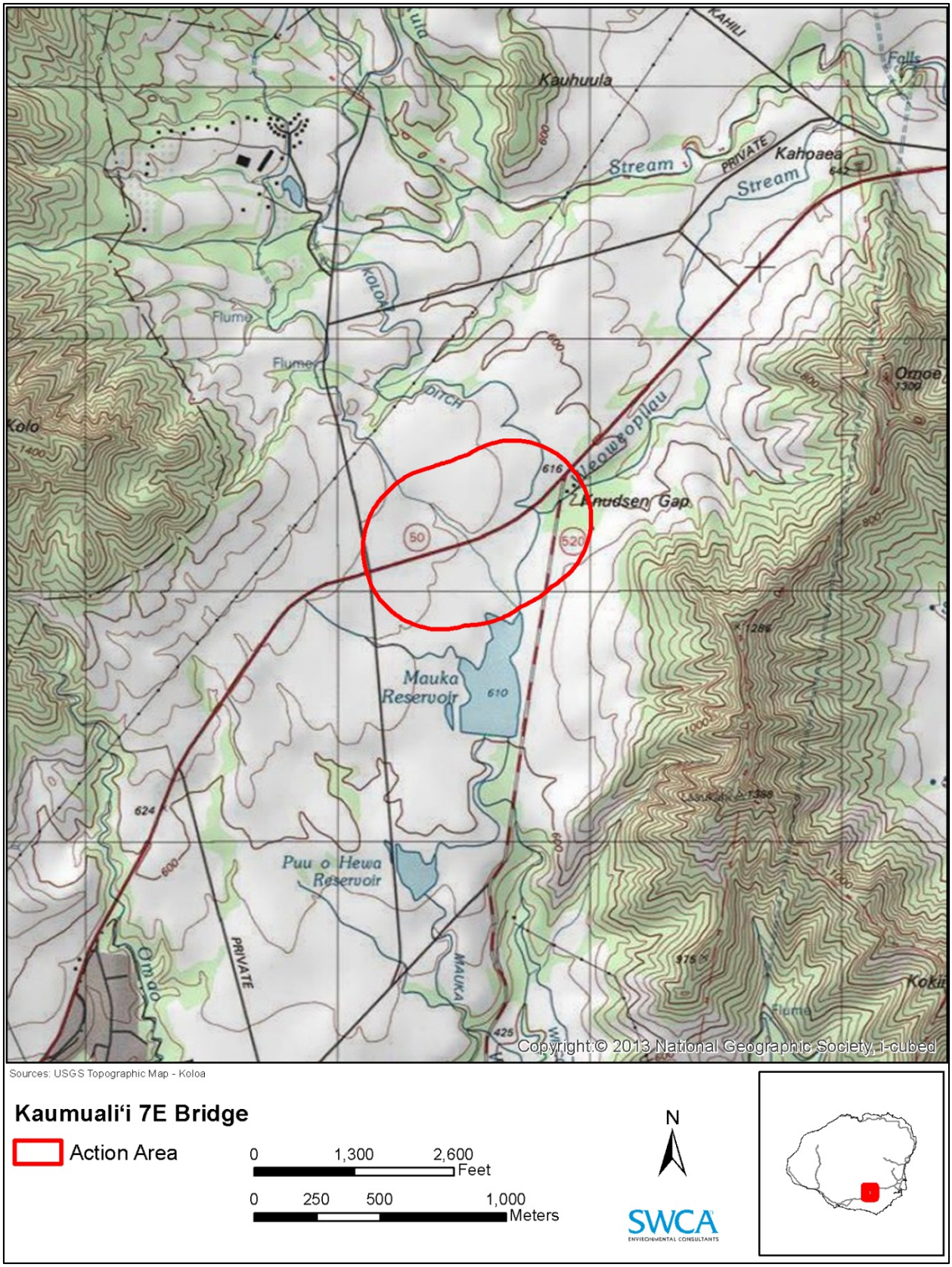

Figure 2. Kaumualiʻi Bridge No. 7E action area.

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 are all federally protected (endangered and threatened) species, proposed 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). Discountable 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 discountable 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, species proposed or candidates for listing are evaluated using the following effect determination categories. *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.

4. AFFECTED ENVIRONMENT

SWCA conducted a review of 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.

A field reconnaissance of the survey area 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.

4.1. Soils and Hydrology

The action area is underlain by the Kōloa Volcanics, which erupted 0.15–3.85 million years ago (Sherrod et al. 2007). The Natural Resources Conservation Service (NRCS) identifies two soil types in the survey area: Haliʻi gravely silty clay (HfB), 3%–8% slopes and Kapaʻa silty clay (KkB), 3%–8% slopes (Foote et al 1972; NRCS 2013).

Mean annual rainfall for this area is approximately 84.5 inches (2,147 millimeters [mm]). Rainfall is typically highest in November–December and lowest in June (Giambelluca et al. 2013). The closest rainfall gage to the site has 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 U.S. Geological Survey (USGS) and the State of Hawaiʻi Division of Aquatic Resources identify an intermittent stream bisecting the action area (Figure 3). USGS data show the un-named stream as a small, non-permanent tributary flowing into Mauka Reservoir and into the Waikomo Stream. The Waikomo Stream, within the Waikomo Watershed, is approximately 21.6 miles (34.7 kilometers) long and flows south, terminating in Hanakaʻape Bay in Poʻipū (Parham et al. 2008). The State of Hawaiʻi names the feature under Bridge No. 7E the Weoweopilau tributary, part of Hulēʻia Stream (Parham et al. 2008). Hulēʻia Stream is within the Hulēʻia Watershed and flows east into Nawiliwili Bay in Līhuʻe, Kauaʻi. However, based on aerial imagery, the stream under the bridge appears to flow south as a minor tributary within the Waikomo Watershed. The stream channel also conveys irrigation water from an upstream reservoir. No wetlands are present in the survey area (see Figure 3).

4.2. Vegetation

No state or federally listed threatened, endangered, or candidate plant species and no native Hawaiʻi plants were recorded in the survey area.[1] The vegetation in the survey area is composed of five main vegetation types: guinea grass grassland, albizia forest, eucalyptus forest, riparian, and ruderal vegetation.

Guinea Grass Grassland: Guinea grass (*Urochloa maxima*) forms dense mats, reaching heights of 7 feet (2 m) in some areas adjacent to the highway (Appendix A, Figures A1 and A2). Very few other weedy species occur in this vegetation type. Small koa haole (*Leucaena leucocephala*) trees, albizia (*Falcataria moluccana*) seedlings, and maile pilau (*Paederia foetida*) vine are uncommon.

Albizia Forest: A large portion of the survey area comprises monotypic albizia stands (Appendix A, Figure A2) that maintain a canopy cover of 50% or greater. The understory is largely dominated by Guinea grass.

Eucalyptus Forest: Portions of the survey area are forested with rainbow eucalyptus trees (*Eucalyptus deglupta*). The understory is largely dominated by Guinea grass.

Riparian: The riparian vegetation type occurs in the non-perennial streambed. Common species in this area include Job's-tears (*Coix lachryma-jobi*), Guinea grass, octopus tree (*Schefflera actinophylla*), Koster's curse (*Clidemia hirta*), and ginger (*Alpinia* sp.).

Ruderal Vegetation: This vegetation type occurs in and along the highway right-of-way. It is dominated by a mix of non-native herbaceous plants. Abundant and common species found in the ruderal vegetation type are Guinea grass, swollen fingergrass (*Chloris barbata*), Spanish needle (*Bidens pilosa*), maile hohono (*Ageratum conyzoides*), graceful spurge (*Euphorbia hypericifolia*), pualele (*Emilia fosbergii*), kiliʻoʻopu (*Kyllinga nemoralis*), elephant grass (*Cenchrus purpureus*), and Hilo grass (*Paspalum conjugatum*). These weedy areas are likely mowed occasionally.

[1] The taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999), Wagner and Herbst (2003), and Staples and Herbst (2005). Recent name changes are those recorded in Wagner et al. (2012). Common/Hawaiian names are provided first, followed by scientific names in parenthesis. If no common or Hawaiian name is known, only the scientific name is provided.

Figure 3. National Wetland Inventory classifications near the survey area.

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 was most likely active. Field observations of birds were conducted using 8 × 42–mm binoculars. Visual and auditory observations were included in the survey. All observed birds, mammals, reptiles, amphibians, fish, and invertebrate species were noted during the survey.

Field 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, four bird species were documented (Table 1). All four species are introduced to the Hawaiian Islands. The native migrant Pacific golden-plover (*Pluvialis fulva*) could also occur in the survey area.

Table 1. Birds Observed by SWCA in and near the Survey Area

Common Name	Scientific Name	Status
Cattle egret	*Bubulcus ibis*	NN
House finch	*Haemorhous mexicanus*	NN
Hwamei	*Garrulax canorus*	NN
Japanese white-eye	*Zosterops japonicus*	NN
Total		**4**

4.3.2. Mammals

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

4.3.3. Terrestrial 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

Four species of terrestrial invertebrates were noted during the survey. These include two non-native snails: the giant African snail (*Achatina fulica*) and another snail (*Subulina octona*). Also observed were the large orange sulphur butterfly (*Phoebis agarithe*) and the native indigenous globe skimmer (*Pantala flavescens*).

4.3.5. Fish and Aquatic Invertebrates

Due to low stream flow and poor visibility (see Figures A3 and A4 in Appendix A), an instream survey was not conducted.

5. SPECIES AND CRITICAL HABITAT CONSIDERED

The species evaluated in this report consist of all federally protected (i.e., endangered and threatened), proposed species, and candidate species.

5.1. Species

The USFWS lists nine species that may occur in the action area: seven endangered species, one threatened species, and one proposed endangered species (Table 2). Based on current distribution and habitat requirements, one of these species—the Hawaiian hoary bat—has the potential to use the habitat of the action area; this species is discussed in further detail in section 6.1.2. 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.

Table 2. Species Federally Listed as Endangered or Threatened

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. On Kauaʻi, 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.	Unlikely to occur; no suitable emergent marsh or reservoir habitat is present in the action area.	No effect.
Hawaiian moorhen (*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.	Unlikely to occur; no suitable nesting habitat is present in the action area.	No 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 around in open mudflats, sparsely vegetated pickleweed mats, and open pasture lands. 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.	Unlikely to occur; no suitable nesting or foraging habitat is present in the action area.	No effect.

Table 2. Species Federally Listed as Endangered or Threatened

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Hawaiian duck (*Anas wyvilliana*)	Endangered	Found in lowland wetlands, river valleys, and mountain streams. They nest on the ground. Breeding can occur throughout the year.	Unlikely to occur; suitable nesting and foraging sites do not occur in the action area because the stream bisecting the action area is intermittent.	No effect.
Hawaiian goose, or nēnē (*Branta* sandvicensis)	Endangered	Frequents scrubland, grassland, golf courses, sparsely vegetated slopes, and on Kauaʻi, in open lowland country. They do not require standing or flowing water for successful breeding but will use it when available. Their current distribution has been highly influenced by captive-bred releases into the wild.	Unlikely to occur due to the lack of shrub cover and the abundance of tall grass; no suitable habitat is present in the action area.	No effect.
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. Burrows are generally 3–6 feet long (from entrance to nest chamber), although some may be as long as 15 feet. One white egg is laid deep within the burrows. 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.
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. Breeding on Maui and Oahʻu has not been confirmed (Mitchell et al. 2005).	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.

Table 2. Species Federally Listed as Endangered or Threatened

Common Name (scientific name)	Status*	Range or Habitat Requirements†	Potential for Occurrence in Action Area	Determination of Effect
Mammals				
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. The action area contains habitats that could support Hawaiian hoary bat roosting and 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. U.S. Fish and Wildlife Service Critical Habitat

No designated or proposed critical habitat for threatened or endangered species occurs in the action area.

6. EFFECTS ANALYSIS

Federally protected species that may be affected by the proposed action are discussed in detail in this section. These species are Hawaiian petrel, Newell's shearwater, band-rumped storm petrel (collectively referred to as Seabirds), and Hawaiian hoary bat, respectively. Species that will not be affected by the proposed action are discussed in Table 2 and are not evaluated in detail in this section.

6.1. 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. 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).

Band-rumped storm petrels are considered the rarest breeding seabird in Hawaiʻi (Banko et al. 1991; Slotterback 2002). Listing of the band-rumped storm petrel under the ESA is anticipated to occur in 2016. In the Pacific Ocean, breeding colonies have been documented in the Galapagos Islands, Japan, and the Hawaiian Islands (Pyle and Pyle 2009; USFWS 2015).

The Newell's shearwater was listed as a threatened species by the USFWS in 1975. The largest breeding population of Newell's shearwater occurs on Kauaʻi (Telfer et al. 1987; Ainley et al. 1995, 1997; Day et

al. 2003). This species has also been documented on Hawaiʻi (Reynolds et al. 1997), Molokaʻi (Day and Cooper 2002), and Oʻahu (Day and Cooper 2008).

The types of habitat used for seabird nesting are diverse and range from xeric habitats 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 ground-nesting seabirds such as Hawaiian petrels are habitat degradation; the loss of nesting habitat; predation of eggs, hatchlings, and adults at nesting sites by introduced mammals (e.g., dogs, mongooses [*Herpestes javanicus*], cats, rats, and pigs [*Sus scrofa*]); and urban lighting associated with disorientation and fall-out of juvenile birds (Banko et al. 1991; Ainley et al. 1997; Mitchell et al. 2005; Hays and Conant 2007).

6.1.1. 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 2.5, will minimize potential for light attraction, reducing it to an unlikely and discountable impact.

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.

6.2. Hawaiian Hoary Bat

The Hawaiian hoary bat was listed as an endangered species on October 13, 1970, under the ESA and the State of Hawaiʻi's Endangered Species List. 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 with 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).

6.2.1. 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 stream/river corridor and riparian vegetation type in the action area are suitable for bat foraging. The Hawaiian hoary bat has been observed roosting in eucalyptus and albizia trees and could roost in the albizia forest and eucalyptus forest vegetation types in the action area.

Direct impacts to 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 will 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.

The permanent removal of roosting habitat would constitute a long-term indirect impact. This impact would be discountable because of the small amount of habitat removed under the proposed action and the availability of adjacent roosting habitat for displaced bats to use. While some permanent vegetation removal would occur (e.g., widening the travel lanes and shoulders), the majority of the vegetation removal would be temporary.

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 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 both that the project will occur on and immediately adjacent to a heavily traveled roadway and the sufficient availability of nearby habitat.

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.

7. CONCLUSION

Four of the federally protected species (see Table 2) have the potential to occur in the action area. The Hawaiian petrel, Newell's shearwater, and band-rumped storm petrel are unlikely to occur, and Hawaiian hoary bat may occur. Potential impacts from the proposed project to these species are expected to be temporary, and discountable and insignificant. As detailed above, the timing of construction (see section 2.5) and minimal construction footprint will preclude any major or long-term effects to these federally protected species. In general, no major or long-term effects are anticipated from the implementation of the proposed project.

In conclusion, the proposed project *may affect, but is not likely to adversely affect* the federally listed Hawaiian petrel, Newell's shearwater, and Hawaiian hoary bat. The proposed project is *not likely to jeopardize the continued existence* of the band-rumped storm petrel, which is proposed for listing.

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Appendix A

Photographs of the Project Area

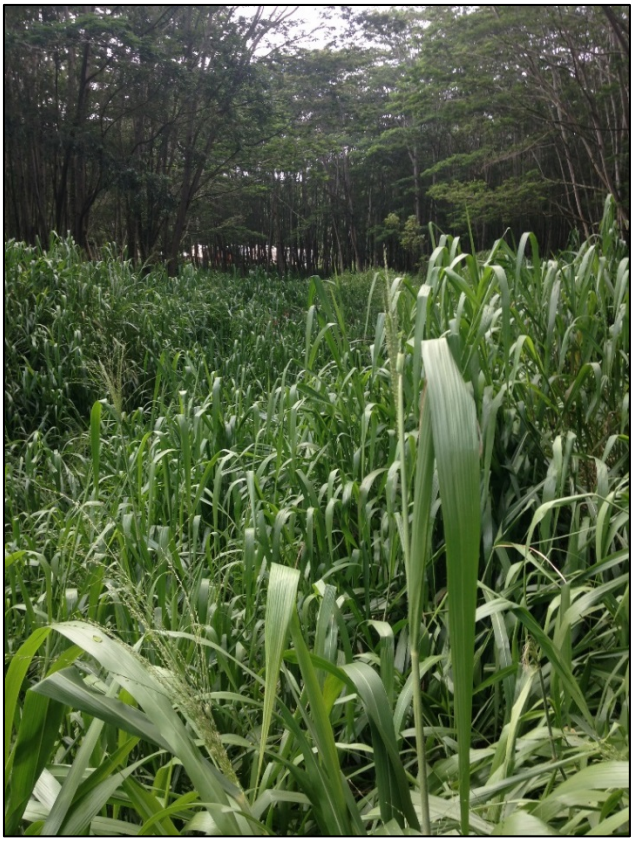


Figure A1. Guinea grass grassland, showing dense and tall grass.

Figure A2. Ruderal vegetation along the guardrail and albizia forest in the background along Kaumualiʻi Highway.

Figure A3. Bridge No. 7E, with concrete vertical walls, and low stream flow. Photograph by CH2M HILL.

Figure A4. Bridge No. 7E poor water visibility.

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-0121

FEB 25 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 Consultation for Bridge 7E Replacement Project, Kauai

Dear Mr. Will:

The U.S. Fish and Wildlife Service (Service) received your letter, dated December 8, 2015, 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 hoary bat (*Lasiurus cinereus semotus*); and the Hawaiian petrel (*Pterodroma sandwichensis*), the threatened Newell's shearwater (*Puffinus auricularis newelli*), and proposed for listing band-rumped storm-petrel (*Oceanodroma castro*) (hereafter collectively referred to as seabirds). The Service met (via teleconference) with the Central Federal Lands Highway Division (CFLHD) of the Federal Highways Administration (FHWA) on January 14, 2016 to discuss the request for concurrence and sedimentation and erosion Best Management Practices (BMPs). In that meeting, the FHWA requested concurrence for the following species, in addition to the Hawaiian hoary bat and seabirds: the endangered Hawaiian coot (*Fulica alai*), Hawaiian duck (*Anas wyvilliana*), Hawaiian moorhen (*Gallinula chloropus sandvicensis*), and Hawaiian stilt (*Himantopus mexicanus knudseni*), (collectively referred to as Hawaiian waterbirds); and the Hawaiian goose (*Branta sandvicensis*). FHWA also confirmed that all applicable BMPs regarding sedimentation and erosion, provided in our December 22, 2014 letter, will be implemented to avoid and minimize impacts to aquatic resources.

The findings and recommendations in this consultation are based on the following: (1) your consultation request; (2) meeting conversation on January 14, 2016; (3) 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.*) and the Fish and Wildlife Coordination Act of 1934 (FWCA), as amended (16 U.S.C. 661 *et seq.*; 48 Stat. 401).

Project Description
The FHWA proposes to replace Bridge 7E located along Kaumualii Highway (Route 50), approximately 800 feet west of Maluhia Road in the Koloa district, on the island of Kauai. The proposed bridge replacement project includes a temporary bypass route, approach roadways, an equipment staging area, and potential relocation of one utility pole. Standard construction equipment would be used such as track-mounted dozers, loaders, excavators, cranes, compactors, dump trucks, and pickup trucks. The project site is expected to be approximately 1,500 feet along Kaumualii Highway and extend approximately 50 feet beyond the width of the existing right-of-way. Where the bridge crosses the stream, the project site will extend 200 feet along the drainage (in both stream directions) and include a 50-foot wide area outside the drainage. There is no highway lighting proposed within the project site.

Conservation Measures
To avoid and minimize impacts to federally listed species and their habitats and aquatic resources, the below conservation measures 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.

- If an endangered Hawaiian waterbird or Hawaiian goose is present or flies into the area during ongoing activities, all activities within 100 feet 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 listed waterbirds and the Hawaiian goose that may be found on-site, and they will know the appropriate steps to take if listed waterbirds or Hawaiian goose is present.

- Construction activity will be restricted to daylight hours during the seabird peak fallout period (September 15-December 15) to avoid the use of nighttime lighting that could attract seabirds. No night work is anticipated; however, for traffic control reasons, some phases of construction may be performed at night outside of the peak fallout period. The project site is surrounded by albizia trees (*Falcataria moluccana*) which will provide additional shielding to minimize potential impacts to seabirds.

- No permanent fencing is anticipated. If any temporary fencing is erected as part of the project, it will have barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat. 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 will be trimmed or removed as a result of this project between June 1 and September 15 to avoid impacts to Hawaiian hoary bats.

- Authorized dredging and filling-related activities will be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.

- Turbidity and siltation from project-related work will be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs will be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices will be removed and disposed of at an approved site.

- All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment will be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities will not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats.

- Project construction-related materials (fill, revetment rock, pipe, etc.) will not be stockpiled in, or in close proximity to aquatic habitats and will be protected from erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.

- Fueling of project-related vehicles and equipment will take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project will be developed. The plan will be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms will be stored on-site to facilitate the clean-up of accidental petroleum releases.

- All deliberately exposed soil or under-layer materials used in the project near water will be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

By implementing the above conservation measures, the proposed project will avoid potential adverse effects to 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, and the band-rumped storm petrel, and will avoid and minimize impacts to aquatic resources in the project area.

Summary

Based on the above information and that avoidance and minimization measures will be implemented, 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, and the band-rumped storm petrel. 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: Mr. Paul Luersen, CH2M HILL

Appendix D
National Historic Preservation Act Section 106 and HRS Chapter 6E Consultation Documentation

AFFIDAVIT OF PUBLICATION

IN THE MATTER OF
NOTICE OF CONSULTATION-BRIDGE 7E

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

Lisa Kaukani

Subscribed to and sworn before me this 28th day of August A.D. 20 15

Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii

My commission expires: Oct 07, 2018

Ad # 0000791402

PATRICIA K. REESE NOTARY PUBLIC Comm. No. 86-467 STATE OF HAWAII

SP.NO.: _____ L.N.

NOTICE OF CONSULTATION

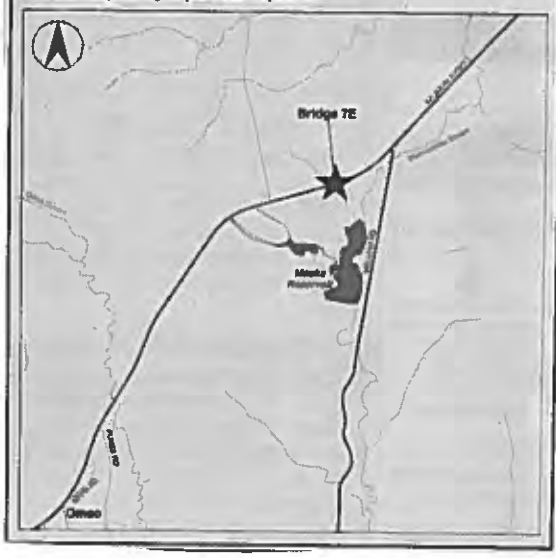
SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966 AS AMENDED (2006) AND CHAPTER 6E OF THE HAWAII REVISED STATUTES

BRIDGE NO. 7E REPLACEMENT PROJECT
KOLOA DISTRICT, KAUAI ISLAND, KOLOA AHUPUAA
FEDERAL-AID PROJECT NUMBER: HI STP SR50(2)
TAX MAP KEYS: (4)2-7-002:001, (4)2-7-001:004, and (4)2-7-001
(Kaumualii Highway Right-of-Way)

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 replace Bridge No. 7E on Kaumualii State Highway 50 (HI-50) at Mile Post 6.95 in Koloa Ahupuaa in Koloa District on Kauai. The proposed project would replace the existing Bridge No. 7E and its approaches to maintain the stream crossing on HI-50 as a safe and functional component of the regional transportation system for highway users. The project would replace the existing double box culvert with a new single-cell box culvert and would accommodate two 12-foot travel lanes, two 8-foot shoulders, and guardrails. The potential area of disturbance, including temporary construction areas, is 2.1 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.



Enclosures have been omitted

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: ALAN DOWNER
STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BLVD, SUITE 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
BRIDGE NO. 7E REPLACEMENT PROJECT
KOLOA DISTRICT, KAUAI ISLAND, KOLOA AHUPUAA
PROJECT NO. HI STP SR50(2)
TAX MAP KEY: (4)2-7-002:001 (POR.), (4)2-7-001:004 (POR.), AND (4)2-7-001 KAUMUALII HIGHWAY RIGHT-OF-WAY

Dear Mr. Downer:

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 replace Bridge Number (No.) 7E on Kaumualii State Highway 50 (HI-50), located at Mile Post (MP) 6.95 (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 replace the existing Bridge No. 7E and its roadway approaches to maintain the crossing over the unnamed intermittent water way on HI-50 as a safe and functional component of the regional transportation system for highway users. The bridge is located at milepost 7.0 on Kaumualii Highway, approximately 800 feet west of its intersection with Maluhia Road. The existing structure, which is a double box culvert, would be demolished and replaced with a single-cell box culvert. The bridge is not eligible for listing on the National Register of Historic Places (NRHP).

The proposed new bridge structure would be approximately 30 feet long and 44 feet wide, to accommodate two 12-foot travel lanes with 8-foot shoulders and guardrails on both sides. The roadway approaches to the bridges would be widened, which would require extending embankment slopes.

During construction, Bridge No. 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 HDOT right-of-way and would extend approximately 20 to 50 feet into adjacent private property. Construction parcels (temporary easements) would be needed from the privately owned parcel mauka of the bridge. Permanent easements would be acquired on the makai side for maintenance of grading and drainage improvements. No historic resources eligible for listing on the NRHP are located within the permanent improvement or temporary construction limits.

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 two studies prepared for this project. Please note that the study areas indicated in the reports are larger than the attached APE maps. 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.

1. Draft Archaeological Inventory Survey Report for the Bridge 7E Replacement Project, Koloa Ahupuaa, Koloa District, Kauai
2. Hawaii State Historic Preservation Division (SHPD) Historic Resource Inventory Form (Reconnaissance Level) for Bridge 7E

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:

- Bridge 7E Area of Potential Effects (USGS Map)
- Bridge 7E Area of Potential Effects (Aerial Imagery)
- On CD: Draft Archaeological Inventory Survey Report for the Bridge 7E Replacement Project, Koloa Ahupuaa, Koloa District, Kauai
- On CD: Hawaii SHPD Historic Resource Inventory Form (Reconnaissance Level) for Bridge 7E

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

PHONE (808) 594-1888

FAX (808) 594-1938

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
560 N. NIMITZ HWY., SUITE 200
HONOLULU, HAWAI'I 96817

HRD15/7603

September 21, 2015

J. Michael Will, P.E., Project Manager
U.S. Department of Transportation, Federal Highways Administration
12300 West Dakota Avenue, Suite 380
Lakewood, CO 80228

Re: Request for Consultation Under NHPA Section 106 and Hawai'i Revised Statutes Chapter 6E for the Replacement of Bridge No. 7E
Kōloa Ahupua'a, Kona Moku, Kaua'i Mokupuni
Tax map key (4) 2-7-002:001 (por.), 004 (por.), and (4) 2-7-001

Aloha Mr. Will:

The Office of Hawaiian Affairs (OHA) is in receipt of your August 26, 2015 letter requesting information on cultural, historic, and archaeological sites within the area of potential effect. The United States Department of Transportation, Federal Highway Administration is proposing the replacement of Bridge 7E on Kaumuali'i Highway.

OHA would like to suggest that the following entities and individuals be contacted:

- Royal Order of Kamehameha I, Kamuali'i Chapter
  - Warren Perry
- Aha Moku Kaua'i Island, Kona Moku
  - Billy Kaohelauli'i (terriehayes@gmail.com)
- Ka'ahumanu Society
  - Julie Souza
- Lopaka Bukoski

Mahalo for the opportunity to consult. Should you have any questions, please contact Jeannin Jeremiah at 594-1790 or by email at jeanninj@oha.org.

'O wau iho nō me ka 'oia 'i'o,

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer

KC:jj

C: Kaliko Santos – OHA Community Outreach Coordinator, Kaua'i Island

**Please address replies and similar, future correspondence to our agency:*
Dr. Kamana'opono Crabbe
Attn: OHA Compliance Enforcement
560 N. Nimitz Hwy, Ste. 200
Honolulu, HI 96817

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: Bridge No. 7E Replacement Project (Project No. HI STP SR50(2))
Kōloa District, Island of Kaua'i, Kōloa Ahupua'a
Tax Map Key: (4)2-7-002:001 (Por.), (4)2-7-001:004 (Por), and (4)2-7-001
Kaumuali'i Highway Right of Way
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). We appreciate being consulted about this undertaking and are providing comments below. We apologize for the delayed response.

Undertaking: The project consists of replacement of Bridge No. 7E and its roadway approaches. The existing structure, which is a double box culvert (originally constructed in 1933), would be demolished and replaced with a single-cell box culvert.

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 the culvert to be "not eligible" for listing on the National Register of Historic Places (NRHP).

The Draft Archaeological Inventory Survey for the project determined that additional cultural resources within the project area are also not eligible for listing on the Hawai'i or National Registers of Historic Places [Draft AISR p. 52]

> *The two cultural resources identified within the project area are Bridge 7E (SIHP # 50-30-10-2285) and an earthen ditch (SIHP # -2286) that extends perpendicular to Kaumuali'i Highway and passes water through the culverts of Bridge 7E. The earthen ditch is a plantation water control feature that likely predates the installation of Bridge 7E in 1933. [Draft AISR, p. 25]*

HHF concurs with the proposed APE and the determination of no eligible historic sites affected.

We do not have concerns regarding the project moving forward as described. However, if the scope of the proposed work changes, or previously unidentified historic or cultural resources are identified

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Email preservation@historichawaii.org / Web www.historichawaii.org

during the project, please notify HHF so we may reevaluate if our involvement is warranted at that time.

Thank you for the opportunity to comment on this undertaking under the National Historic Preservation Act Section 106.

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

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: Bridge 7E

Historic Name: Bridge 7E

Address: Kaumualii Highway (Rt. 50) at mile marker 7

City/ Town/ Location: 1100' west of Rt. 50 intersection with Rt. 520

County: Kauai

TMK [(X)-X-X-XXX:XXX)]: (4)-2-7-001: 999

Subdivision/Neighborhood: n/a

Latitude: 21d-56m-54.20s N

Longitude: 159d-28m-10.26s W

Original Use: Vehicular bridge

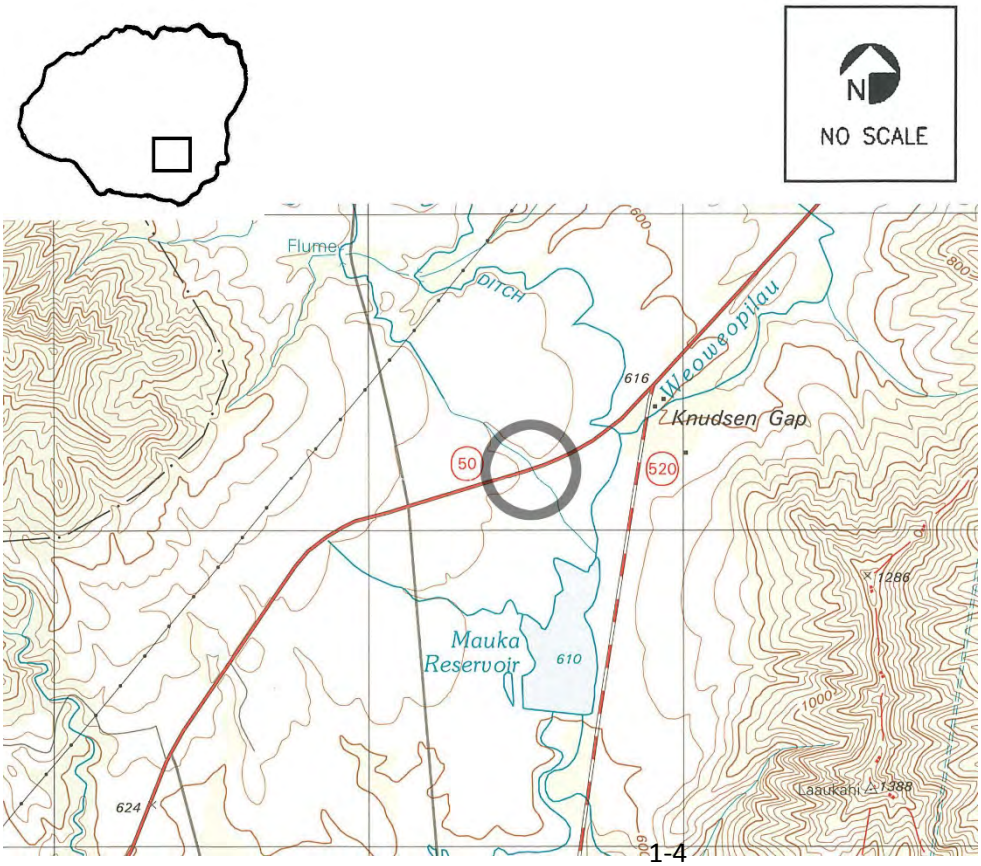
Current Use: Vehicular bridge

Architect/ Builder (if known): William R. Bartels, engineer.

Date of Construction (if known): 1933

Bridge 7E, view facing southwest

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

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. 1953 the 5 mile section of roadway that was built under NRH 12-B was widened under Federal Aid Project (FAP) F12 (19). In most areas, the original 18' wide roadway was widened by 3' at each side to give a total roadway width of 24'. On curves and tangents, the 6' increase was added to one side only. This work did not affect Bridge 7E directly, as it was originally built at 30' wide. However, the roadway over the bridge was likely resurfaced at this time. Drawings for FAP F12 (19) were produced by the Territorial Highway Department, dated April 2, 1952 and signed by Robert Belt, who was then the Territorial Highway Engineer. It is uncertain who designed FAP F12 (19), as the extant drawings are not initialed. The metal guardrails were added at an unkown date.

Original Location, if moved: _____
Reason for move (if known): _____

Condition:
- ☐ Excellent
- ☒ Good
- ☐ Fair
- ☐ Deteriorated

Condition Explanation: Some impact damage of concrete at parapets

Eligibility (select all that apply):
- ☐ National Register of Historic Places
- ☐ State Register of Historic Places
  - ☒ Not Eligible

Bridge 7E, view facing northeast

Bridge 7E, view facing north

FOR SHPD USE ONLY:	**Site #**Click here to enter text.	**TMK #** Click here to enter text.

☐Eligible
☐Listed
☐Contributing to Historic District:
Name of District:
☐Unknown

Bridge 7E, view facing southwest

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

FOR SHPD USE ONLY:	**Site #**Click here to enter text.	**TMK #** Click here to enter text.

☐Rammed Earth ☐Sod ☐Other: _____

Windows:

☐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:

Bridge 7E (Feature MAI A) is a concrete, double box culvert that carries two lanes of Kaumualii Highway (Route 50) over an unnamed intermittent stream at mile marker 7, east of Lihue, Kauai. The bridge is 30' wide between the parapets with a total span of about 21' for both cells of the culvert.

The setting of the bridge is rural, along a gently curving section of the highway with a sight distance of about 900' to the east and about 1800' to the west, with no buildings that are in sight of the bridge. Thick vegetation is growing in the stream bed and covering the low banks, and tall trees line the road in both directions. Bridge 7E is about 1100' west of the intersection of Maluhia Road.

The 24'-6" long, low, solid concrete parapets of the bridge are 10" thick and about 1'-6" high above the asphalt roadway surface. The top corners of each parapet that are presented to oncoming traffic have a 10" chamfer. W-beam guardrails are mounted to the top surface of each parapet by short, vertical sections of galvanized steel I-beam. The parapets and headwalls of the underside of the bridge show the horizontal impressions of the forming boards used during construction.

Each of the two cells of the culvert are about 10' high and 10' wide and are separated by a 10" wide concrete wall that forms a vertical support at the middle of the 21' total span of the bridge. The four concrete wing walls each extend straight out about 12' from the concrete abutments. Along this 12' length, the top edge of each wing wall slopes downward about 8'.

Throughout the historic period until approximately 1989, the area surrounding Bridge 7E was sugar cane fields. The tall trees that line the road have grown since 1989.

Bridge 7E is bridge number 007000500300700 in the National Bridge Inventory database. It was last inspected on October 23, 2012 by the State of Hawaii, Department of Transportation, Highways Division.

Integrity:

Bridge 7E retains sufficient integrity to enable NA listing. Integrity of location is retained. Integrity of setting is partially retained, the area surrounding the bridge that is now forested was formerly sugar cane. Integrity of design, materials, and workmanship are retained, although somewhat impacted by the alterations. Integrity of feeling and association are retained.

Nearby Resources:

Within the Area of Potential Effect (APE) an additional resource was identified:

Feature MAI D: Earth ditch. Location: Passes under Kaumualii Highway through the [culvert] Bridge 7E. Description and evaluation: This unlined, earth ditch is typically about 8' to 10' wide in the vicinity of Bridge 7E,

with banks about 6' high. As shown on topographic maps, it extends several thousand feet to carry water from an area near the confluence of the Paohia Stream and the Waiahi-Kuia Aqueduct down to the Mauka Reservoir south of the highway. This ditch is one of four that supply water to the Mauka Reservoir. This ditch is evaluated as not eligible for the National Register of Historic Places. It lacks significance associated with engineering distinction and has no known association with an important historic person or event.

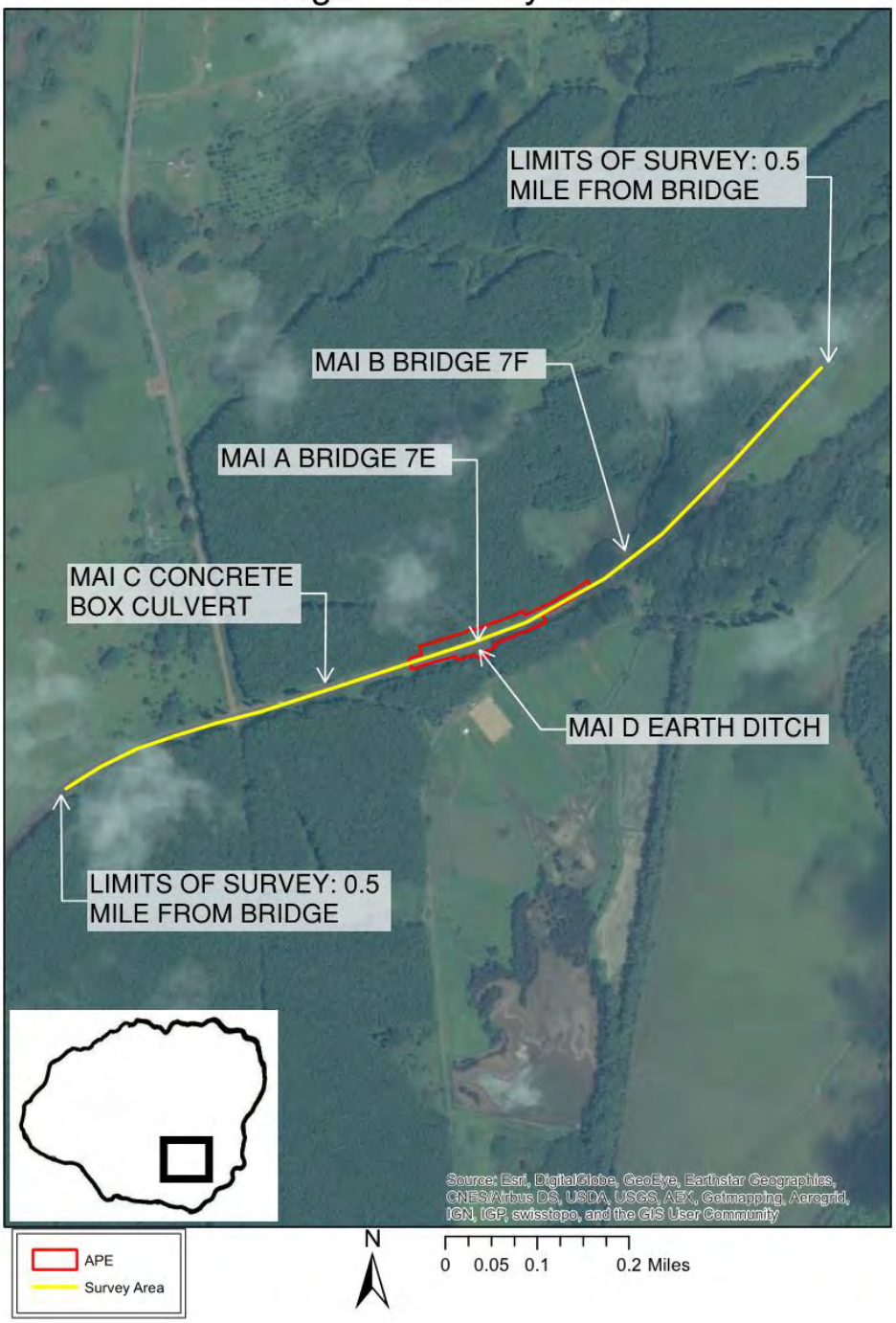
During the field inspection of Kaumualii Highway for a distance of approximately ½ mile on either side of the Bridge 7E the following features were noted which are outside the APE.

Feature MAI B: Reinforced concrete bridge. Location: Kaumualii Highway about 750' east of Bridge 7E. Description and evaluation: This approximately 22' long bridge has concrete parapets with narrow arched openings and curved-plan end stanchions. This bridge appears as Bridge 7F on original 1933 construction drawings (drawing # 4298.3) for this section of Kaumualii Highway. This bridge is included in the 2013 Hawaii State Historic Bridge Inventory, Waihohonu Stream Bridge. This 2013 inventory evaluated it as eligible for the National Register under Criterion A and C for its association with the development of Kaui's Belt Road system, as a good example of a 1930s concrete bridge, and as an example of Federal Aid bridges constructed by the Territory in the 1930s. This bridge is outside the APE and was not evaluated in this report for eligibility for the National Register of Historic Places.

Feature MAI C: Concrete box culvert. Location: Kaumualii Highway about 540' west of Bridge 7E. Description and evaluation: This small culvert has concrete headwalls that project up about 1'-6" above the level of the roadway. These are topped by a W-beam guardrail fixed to posts on the top surface of the projecting headwall. This culvert appears as "3 x 6 concrete box culvert" on original construction drawings (drawing # 4298.3) for this section of Kaumualii Highway. This culvert is outside the APE and was not evaluated for eligibility for the National Register of Historic Places.

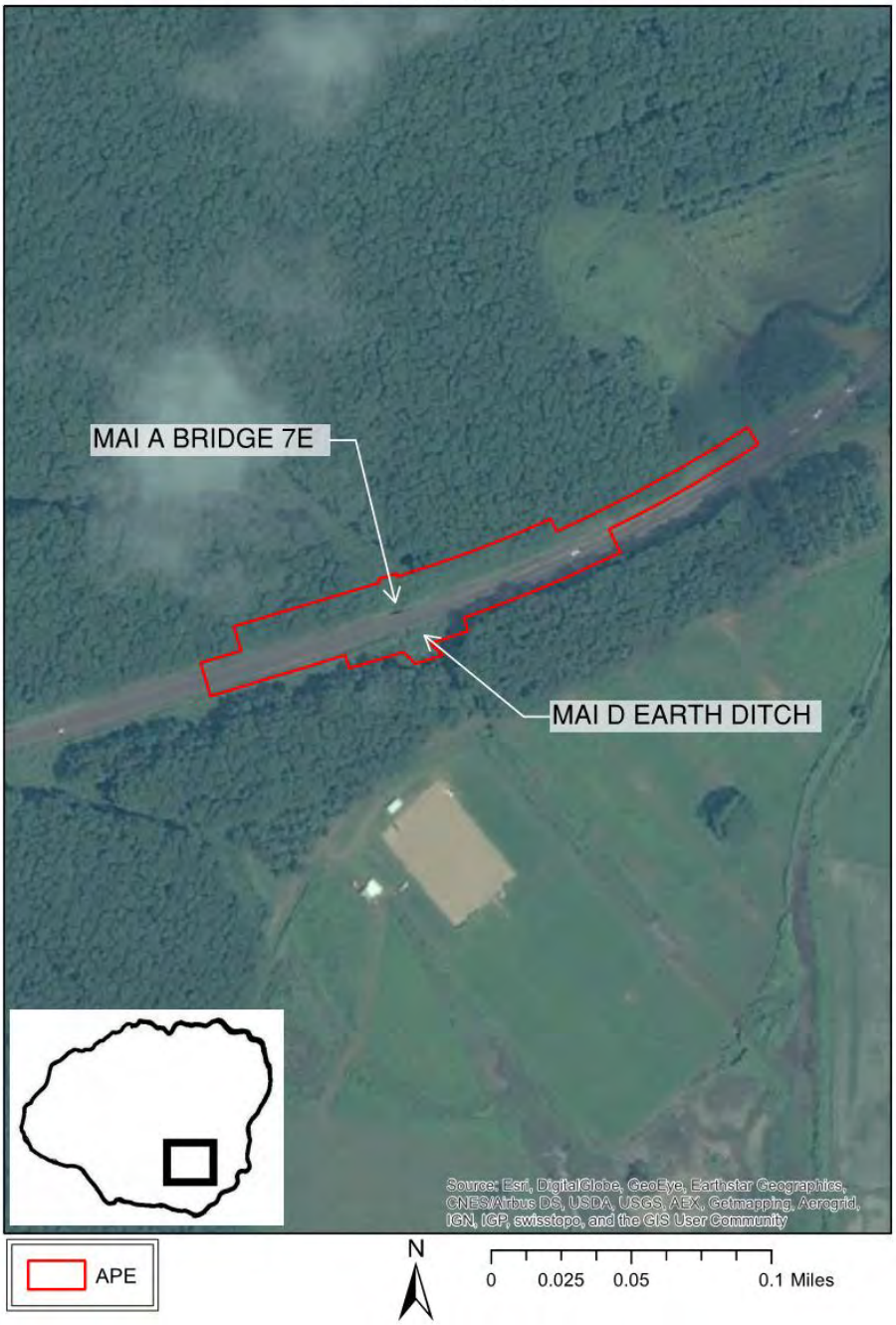
FOR SHPD USE ONLY:	Site #Click here to enter text.	TMK # Click here to enter text.

Bridge 7E Survey Area



FOR SHPD USE ONLY:	Site #Click here to enter text.	TMK # Click here to enter text.

Bridge 7E APE
Historic Resources
within the APE



FOR SHPD USE ONLY:	Site #Click here to enter text.	TMK # Click here to enter text.

Statement of Significance

Historical Context:

Bridge 7E was part of the ca. 1933 National Recovery Highway Project (NRH) No. 12-B which built what would become Route 50 along an approximate five mile section beginning near the present day junction with Route 520 and extending west to Kalaheo. Prior to this project the existing road followed a twisting route with frequent abrupt turns along the contour of the land and was unpaved in places. The 1933 project built a straighter road that was cut and filled through the terrain to provide a gentler grade. Much of the older road was destroyed as NRH 12-B cut through it, other sections that extended farther from the path of the 1933 project were abandoned.

Drawings for Project NRH 12-B were produced by the Hawaii Territorial Highway Department. They are signed by the Territorial Highway Engineer, Lyman H. Bigelow, and are dated October 2, 1933. The individual drawings for Bridge 7E are dated July 1933 and show that the designer of the bridge was William R. Bartels.

Bartels 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. 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.

The National Recovery Highway project was a depression-era public works program undertaken by the Roosevelt administration. The roadway of NRH 12-B bypassed Koloa. The bridge was built by Hawaiian Contracting Co. LTD and construction was supervised by Robert Belt, who was the Resident Engineer on Kauai for the Territorial Highway Department.

Significance Statement:

Bridge 7E is included in the November 2013 Hawaii State Historic Bridge Inventory and Evaluation by MKE Associates, LLC, and Fung Associates, Inc. This inventory describes 7E as not eligible (page 3-6), with no distinctive features that depart from standard design. The bridge is included in the 1989 Kauai Bridge Inventory. The 1989 inventory states that the bridge is also known as Hoinakaunalehua Bridge. However, this name is assigned to a 1950 culvert that is located on Rt. 50 about 2 miles east of Bridge 7E. It is more likely that the alternate name in the 1989 bridge inventory is in error due to a confusion between the two bridges. The 1989 evaluation for Bridge 7E is not eligible due to a lack of distinguishing engineering or artistic characteristics.

Bridge 7E is evaluated in this report as not eligible for the Hawaii or National Register of Historic Places. The culvert does not appear to contribute significantly to an understanding of the development of the Kaumualii

Highway. It is not a particularly distinctive example of a box culvert; nor is considered a significant achievement of its designer. As such the 7E culvert does not appear to be eligible for listing on the NRHP.

References

Drawings:

Historic drawings are available at the Hawaii Department of Transportation, Highway Design Section database as electronic scans. These include:

Project NRH 12-B, 53 sheets. Dated 1933.

Project FAP F12 (19), 15 sheets. Dated 1952.

Sources:

Cultural Surveys Hawaii, Inc. "Draft, Phase I Archaeological Survey Report for the Bridge 7E Improvements Project." Prepared for CH2MHill on behalf of the Federal Highways Administration Central Federal Lands Highway Division. October 2014.

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.

Spencer Mason Architects. Historic Bridge Inventory: Island of Kauai. Honolulu: State of Hawaii Department of Transportation, Highways Division. October 1989.

State of Hawaii, Department of Transportation,Highways Division. "NBI Bridge Inspection Report, Bridge Number 007000500300700." October 23, 2012. The current bridge inspection report for this bridge, available at the Hawaii Department of Transportation, Highway Division, Bridge Design Office.

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.

Final

Archaeological Inventory Survey Report for the Bridge 7E Replacement Project, Kōloa Ahupuaʻa, Kōloa District, Kauaʻi, 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. Kaumualiʻi 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
Trevor M. Yucha, B.S.,
Scott A. Belluomini, B.A.,
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawaiʻi, Inc.
Kailua, Hawaiʻi
(Job Code: KOLOA 66)

April 2016

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Management Summary

Reference	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 (Yucha et al. 2015)
Date	April 2016
Project Number(s)	• FHWA/CFLHD Contract Code: DTFH68-13-R-00027 • CH2M HILL Project Task ID: 499069.10SU.CS • Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KOLOA 66
Investigation Permit Number	CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological permit number 14-04 (for 2014) and 15-03 (for 2015), 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	Private; State Department of Transportation (HDOT)
Land Ownership	Kalihi Mountain Farms; Eric A. Knudsen Trust; State of Hawai‘i
Project Proponent	FHWA/CFLHD, HDOT
Project Funding	FHWA/CFLHD, HDOT
Project Location	The proposed project is located along Kaumuali‘i Highway, Route 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.
Project Description	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. The bridge is not eligible for listing on the National Register of Historic Places (NRHP). The proposed new bridge structure would be approximately 30 ft (9.1 meters [m]) long and 44 ft (13.4 m) wide, to accommodate two 12-ft (3.7 m) travel lanes with 8-ft (2.4 m) 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 and would extend approximately 20 to 50 ft (6.1 to 15.2 m) 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.
Project Acreage	The project area includes approximately 2.24 acres (0.91 hectares).
Area of Potential Effect (APE)	The APE for the current project is defined as the entire 2.24-acre (0.91-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 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/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[1] for any cultural resources/historic properties[2]. 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, if applicable. A companion architectural study (Ruzicka 2015) is being conducted by Mason Architects, Inc. in conjunction with this AISR. When applicable, the information from the architectural study has been incorporated into the present AIS document. The entirety of the current project area has been previously subject to an AIS-level investigation. An AIS for an approximately 11.5-kilometers (km) long portion of Kaumuali‘i Hwy including the majority of the Bridge 7E project area was completed by CSH (Hammatt and Chiogioji 1998) with no significant finds. Therefore, the study was termed an archaeological assessment. However, the study did note the location of four cultural resources in the vicinity of the study area including Grove

	Farm office building in Puhi, Līhu‘e Mill Bridge, Ho‘omana Overpass Bridge, and Līhu‘e Public Cemetery. None of these cultural resources are located in the vicinity of the current project area.
Fieldwork Effort	The fieldwork component of this AIS consists of a 100% pedestrian survey and subsurface testing. Fieldwork was conducted on 14 June and 15 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 Bridge 7E 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 on-going. Cultural consultation is also being conducted by CSH for a cultural impact assessment (CIA) for Bridge 7E (Liborio and Hammatt 2015). No cultural resources have been assessed as having traditional cultural significance to an ethnic group (HAR §13-13-275 Criterion “e”) within the project area.
Cultural Resources Identified	The AIS identified two cultural resources within the project area. These cultural resources include SIHP # 50-30-10-2285, Bridge 7E and SIHP # 50-30-10-2286, an earthen ditch that extends perpendicular to Kaumuali‘i Highway and passes water through the culverts of Bridge 7E. SIHP # -2285 has been evaluated in the 1989 State Historic Bridge Inventory Evaluation as not eligible for historic status (Spencer Mason Architects 1989:27–28). Similarly, the 2013 State Historic Bridge Inventory Evaluation states, “This culvert does not have distinctive engineering or architectural features that depart from standard culvert design” (MKE Associates LLC/Fung Associates, Inc. 2013:3–6). Architectural recordation conducted during the current project supports the previous evaluations (Ruzicka 2015). CSH agrees with the Ruzicka (2015) assessment that Bridge 7E (SIHP # -2285) is not a significant cultural resource. SIHP # -2286, an earthen ditch, is 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 recommended eligible to both the Hawai‘i and National Registers under Criterion D. The cultural resource possesses integrity of setting, location, design, and materials. The AIS has sufficiently documented the information content of SIHP # -2286 within the APE.

Effect Recommendation	In accordance with Federal regulations (36 CFR 800.5), CSH's project-specific effect recommendation is "no adverse effect." Under Hawai‘i State historic preservation review legislation, the project's effect recommendation is "no historic properties affected" (in accordance with HAR §13-13-275-7).
Mitigation Recommendations	No further archaeological fieldwork is recommended for the current project.

[1]Cultural resource significance is evaluated and expressed as eligibility for listing on the National and/or Hawai‘i Registers. To be considered eligible for listing on the National and/or Hawai‘i Registers a cultural resource should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association and meet one or more of the following broad cultural/historic significance criteria: "A" reflects major trends or events in the history of the state or nation; "B" is associated with the lives of persons significant in our past; "C" is an excellent example of a site type/work of a master; and "D" has yielded or may be likely to yield information important in prehistory or history.

[2]In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are 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.

Historic properties, as defined under Federal historic preservation legislation (36 CFR 800.16), are any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria. Determinations of eligibility are generally made by a federal agency official in consultation with the SHPD. Under Federal legislation, a project's (undertaking's) potential effect on historic properties must be evaluated and potentially mitigated. Under Hawai‘i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their historic/cultural significance under State law, and a project's effect and potential mitigation measures are evaluated based on the project's potential impact to "significant" historic properties (those historic properties assessed as significant using the five State of Hawai‘i significance criteria).

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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 Bridge 7E Replacement project, Kōloa Ahupua‘a, Kōloa District, Kaua‘i, 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. The proposed project is located along Kaumuali‘i Highway, Route 50, approximately 800 feet (ft) west of the Maluhia Road/Kaumuali‘i Highway intersection. The project area is depicted on a portion of the 1996 Kōloa U.S. Geological Survey (USGS) topographic quadrangle (Figure 1), tax map plats (Figure 2 and Figure 3), and an aerial photograph (Figure 4).

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. The bridge is not eligible for listing on the National Register of Historic Places (NRHP).

The proposed new bridge structure would be approximately 30 ft (9.1 meters [m]) long and 44 ft (13.4 m) wide, to accommodate two 12-ft (3.7 m) travel lanes with 8-ft (2.4 m) 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 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 HDOT right-of-way and would extend approximately 20 to 50 ft (6.1 m to 15.2 m) into adjacent private property. Construction parcels (temporary easements) would be needed from the privately owned parcel *mauka* (toward the mountains, inland) of the bridge. Permanent easements would be acquired on the *makai* (seaward) side for maintenance of grading and drainage improvements.

The project area includes approximately 2.24 acres (0.91 hectares). The area of potential effect (APE) for the current project is defined as the entire 2.24-acre (0.91-hectare) project area.

1.2 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 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/Hawai‘i Administrative Rules [HAR] §13-275, respectively).

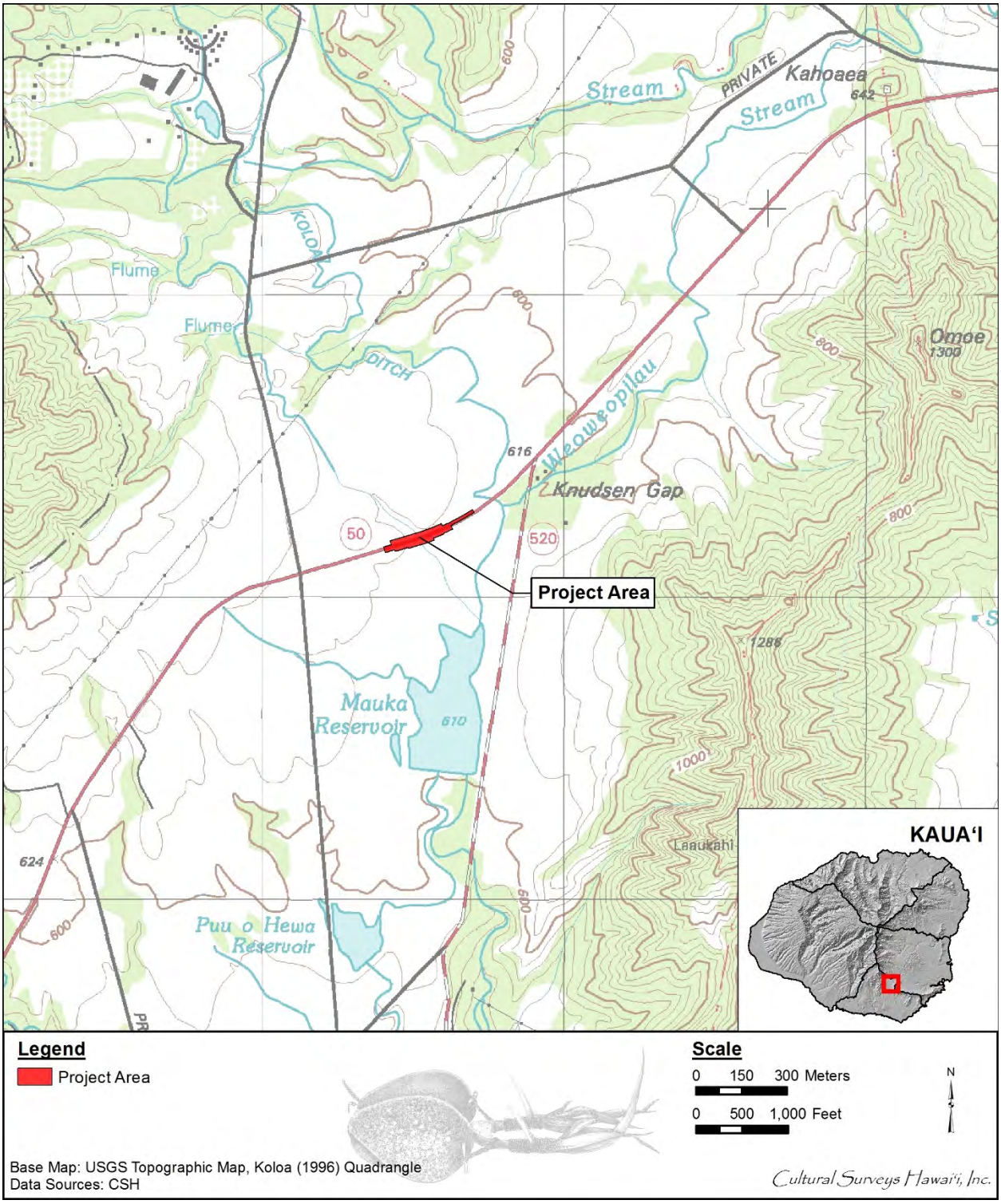

Figure 1. Portion of the 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of the project area

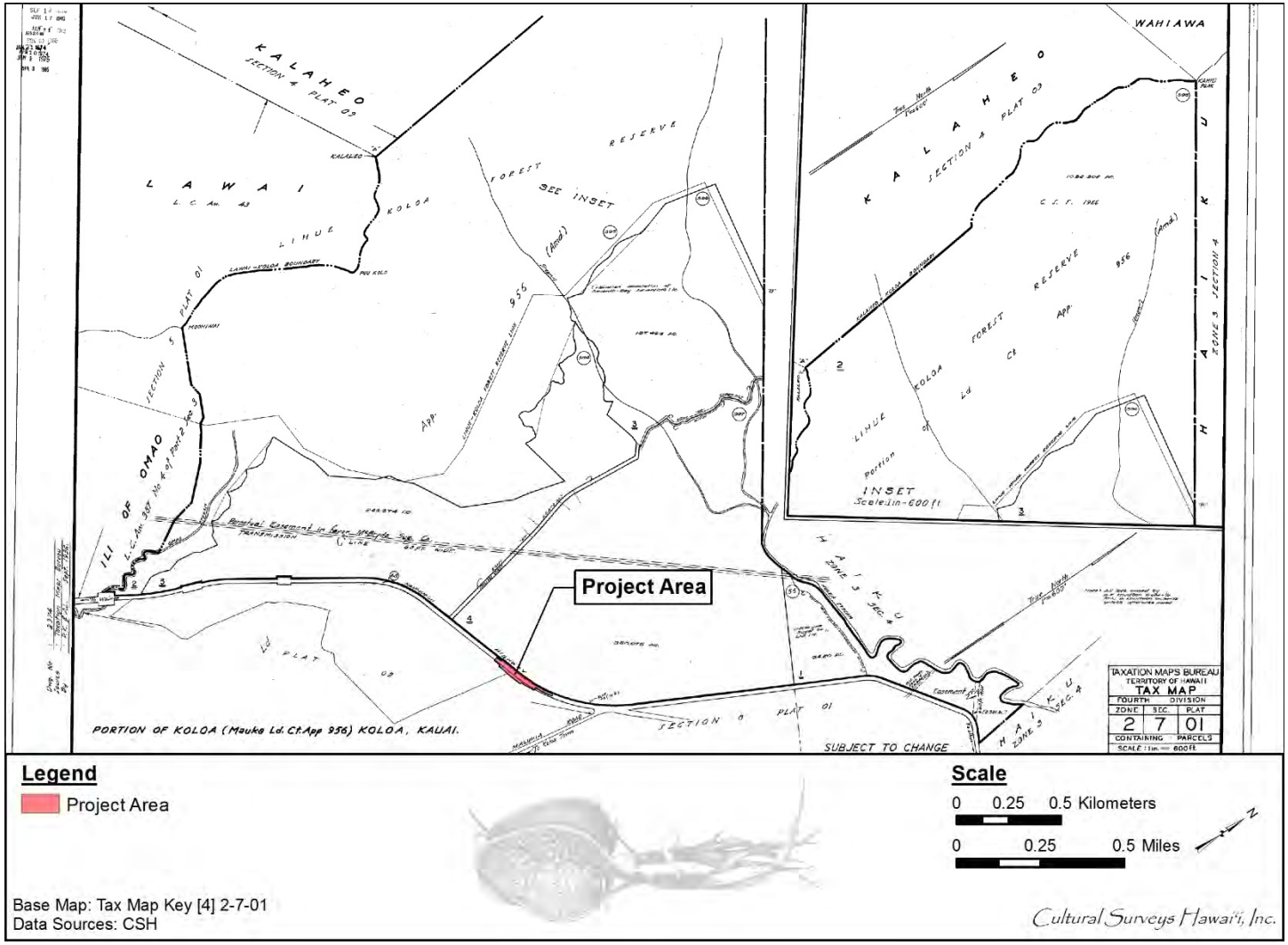

Figure 2. Tax Map Key (TMK) [4] 2-7-01 showing the location of the project area (Hawai‘i TMK Service 2012)

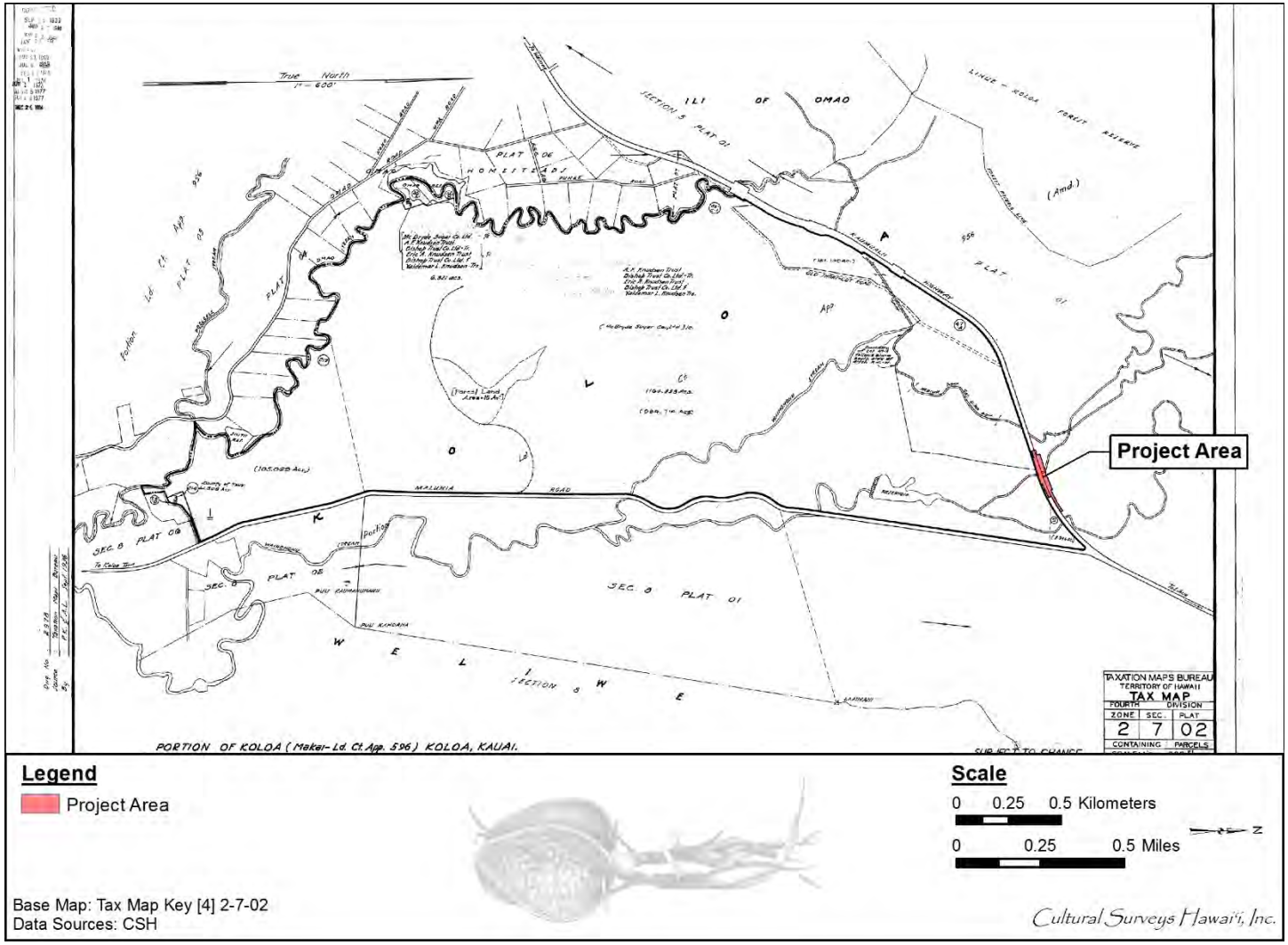

Figure 3. TMK: [4] 2-7-02 showing the location of the project area (Hawai‘i TMK Service 2012)

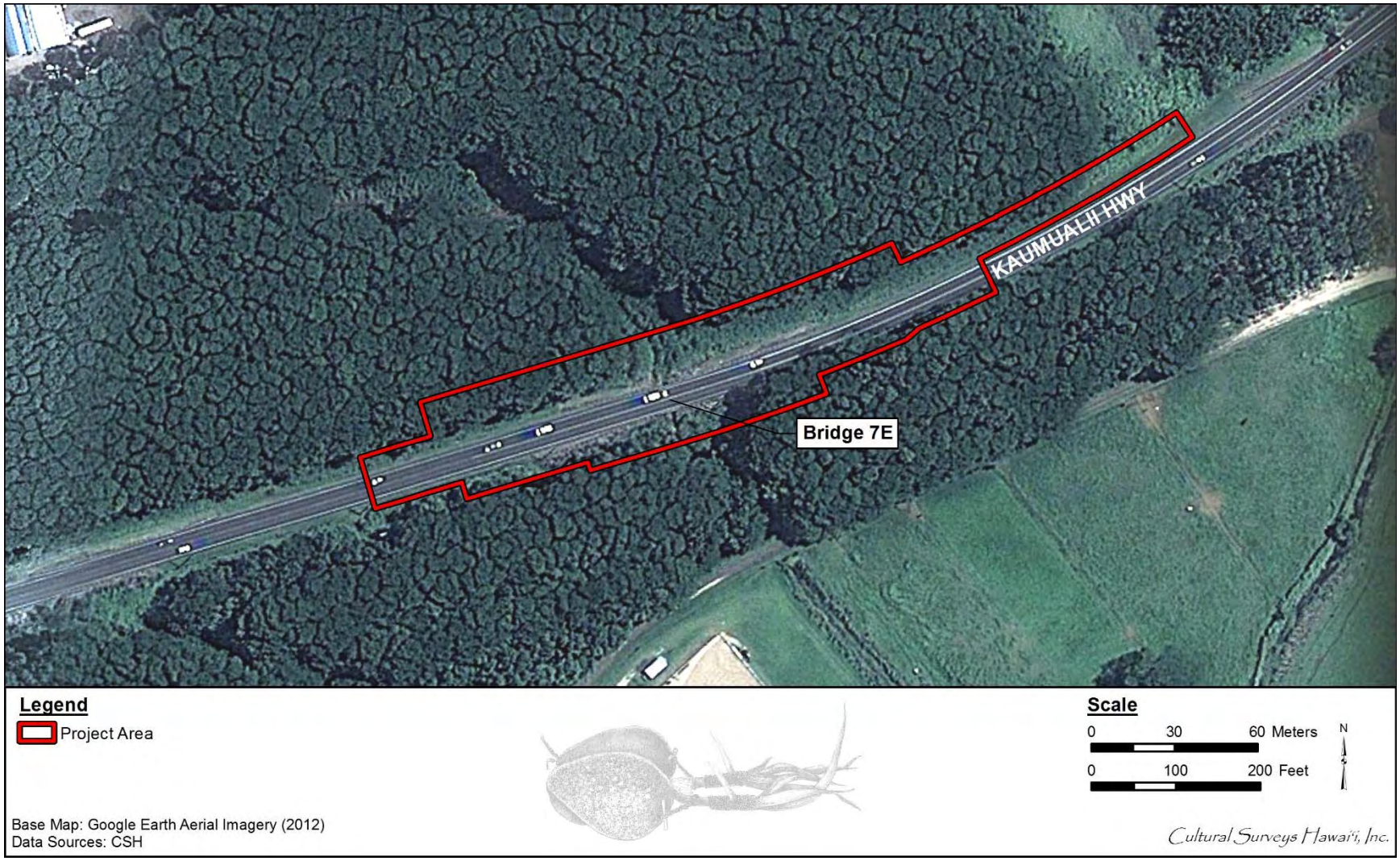

Figure 4. Aerial photograph showing the project area (Google Earth 2012)

In consultation with the State Historic Preservation Department (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 any cultural resources/historic properties. 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, if applicable.

A companion architectural study (Ruzicka 2015) is being conducted by Mason Architects, Inc. in conjunction with this AISR. When applicable, the information from the architectural study has been incorporated into the present AIS document.

The entire current project area has been previously subject to an AIS-level investigation. An AIS for an approximately 11.5-kilometer (km) long portion of Kaumuali‘i Highway including the majority of the Bridge 7E project area was completed by CSH (Hammatt and Chiogioji 1998) with no significant finds. Therefore, the study was termed an archaeological assessment. No cultural resources have been previously documented within the current project area.

Definitions of Cultural Resources and Historic Properties

As discussed in the following paragraphs, there are important distinctions between the Federal and Hawai‘i State definitions of historic properties. To eliminate any confusion these different definitions might cause, CSH has opted in this document to use the more generic term "cultural resources" as defined below in its discussion of the cultural remains within the current project area.

In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are 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.

Historic properties, as defined under Federal historic preservation legislation (36 CFR 800.16), are any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria. Determinations of eligibility are generally made by a federal agency official in consultation with the SHPD. Under Federal legislation, a project's (undertaking's) potential effect on historic properties must be evaluated and potentially mitigated. Under Hawai‘i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their historic/cultural significance under State law, and a project's effect and potential mitigation measures are evaluated based on the project's potential impact to "significant" historic properties (those historic properties assessed as significant under the five broad State of Hawai‘i significance criteria).

1.3 Environmental Setting

1.3.1 Natural Environment

The *ahupua‘a* (land division) of Kōloa extends as a fairly large land segment from Mt. Kāhili to the sea. It is bordered by Lāwa‘i Ahupua‘a to the west and Weliweli Ahupua‘a to the east. 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]

Vegetation observed within the project area includes exotic grasses, eucalyptus (*Eucalyptus* sp.), and albizia (*Albizia* sp.) trees.

1.3.2 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 sugar cane cultivation, but is now cultivated with eucalyptus and albizia trees.

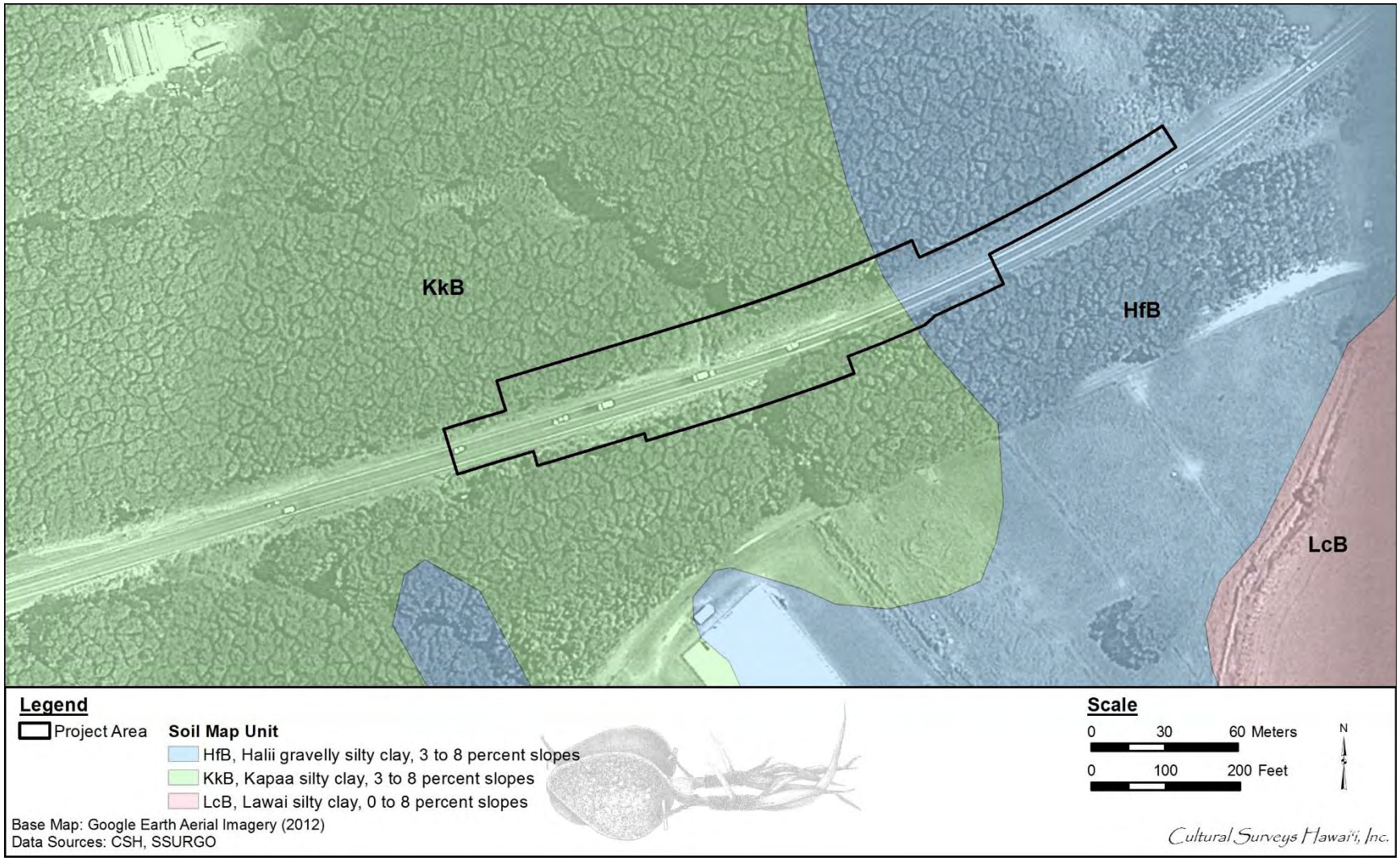

Figure 5. Aerial photograph (Google Earth 2012) showing the project area with an overlay of the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972)

Section 2 Methods

2.1 Field Methods

CSH completed the fieldwork component of this AIS under archaeological permit number 14-04 (for 2014) and 15-03 (for 2015), issued by the SHPD pursuant to HAR §13-13-282. Fieldwork was conducted on 14 June and 15 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 area, GPS data collection and subsurface testing.

2.1.1 Pedestrian Survey

A 100%-coverage pedestrian inspection of the project area was undertaken for the purpose of cultural resource identification and documentation. The pedestrian survey was accomplished through systematic sweeps spaced 5 m apart.

2.1.1 GPS Data Collection

Cultural resources 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 involved six shovel test probes (STP-1 through STP-6). In general, STPs measuring approximately 50 centimeters (cm) long by 50 cm wide were excavated within the project area. The STPs were distributed throughout the project area along the shoulder of the highway. The sampling strategy was detailed in 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. Artifacts were washed, sorted, measured, weighed, described, photographed, and catalogued. In general, artifact analysis focused on establishing, to the greatest extent possible, material type, function, cultural affiliation, and location and age of manufacture.

2.2.1 Traditional Hawaiian Artifacts

No traditional Hawaiian artifacts were identified during the AIS investigation.

2.2.2 Historic Artifacts

Historic artifacts will be identified using standard reference materials (e.g., Elliott and Gould 1988; Fike 1987; Kovel and Kovel 1986; Lehner 1988; Lindsey 2010; Lockhart 2004-2010; Toulouse 1971; Whitten 2009; and Zumwalt 1980) and resources available on the internet. Analyzed materials will be tabulated and a master catalogue will be presented within the AIS report. As noted above, the results of the historic artifact analysis will be used to better characterize the age, function, and potentially the cultural affiliation of the associated archaeological deposits and/or features.

2.3 Disposition of Materials

Materials collected during the current archaeological inventory survey will remain temporarily curated at the CSH storage facility io 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.

2.4 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 area. The sources studied were used to formulate a predictive model regarding the expected types and locations of cultural resources in the project area.

2.5 Consultation Methods

The Bridge 7E 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 on-going. Cultural consultation is also being conducted by CSH for a cultural impact assessment (CIA) for Bridge 7E (Liborio and Hammatt 2015). No cultural resources have been assessed as having traditional cultural significance to an ethnic group (HAR §13-275-6 Criterion “e”) within the project area.

Section 3 Background Research

3.1 Traditional and Historical Background

The project area is situated within the Kona District of the island of Kaua‘i. Few records exist that document traditional Hawaiian life in the *ahupua‘a* of Kōloa. While settlement by westerners with religious and commercial interests made the area a focus of documentation after the first quarter of the nineteenth century, the accounts generally emphasized the lives and concerns of the westerners themselves, with only anecdotal references to the Hawaiian population. Two nineteenth century documents, the *Boundary Commission Testimony* of 1874 and a Lahainaluna manuscript of 1885, however, provide insight into the history of Kōloa before the arrival of westerners.

A dispute over the northern boundary of Kōloa Ahupua‘a in 1874 led to a hearing before Duncan McBryde, the Commissioner of Boundaries for Kaua‘i. One native witness, Nao (who described himself as born in Kōloa but presently living in Ha‘ikū), in order to show that Hoaea (the area in dispute) was indeed at the northern boundary of Kōloa, testified: “At Hoaea, tea [*sic*] leaves were hung up to show that there were battles going on” (Boundary Commission, Kaua‘i, 1874:1:124). That there were traditional “warning systems” well-known to all natives suggests that Kōloa may well have been the scene of some serious conflicts. Throughout the early settlement history of Kōloa, conflicts must have occurred at intervals often enough and serious enough to warrant having to devise such a system.

Additional evidence of a rich history within Kōloa was offered in a Lahainaluna document produced 11 years later. This document appeared to have been based on an oral history project. On 7 September 1885, a student from Lahainaluna Schools interviewed Makea—“a native who is well acquainted with Kōloa”—and recorded “what she said about the well-known places in the olden times” (Lahainaluna Schools 1885). More than 64 years after the abolition of the *kapu* (taboo) system and almost as many years after contact with westerners, Makea was able to describe 14 *heiau* (religious structures) within the Kōloa area.

3.1.1 Mythological and Traditional Accounts

There are several place names within Kōloa that have legendary associations. The name Kōloa itself has several derivations. Kōloa is the name for the large, soft Hawaiian sugar cane (*Saccharum officinarum*) once grown by Hawaiians; Kōloa is also the name of a steep rock on the banks of Waikomo Stream, from whence the *ahupua‘a* got its name. This bank of the river was called Kōloa after the native Hawaiian duck (*Anas wyvilliana*) (Kikuchi 1963:46; Pukui et al. 1974:116).

Maulili (constant jealousy) is a deep pool in Waikomo Stream in the uplands of Kōloa. When the gods Kāne and Kanaloa first came to Kaua‘i, legends say they explored the island and came to the pool at Maulili at evening. They stretched out beside the pool for their night’s sleep on its eastern bank and left the impression of their forms within the rock, as can be seen in the *‘āpapa* (a flat area). The Maulili Heiau was first built by Ka-pueo-maka-walu, the son of Kapu-lau-kī. It was a place of human sacrifice (Wichman 1998:12).

This *heiau* may be the Maulili Heiau described by Makea in the Lahainaluna document mentioned above. “The ‘āpapa in this vicinity is called an ‘Unu’ and a ‘Heiau,’ but was never

walled in, it is said. On the nights of Kāne, the drums are heard to beat there, also at the sacred rocks, or unu's, of Opuokahaku and Kanemilohae, near the beach of Poipu" (Farley 1907).

Bernice Judd, writing in 1935, summarized most of what was known of the traditional Hawaiian life of Kōloa:

> In the old days two large *‘auwai* or ditches left the southern end of the Maulili pool to supply the taro patches to the east and west. On the *kuāuna*s [embankments] the natives grew bananas and sugar cane for convenience in irrigating. Along the coast they had fish ponds and salt pans, ruins of which are still to be seen. Their dry land farming was done on the *kula* (dry land), where they raised sweet potatoes, of which both the tubers and the leaves were good to eat. The Hawaiians planted *pia* (arrowroot) as well as *wauke* (paper mulberry) in patches in the hills wherever they would grow naturally with but little cultivation. In the uplands they also gathered the leaves of the *hala* (screwpine) for mats and the nuts of the *kukui* (candlenut) for light. [Judd 1935:53]

Beginning possibly as early as 1450, the "Kōloa Field System" was planned and built on the shallow lava soils to the east and west of Waikomo Stream. The Kōloa Field System is characterized as a network of fields of both irrigated and dryland crops, built mainly upon one stream system. Waikomo Stream was adapted into an inverted tree model with smaller branches leading off larger branches. The associated dispersed housing and field shelters were located among the fields, particularly at junctions of the irrigation ditches (*‘auwai*). In this way, the whole of the field system was contained within the entire *makai* (seaward) portion of the *ahupua‘a* of Kōloa, stretching east and west to the *ahupua‘a* boundaries.

The field system, with associated clusters of permanent extended family habitations, was in place by the middle of the sixteenth century and was certainly expanded and intensified continuously from that time. Long *‘auwai* were constructed along the tops of topographic high points formed by northeast to southwest oriented Kōloa lava flows, and extended all the way to the sea. Habitation sites, including small house platforms, enclosures and L-shaped shelters were built in rocky bluff areas which occupied high points in the landscape and were therefore close to *‘auwai*, which typically ran along the side of these bluffs (Hammatt et al. 2004). From AD 1650-1795, the Hawaiian Islands were typified by the development of large communal residences, religious structures and an intensification of agriculture. Large *heiau* in Kōloa may date to this period.

The manufacture of salt was important for Native Hawaiians. Many of the larger salt pans on Kaua‘i are located near Nōmilu, "where people came in the summer to gather salt when the winds blow the salt across the surface of the pond at the edge of the pond where it was carefully scooped out with the hands or with pieces of gourd shell and dried" (Wichman 1998:35). The importance of salt manufacture in the area was illustrated in the 1874 Boundary Commission determination for Kōloa, where the oral testimony of Pene Kalauau claimed he had come all the way "from Koolau to go to Koloa for salt" (Boundary Commission, Kaua‘i, 1874, 1:124).

3.1.2 Early Historic Period

By the early 1800s, Kōloa Landing had become the principal port of Kaua‘i. Shipments of North American furs and pelts to the Orient depended on the provisioning of ships at Kōloa Landing, as well as other Hawaiian ports. As the fur trade grew, markets in China became aware of sandalwood (*Santalum* sp.) grown in the Hawaiian Islands. The shipment of most of Kaua‘i's sandalwood to the Orient took place at Kōloa Landing, until the supply of the fragrant wood was exhausted around 1830.

Accounts by visitors and settlers at Kōloa focused on the early westerners' own concerns—religious and commercial—as these concerns appeared within the historical record of Kōloa in the 1800s. However, scattered throughout the accounts are occasional references to the Hawaiians of Kōloa that give some insight into their lives.

The American Board of Commissioners for Foreign Missions (ABCFM) missionary Samuel Whitney described in a *Missionary Herald* article (June 1827:12) an 1826 visit to Kōloa with Kaikio‘ewa, the governor of Kaua‘i:

> The people of this place were collected in front of the house where the old chief lodged in order to hear his instructions. After a ceremony of shaking hands with men, women, and children they retired . . .
>
> Our company consisted of more than a hundred persons of all ranks. The wife of the chief, with her train of female attendants, went before. The governor, seated on a large white mule with a Spaniard to lead him, and myself by his side, followed next. A large company of *aipupu*, [*‘ā‘īpu‘upu‘u*] cooks, attendants came on in the rear. [*Missionary Herald* June 1827:12]

Whitney's account suggests something of the deference paid to the *ali‘i* (chiefs) by the local populations and the scale at which the *ali‘i* carried out their functions. An even grander view of that deference was provided in an account of a later visit by an *ali‘i* to Kōloa. John Townsend, a naturalist staying in Kōloa in 1834, described a visit by Kamehameha III:

> In the afternoon, the natives from all parts of the island began to flock to the king's temporary residence. The petty chiefs, and head men of the villages, were mounted upon all sorts of horses from the high-headed and high-mettled California steed, to the shaggy and diminutive poney [*sic*] raised on their natives hills; men, women, and children were running on foot, laden with pigs, calabashes of *Poe* [*sic*], and every production of the soil; and though last certainly not least, in the evening there came the troops of the island, with fife and drum, and 'tinkling cymbal' to form a body guard for his majesty, the king. Little houses were put up all around the vicinity, and thatched in an incredibly short space of time, and when Mr. Nuttall, and myself visited the royal mansion, after nightfall, we found the whole neighborhood metamorphosed; a beautiful little village had sprung up as by magic, and the retired studio of the naturalists had been transformed into a royal banquet hall. [Palama and Stauder 1973:18]

On 31 December 1834, Peter Gulick and his family arrived in Kōloa. Apparently the first foreigners to settle in the *ahupua‘a,* they initiated the process of rapid change that would reshape the life of Kōloa in the nineteenth century. In 1835, a 30 by 60-ft grass house was erected as a

meeting-house and school near the Maulili Pond. Mr. Gulick cultivated sugar cane and collected a cattle herd for the Protestant Mission. In 1837, a 45 by 90-ft adobe church was built where Kōloa Church stands today, and the first mission doctor, Thomas Lafon, arrived to assist Mr. Gulick (Damon 1931:179, 187). The Kōloa mission station apparently flourished immediately. Navy Lieutenant Charles Wilkes, a member of the U.S. Exploring Expedition, during his visit to Kōloa in 1840 recorded the following:

> The population in 1840, was one thousand three hundred and forty-eight. There is a church with one hundred and twenty-six members, but no schools. The teachers set apart for this service were employed by the chiefs, who frequently make use of them to keep their accounts, gather in their taxes &c. The population is here again increasing partly by immigration, whence it was difficult to ascertain its ratio. [Wilkes 1845:64]

Kōloa Village and Kōloa Landing, at the mouth of the Waikomo Stream, became flourishing commercial centers as trade with Americans and Europeans grew. An estimate in 1857 stated that "10,000 barrels of sweet potatoes were grown each year at Kōloa, and that the crop furnished nearly all the potatoes sent to California from Hawai‘i" (Judd 1935:326). Sugar and molasses were also chief articles of export. Whalers used the Kōloa "Roadstead" from 1830 to 1870, and took on provisions of squashes (pumpkins), salt beef, pigs, and cattle (Damon 1931:176). Hawaiians grew the pumpkins on the rocky land north of the landing. There were also numerous salt pans along the shore near the landing that were used to make the salt (Palama and Stauder 1973:20).

3.1.3 Mid-1800s and the Māhele

In the early post-Contact period, the *ahupua‘a* of Kōloa was controlled by the ruling chief of Kaua‘i and was administered by lesser chiefs appointed by him. When Ka-umu-ali-i, last of the ruling chiefs of the island, died in 1824, his lands (Kaua‘i and Ni‘ihau) were given to the lineal descendants of Kamehameha. Queen Ka‘ahumanu redistributed the lands among chiefs of other islands who had been loyal to the bloodline of Kamehameha. By the mid-nineteenth century, control of the *ahupua‘a* of Kōloa was divided between Kamehameha III and Moses Kekūāiwa, a brother of Kamehameha IV (Alexander 1937). The Māhele Award records indicate Kōloa Ahupua‘a, which totaled 8,620 acres, was granted by way of a Land Commission Award (LCA) to Moses Kekūāiwa, (the brother of Alexander Liholiho [Kamehameha IV]), Lot Kapuāiwa (Kamehameha V), and Victoria Kamāmalu (LCA 7714-B: Waihona ‘Aina 2000, OHA 2015).

Eighty-nine *kuleana* awards were given to individuals within Kōloa Ahupua‘a. The majority of these Land Commission Awards (LCAs) were located in and around Kōloa Town itself. No LCAs were granted within the vicinity of the project area.

The Koloa Sugar Company began commercial operation in the late 1840s with about 450 acres of Kōloa land under cultivation. Development of additional acreage continued gradually. An 1891 map of Kōloa by Monsarrat depicts a fence line extending through the current project area (Figure 6). The project area is depicted in an undeveloped area between the government road to the east and a trail to the west. A cane field is depicted approximately 1.0 km to the southwest.

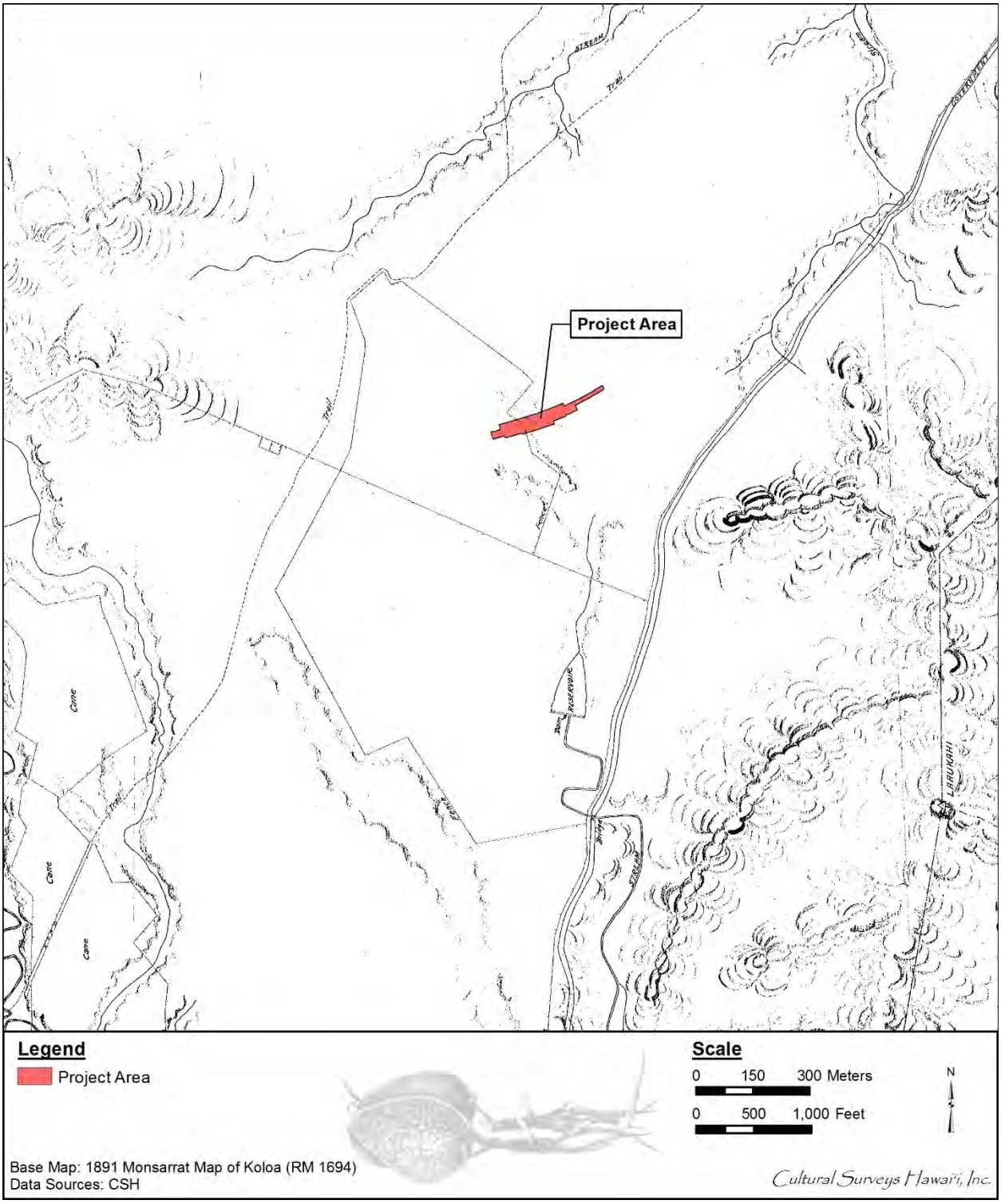

Figure 6. Portion of the 1891 Monsarrat map of Kōloa showing the location of the project area

3.1.4 1900s

The Koloa Sugar Company had previously purchased the *ahupua‘a* of Pā‘ā southeast of Kōloa Town, and a large parcel of it was unproductive. A new and much larger mill was built there in 1912 about a mile from Kōloa. New railroad track was laid, and an asphalt road was built to connect the new mill with Kōloa Landing. World War I caused a huge demand for sugar. By the end of hostilities in 1918, the Koloa Sugar Company was producing 9,000 tons of sugar each year, and adding additional acreage. A road alignment, later to become Kaumuali‘i Highway, is depicted in the 1910 Lihue USGS topographic map extending through the current project area (Figure 7). No other development is depicted in the vicinity of the project area.

Kōloa Landing was phased out around 1925 when McBryde Sugar Company and the Koloa Sugar Company began shipping their product out of Port Allen Harbor at Hanapēpē. The McBryde Plantation had been improving the facilities at Ele‘ele Landing since the turn of the century and a private company, the Kauai Terminal Limited Railway, had developed a modern bridge crossing the Hanapēpē River. Soon after this, the Koloa Sugar Company ceased to use the *makai* Kōloa fields, and much of the area was converted into cattle-grazing pasture by the Knudsen family. Most of the *mauka* areas of Kōloa remained under sugar cane cultivation as late as the 1970s, when these cane lands were converted into pasture.

It was during the 1930s, when Federal funds became available to assist the Territory of Hawaii’s highway construction program, that development of the Kaumuali‘i Highway project accelerated. On 10 October 1933, Hawaiian Contracting Company, Ltd. was awarded a $354,355.63 contract for construction of a 5.066-mile long portion of the Kaua‘i Belt Road (i.e., the present Kaumuali‘i Highway) extending west from the junction with the road to Kōloa. The project, identified as NRH 12-B, was funded by the National Recovery Highway Fund, the Federal Aid Fund, and a contribution by the County of Kaua‘i.

Following the merger of the plantation lands of the Koloa Sugar Company and Grove Farm Company in 1948, the combined lands under cultivation required new sources of irrigation water. In 1965, Grove Farm built a tunnel to bring the waters from Ku‘ia directly into the Waitā (Kōloa) Reservoir. Grove Farm leased these cane lands to McBryde Sugar Company when it terminated sugar operations in 1974 (Wilcox 1996). The mill in Pā‘ā was finally closed in 1996, and remains a landmark of the countryside.

3.1.5 Modern Land Use

By the late 1960s, the main town of Kōloa experienced a type of reverse migration back to the shoreline. Although the town had established a Civic Center in 1977, the pace of tourism-driven development at the shoreline had been drawing construction and service jobs away from the town center. The Kīahuna Plantation Resort opened in 1967, followed by the construction of various condominiums throughout the 1970s and 1980s. Finally, the Hyatt Regency Resort, with its expansive golf course, opened in 1991.

The 1963 Koloa USGS topographic quadrangle depicts the modern alignment of Kaumuali‘i Highway extending through the project area (Figure 8). A drainage is shown extending perpendicular to and underneath the highway at the location of Bridge 7E. The drainage extends from a flume in the northwest to Mauka Reservoir located south of the project area.

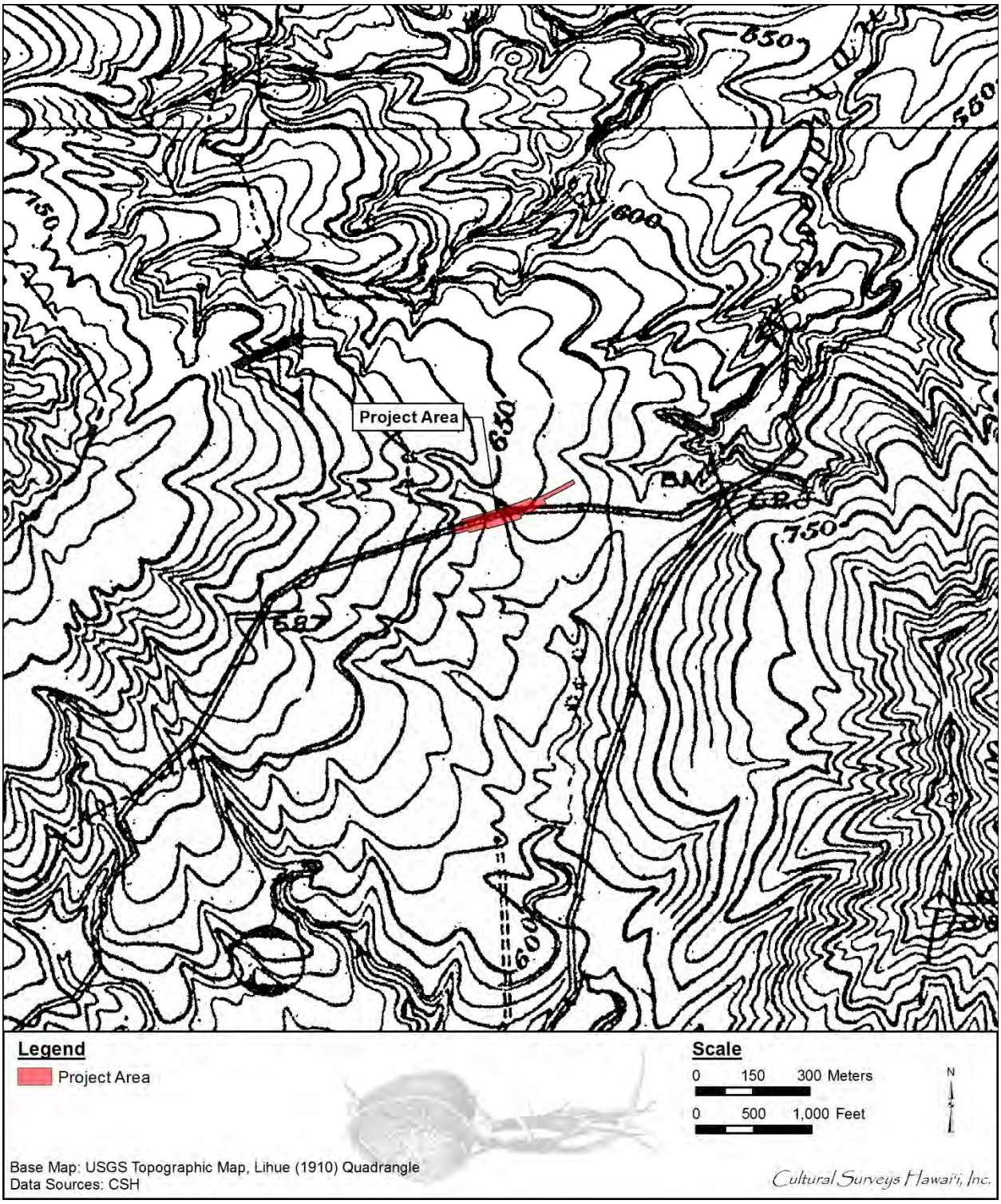

Figure 7. Portion of the 1910 Lihue USGS topographic quadrangle showing the location of the project area

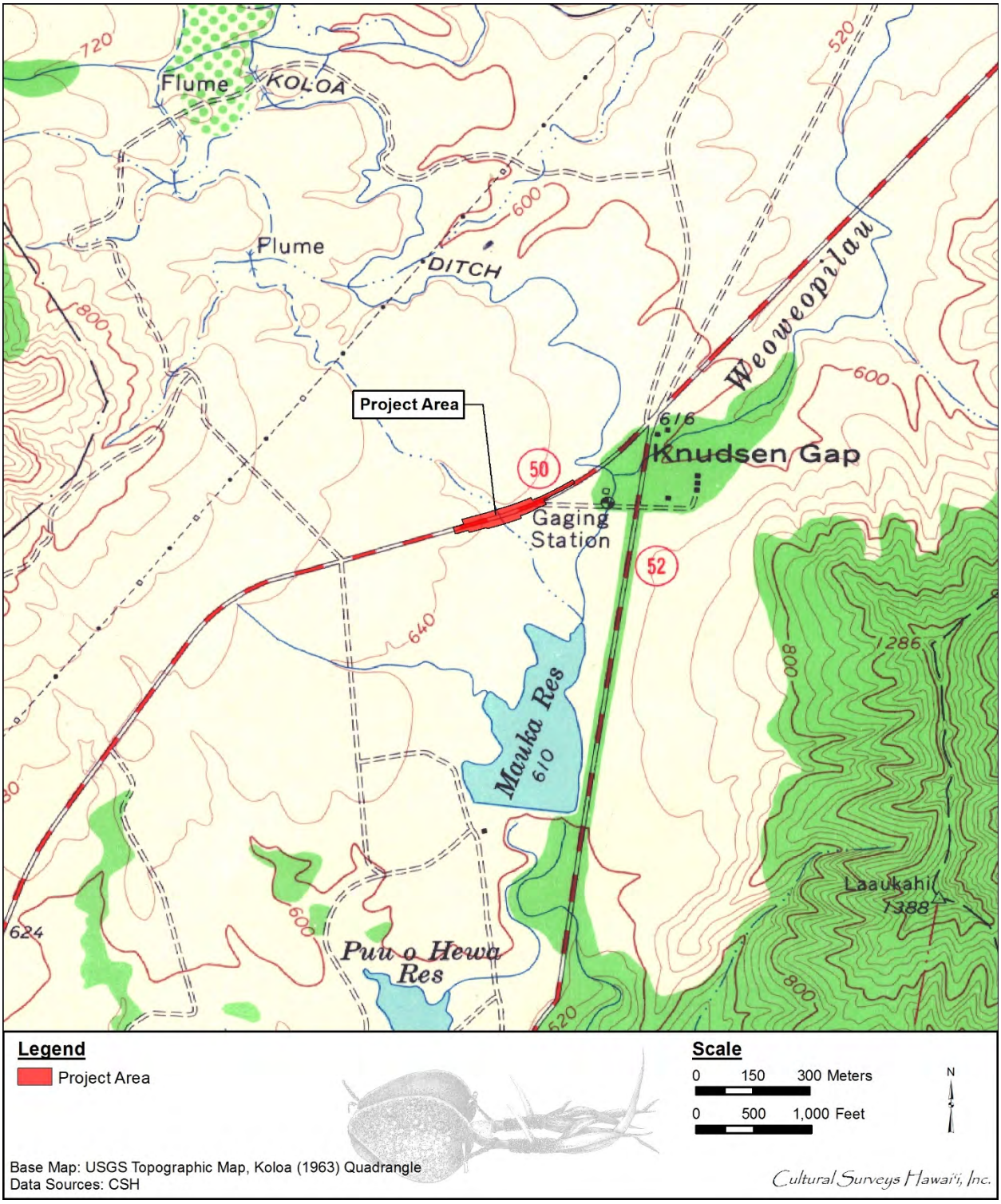

Figure 8. Portion of the 1963 Koloa USGS topographic quadrangle showing the location of the project area

By the early 1990s, the tourist industry had successfully attached the name “Po‘ipū Beach” to the entire coastline beginning at Kōloa Landing and continuing east to Makahū‘ena Ledge. With the development of the Po‘ipū Bay Resort Golf Course and the Hyatt Regency Kaua‘i Resort Hotel, the Po‘ipū Beach name became synonymous with all 2 miles of coastline fronting the Wai‘ohai, Kiahuna, and Sheraton developments, ending at Po‘ipū Beach Park (Donohugh 2001).

The 1978 Koloa USGS orthophotoquad aerial photograph depicts field of sugar cane in cultivation surrounding the project area (Figure 9). The drainage that extends through Bridge 7E is clearly visible. On September 1996, the last sugar crop was harvested ending 179 years of Koloa Plantation. Since then the area in and around the project area has remained the same. Remnants of sugar cane were visible until the late 1990s.

Future plans within the Kōloa District will place more demands on beachfront properties along the coastline. Over 1,000 acres of former sugar plantation lands are slated for hotel and condominium development surrounding both Lāwa‘i and Po‘ipū coastal resort areas (Donohugh 2001). Future development plans for the upland areas involve both large tracts of land, as well as regional redevelopment within Kōloa Town itself. The area within the current project is cultivated with eucalyptus and albizia trees for renewable energy projects. In 2008, the county Planning Commission approved use permits to allow a company, Green Energy Hawaii, to proceed with its plan to build a 7,100-kilowatt facility in Knudsen Gap.

3.2 Previous Archaeological Research

The majority of the previous archaeological investigations conducted within the *ahupua‘a* of Kōloa have been in conjunction with the burgeoning development of the areas located south of the project area. Only one modern systematic study has been conducted in the project area and no other archaeological studies have been conducted within a 0.8-km (0.5-mile) radius of the project area. The location of this previous archaeological study is shown in Figure 10 and described in Table 1.

Evidence of the importance of Kōloa to pre-Contact traditional Hawaiians is indicated in a Lahainaluna Schools document produced in 1885. This document appears to have been based on an oral history project utilizing information obtained from Makea—“a native who is well acquainted with Kōloa.” Makea was able to describe 14 *heiau* (religious structures) within the Kōloa area. Of the 14 *heiau,* five were associated with human and animal blood sacrifices (*luakini* and *po‘okanaka*), five with fishing, two medicinal, and one agricultural, with one of unknown function (Lahainaluna 1885).

Thomas Thrum was the next to document sites in the Kōloa area in his list of the *heiau* of Kaua‘i (Thrum 1907). He discussed six *heiau* in the district of Kōloa, which once extended from Hanapēpē to Māhā‘ulepū (Table 2).

The earliest systematic archaeological survey on Kaua‘i was conducted by Wendell Bennett in the late 1920s. Bennett examined and recorded 202 sites on the island. The following are sites recorded within Kōloa Ahupua‘a (see Bennett 1931:116-117, 120):

Site 72	Niu Kapukapu Heiau—on the top of Niu Kapukapu Hill on the east bluff of Lāwa‘i Valley.
Site 73	Stone work on the hill just in-land from Site 72

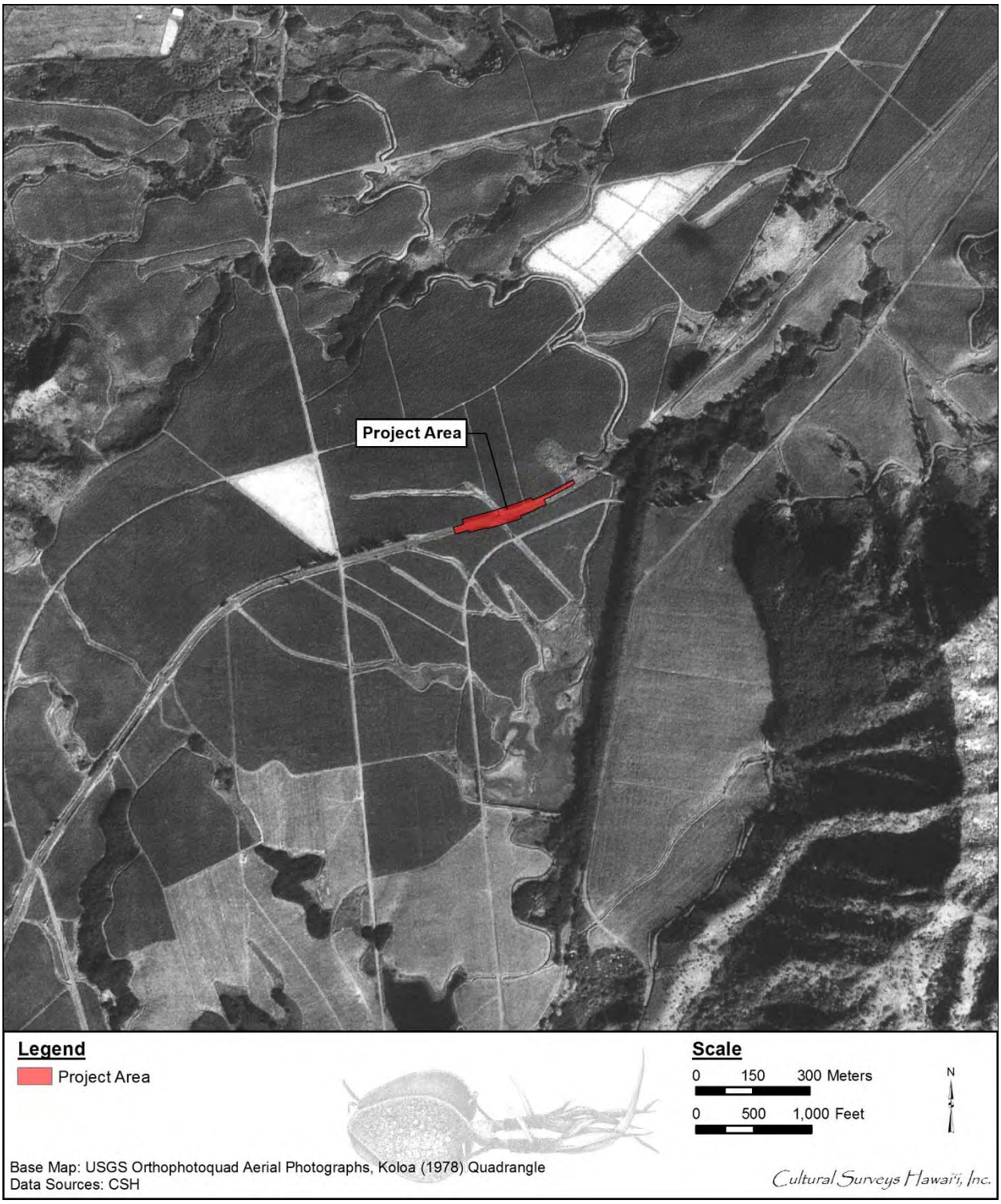

Figure 9. Portion of the 1978 Koloa USGS orthophotoquad aerial photograph showing the location of the project area

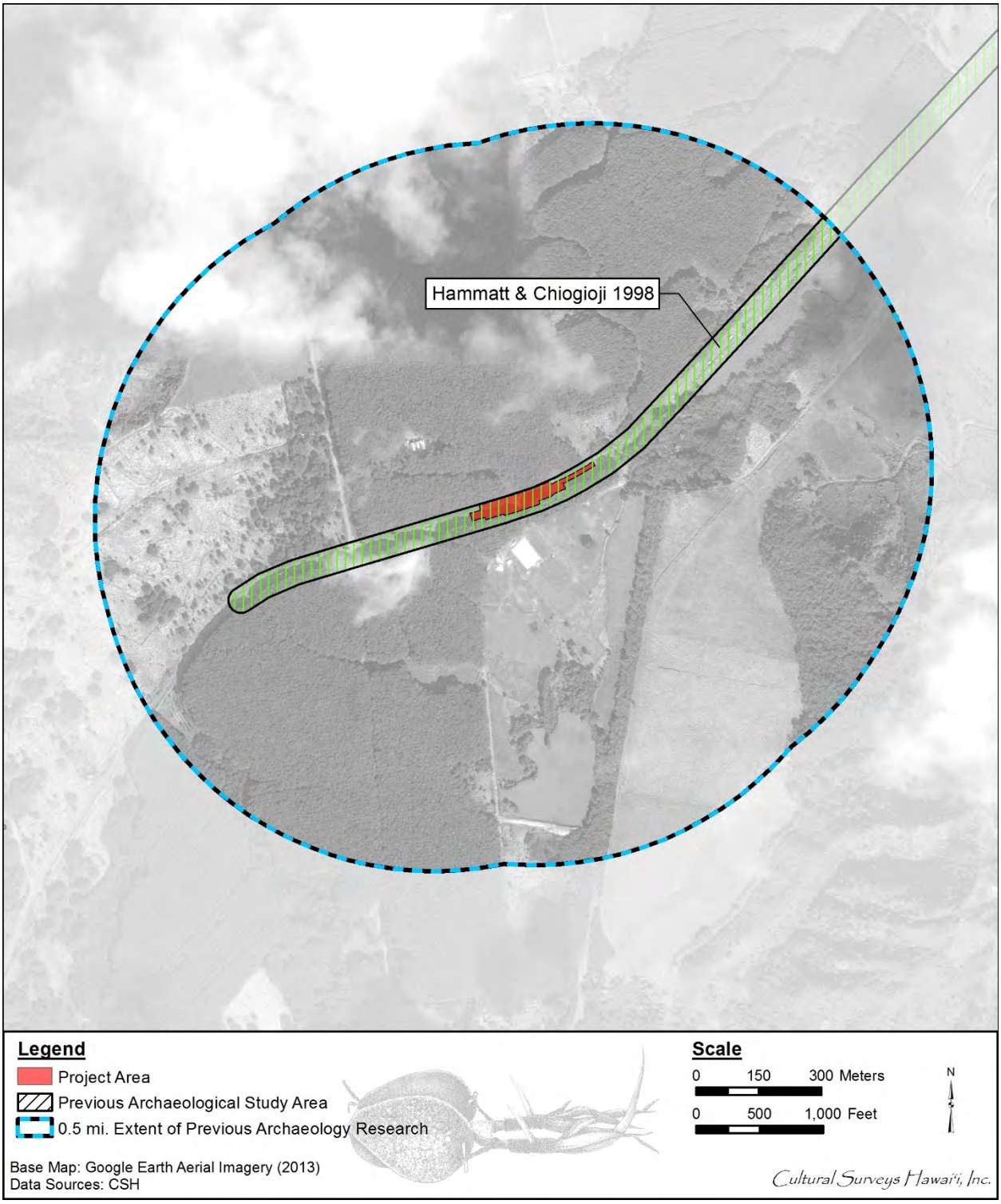

Figure 10. Aerial photograph depicting one previous archaeological study within a 0.8-km (0.5-mile) radius of the project area (Google Earth 2013)

Table 1. Previous Archaeological Investigations within a 0.8-km (0.5-mile) Radius of the Project Area

Reference	Type of Investigation	Location	Findings
Hammatt and Chiogioji 1998	Archaeological assessment	Approximately 11.5-km long portion of Kaumuali‘i Hwy	Four historic-era sites and areas of concern within or adjacent to highway corridor identified: Grove Farm office building in Puhi, Līhu‘e Mill Bridge, Ho‘omana Overpass Bridge, and Līhu‘e Public Cemetery

Table 2. Kōloa Heiau Documented by Thrum in 1907

Name	Location	Remarks
Hanakalauae	Māhā‘ulepū, Kōloa	Of large size, destroyed years ago by Fredenberg to erect cattle pens with its stones
Kanehaule	Kaunuieie, Kōloa	Paved walled enclosure of large size, destroyed some time ago; a *heiau* where rites of circumcision were performed
Kihouna	Po‘ipū, Kōloa	Single walled *heiau* situated a short distance west of the above, 100 x 125 ft, enclosed on all sides by walls 4 to 6 ft high, with entryway near middle of *mauka* wall; *makai* wall 8 ft thick; a section of stones as of pavement shows nearly whole length near *makai* wall and in NE corner is section said to have been its altar stones
Kaneiolouma	Po‘ipū, Kōloa	Size 102 x 180 ft, lying nearly east and west along shore close to beach; of three terraces, with two prominent and other room divisions at east or inner end, west end open; side walls 3 to 5 ft high; seaward wall 9 ft thick; east end wall very crooked, 11 ft thick, 6 ft high; inner terrace stone paved, middle terrace partly so, with flat slabs of coral or limestone
Weliweli	Weliweli, Kōloa	Paved *heiau* of large size; Po‘okanaka class; walls 4 ft high; portions of same said to be still standing
Waiopili	Māhā‘ulepū, Kōloa	Oblong *heiau* of good size, walls still standing

Site 74	Fishing shelter on the shore near the mouth of Kukui‘ula valley.
Site 75	Kūhiō Park, west of Waikomo Stream with taro patches, a small *heiau*, an oven, paved house platform, fish pond, game ground with seats and a fishing shrine.
Site 76	Salt pans east of Waikomo Stream
[Sites 77-84]	Located east of Kōloa Ahupua‘a
Site 85	Walls, enclosures and house sites in the cactus covered country around the Kōloa reservoir and extending to the sea.
Site 86	House site in the area described in Site 85

A photographic comparison of two photographs taken from nearly identical positions, one in 1998 (from Hammatt and Chiogioji 1998) and the other in 2014 (from the current archaeological reconnaissance), documents a significant change in vegetation across the landscape in the vicinity of the project area (Figure 11 and Figure 12).

3.3 Background Summary and Predictive Model

Although much of the seaward portion of Kōloa is a relatively dry area with approximately 30 inches of rain per year, the perennially flowing streams provided a resource for the development of a rather expansive agricultural system. Accounts of the early history of Kōloa (Farley 1907; Jarves 1844; Judd 1935; and Townsend 1839) describe the lands *mauka* of Kōloa Town as a seemingly continuous, well-maintained, agricultural complex of taro, yams, sweet potato, and sugar cane irrigated by an extensive *‘auwai* system siphoned off Waikomo and Pō‘ele‘ele streams. This system had a significant influence on later commercial endeavors in Kōloa.

Kōloa is the site of the first organized sugar plantation in Hawai‘i. Ladd and Company leased about 1,000 acres for the sole purpose of growing sugar cane (Palama and Stauder 1973). The commercialization of sugar cane in Kōloa had widespread social effects. The traditional view of the *‘āina* being a responsibility of the *ali‘i* was transformed into one of capitalist opportunity.

Kōloa Town and Kōloa Landing, at the mouth of Waikomo Stream, became prominent commercial centers during the mid- to late 1800s, exporting a variety of products such as sweet potatoes, sugar, and molasses. Whalers also stopped for provisions of squash, salt, salt beef, pigs, and cattle (Palama and Stauder 1973:20). This heightened activity dramatically altered the social structure and landscape of Kōloa.

While most of the infrastructure supporting historic agriculture clearly lies well seaward of the present project area, during the later historic period the upper elevations of Kōloa became important collection areas for irrigation water. It is possible historic ditches, flumes, pipelines, and other features related to collection of irrigation water exist within or in the immediate vicinity of the project area.

Figure 11. Overview of Kaumuali‘i Highway and surrounding area, view to east (from Hammatt and Chiogioji 1998)

Figure 12. 2014 matching overview of Kaumuali‘i Highway and surrounding area from current archaeological reconnaissance, view to east

Section 4 Results of Fieldwork

Fieldwork conducted for the AIS includes a 100% pedestrian inspection and subsurface testing. A 100% pedestrian inspection of the project area included the identification and documentation of cultural resources within the project area and a description of the overall project area including ground visibility, modern use or disturbance, and vegetation. Subsurface testing consisted of six shovel test probes (STP). The STPs were designated STP-1 through STP-6. Fieldwork was conducted between 14 July 2015 and 15 July 2015 by CSH archaeologists Missy Kamai, B.A., Tom Martel, B.A., and Richard Stark, Ph.D. All fieldwork was conducted under the direction of the principal investigator Hallett H. Hammatt, Ph.D.

4.1 Pedestrian Inspection Results

The two cultural resources identified within the project area are Bridge 7E (SIHP # 50-30-10-2285) and an earthen ditch (SIHP # -2286) that extends perpendicular to Kaumuali‘i Highway and passes water through the culverts of Bridge 7E. The earthen ditch is a plantation water control feature that likely predates the installation of Bridge 7E in 1933. Complete descriptions of these cultural resources are provided in Section 6.

Vegetation observed within the project area included exotic grasses, eucalyptus, and albizia trees. The eucalyptus trees within the project area appear to be part of a tree farm that spans both sides of Kaumuali‘i Highway (see Figure 4 and Figure 13). Eucalyptus trees are commonly grown as a cash crop for pulpwood, which can be used to make a variety of paper products. The tall exotic grasses within the project area obscured ground visibility significantly during the pedestrain survey (Figure 14). These grasses are commonly found in areas of past sediment disturbance, including former agricultural fields.

4.2 Subsurface Testing Results

Six shovel test probes (STPs 1–6) were excavated along the shoulder of Kamuali‘i Highway (Figure 15). The STPs measured on average 50 cm in length by 50 cm in width and extended on average 82 cm below surface. The general stratigraphy observed includes three strata consisting of a clay loam A horizon (Stratum I), overlying a clay B horizon (Stratum II) that overlies a lateritic decomposing bedrock C horizon (Stratum III). As the depth increases, the mottling and compaction of the sediment increases.

Traditional Hawaiian cultural material was not observed during subsurface testing. Historic cultural material observed and collected from within the A horizon consisted of a porcelain fragment (Acc. # 1). No cultural resources were identified during the subsurface testing program.

Figure 13. Overview of the project area depicting eucalyptus trees and exotic grasses along both sides of Kaumuali‘i Highway, view to east

Figure 14. General view of exotic grasses within the project area that obscure ground visibility, view to northwest

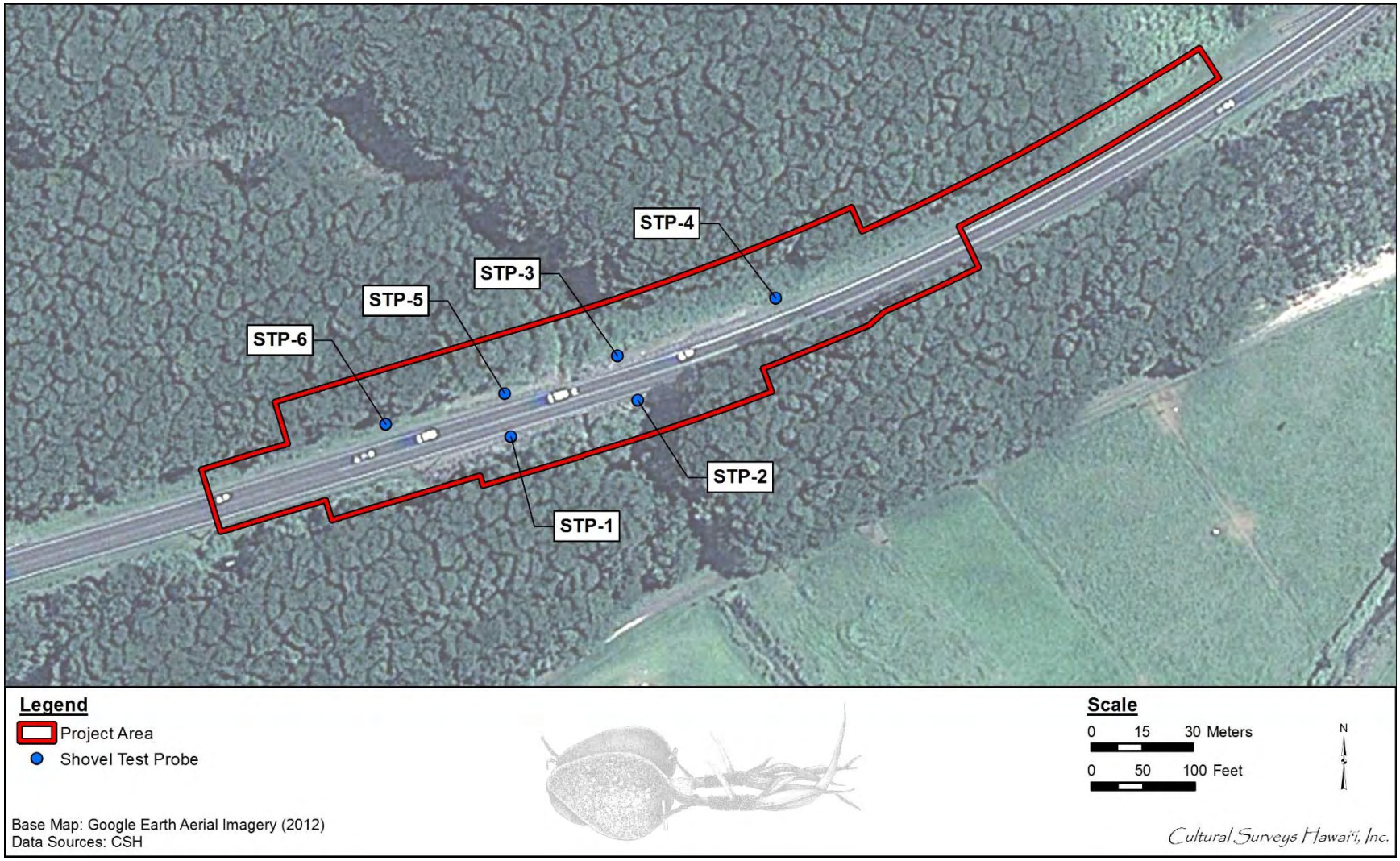

Figure 15. Aerial photograph depicting the location of the six STP excavations within the project area (Google Earth 2013)

4.2.1 STP-1

STP-1 is located southeast of the bridge, on the south side of the highway, in the central portion of the project area (see Figure 15). STP-1 measured 50 cm long by 50 cm wide. The base of excavation was determined to be approximately 115 cm. The water table was not observed. The stratigraphy of STP-1 consists of a clay loam A horizon (Stratum I), overlying disturbed loam (Stratum II) and lateritic clay C horizon (Stratum III) (Figure 16, Figure 17, and Table 3).

No traditional Hawaiian cultural material was observed. Historic cultural material observed consists of one historic ceramic sherd (Acc. # 1). The sherd is an undecorated, porcelain, body fragment dating from early eighteenth century to twentieth century.

4.2.2 STP-2

STP-2 is located east of the bridge, on the south side of the highway, in the middle portion of the project area (see Figure 15). STP-2 measured 50 cm long by 50 cm wide. The base of excavation was determined to be approximately 80 cm. The water table was not observed. The stratigraphy of STP-2 consists of a clay loam A horizon (Stratum I) overlying clay B horizon (Stratum II) and a lateritic clay C horizon (Stratum III) (Figure 18, Figure 19, and Table 4). No traditional Hawaiian or historic cultural material was observed.

4.2.3 STP-3

STP-3 is located east of the bridge, on the north side of the highway, in the middle portion of the project area (see Figure 15). STP-3 measured 50 cm long by 50 cm wide. The base of excavation was determined to be approximately 60 cm. The water table was not observed. The stratigraphy of STP-3 consists of a sandy clay loam A horizon (Stratum I) overlying clay loam B horizon (Stratum II) and a lateritic clay C horizon (Stratum III) (Figure 20, Figure 21, and Table 5). No traditional Hawaiian or historic cultural material was observed.

4.2.4 STP-4

STP-4 is located east of the bridge, on the north side of the highway, in the east portion of the project area (see Figure 15). STP-4 measured 50 cm long by 50 cm wide. The base of excavation was determined to be approximately 44 cm. The water table was not observed. The stratigraphy of STP-4 consists of a clay loam A horizon (Stratum I) overlying a disturbed clay (Stratum II) and a lateritic clay C horizon (Stratum III) (Figure 22, Figure 23, and Table 6). No traditional Hawaiian or historic cultural material was observed.

4.2.5 STP-5

STP-5 is located west of the bridge, on the north side of the highway, in the central portion of the project area (see Figure 15). STP-5 measured 50 cm long by 50 cm wide. The base of excavation was determined to be approximately 110 cm. The water table was not observed. The stratigraphy of STP-5 consists of a clay loam A horizon (Stratum I) overlying a clay B horizon (Stratum II) and a lateritic clay C horizon (Stratum III) (Figure 24, Figure 25, and Table 7). No traditional Hawaiian or historic cultural material was observed.

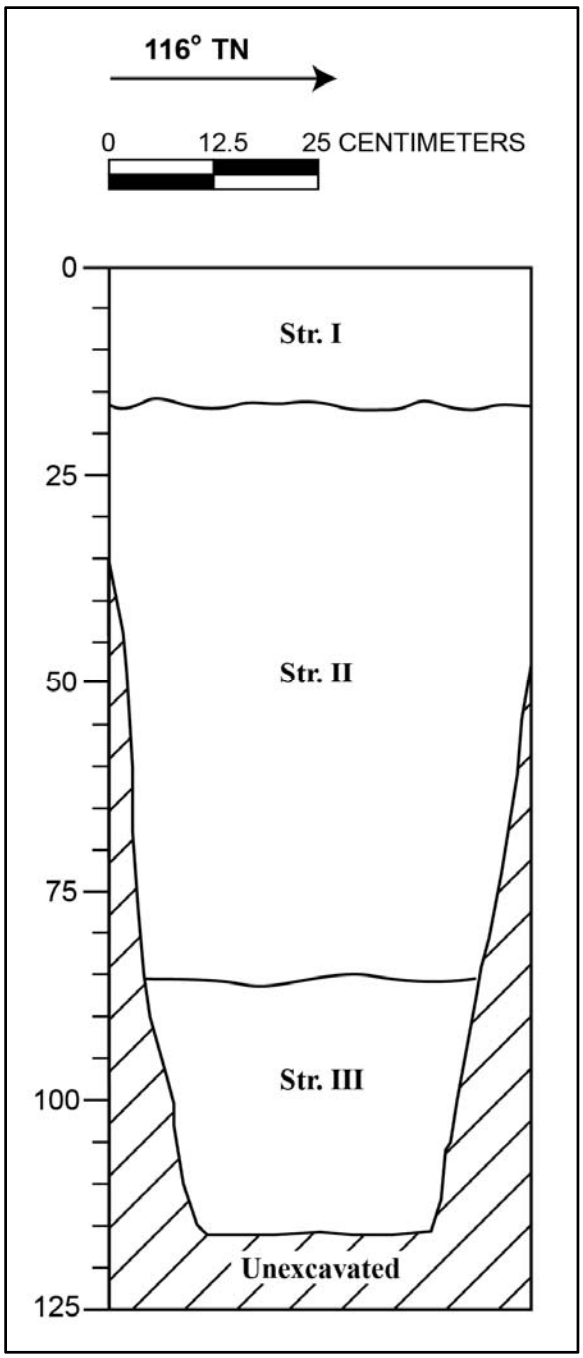

Figure 16. STP-1 northeast wall profile view

Figure 17. STP-1, northeast wall, view to northeast

Table 3. Stratigraphic Description of STP-1 Northeast Wall

Stratum	Depth (cmbs)	Description of Sediment
I	0–16	A horizon; 10YR 3/4, dark yellowish brown; clay loam; weak, fine, crumb structure; moist, firm consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; common, fine, medium roots observed; current land surface; historic ceramic sherd (Acc. # 1) observed and collected
II	16–85	Disturbed natural; 10YR 4/4, dark yellowish brown; loam; weak, medium, crumb structure; moist, loose consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; few, fine, medium roots observed; 5 cm lens of angular basalt pebbles (40-45 cmbs), disturbed layer, likely related to agricultural use and/or highway construction
III	85–115 (BOE)	Natural; 5YR 3/4, dark reddish brown; clay; moderate, medium, crumb structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not visible; few fine roots observed; naturally deposited decomposing bedrock (laterite), compaction increases near BOE

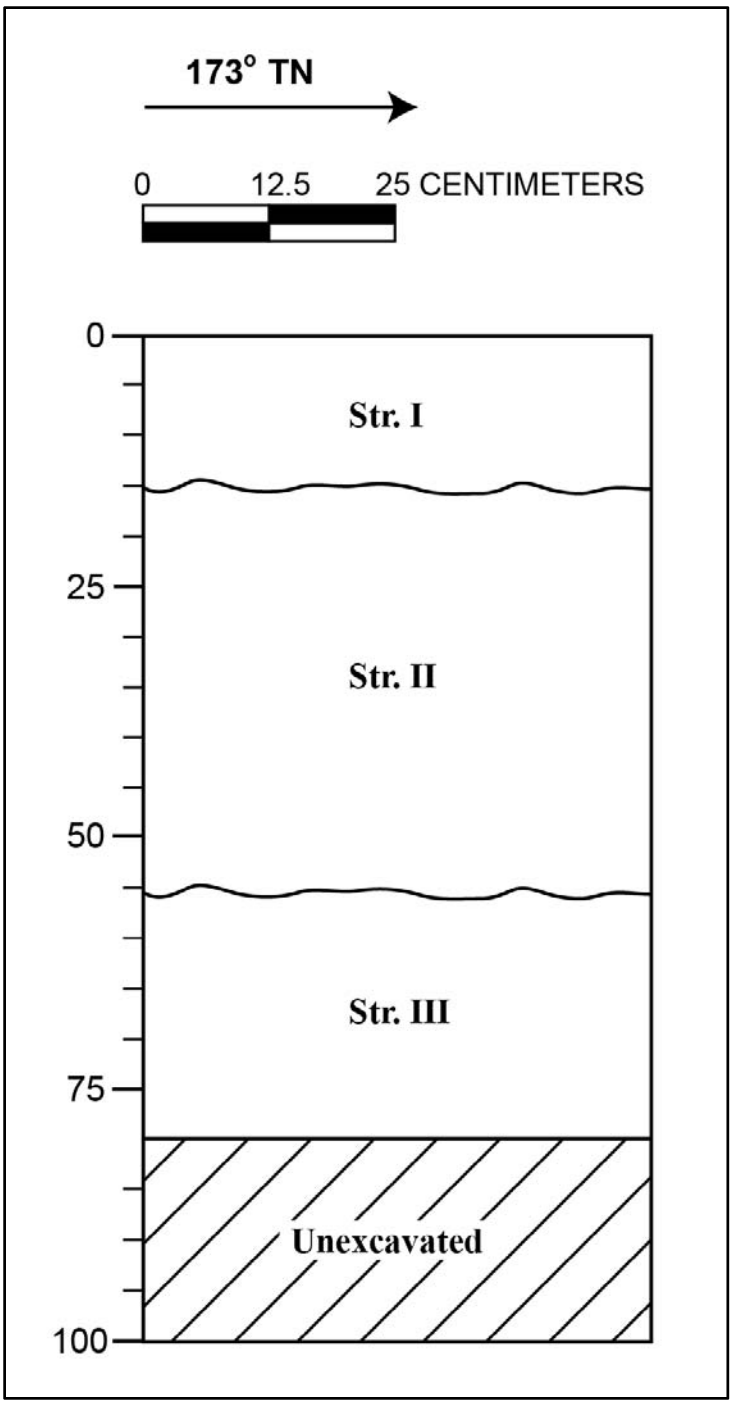

Figure 18. STP-2, east wall profile

Figure 19. STP-2, east wall, view to east

Table 4. Stratigraphic Description of STP-2 East Wall

Stratum	Depth (cmbs)	Description of Sediment
I	0–15	A horizon; 10YR 3/3, dark brown; clay loam; moderate, medium, crumb structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; diffuse, wavy lower boundary; common, fine, medium roots observed; current land surface
II	15–55	B horizon, 5YR 4/4, reddish brown; clay; strong, medium, blocky structure; moist, firm consistence; no cementation; very plastic; terrigenous origin; diffuse, wavy lower boundary; no roots observed
III	55–80 (BOE)	C horizon, 2.5YR 4/4, reddish brown, containing 40%, medium mottles of 10R 4/6, red; clay; massive structure; moist, extremely firm consistence; no cementation; very plastic; terrigenous origin; lower boundary not visible; no roots observed; naturally deposited decomposing bedrock (laterite), mottling and compaction increases near BOE

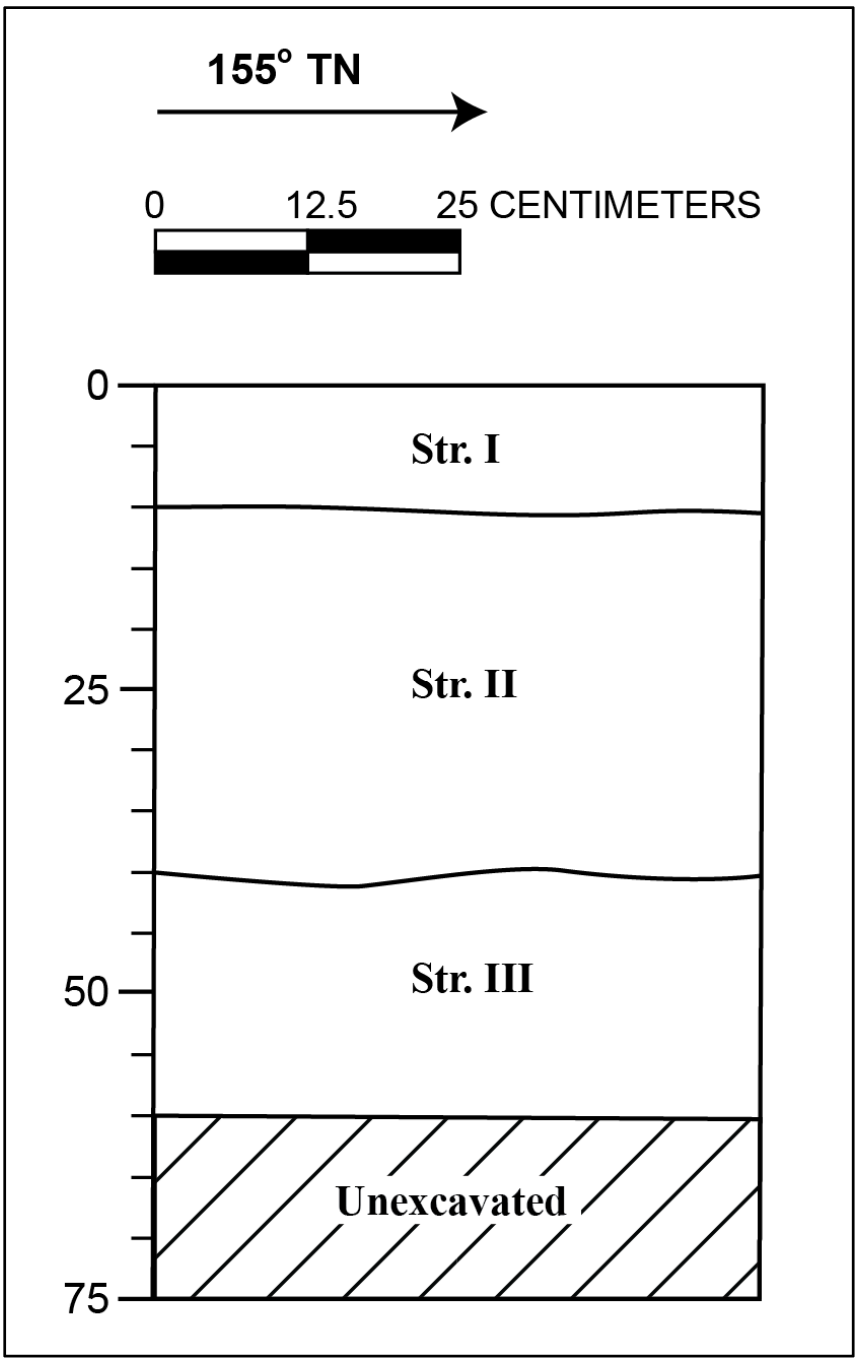

Figure 20. STP-3, northeast wall profile

Figure 21. STP-3, northeast wall, view to northeast

Table 5. Stratigraphic Description of STP-3 Northeast Wall

Stratum	Depth (cmbs)	Description of Sediment
I	0–10	A horizon; 10YR 3/3, dark brown; sandy clay loam; moderate, medium, crumb structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; many, fine, medium roots observed; current land surface
II	10–40	B horizon, 5YR 4/6, yellowish red; clay loam; strong, medium, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; diffuse, wavy lower boundary; no roots observed
III	40–60 (BOE)	C horizon, 10YR 5/8, yellowish brown, containing 30%, medium mottles of 5YR 4/6, yellowish red; clay; massive structure; moist, extremely firm consistence; no cementation; very plastic; terrigenous origin; lower boundary not visible; no roots observed; naturally deposited decomposing bedrock (laterite), mottling and compaction increases near BOE

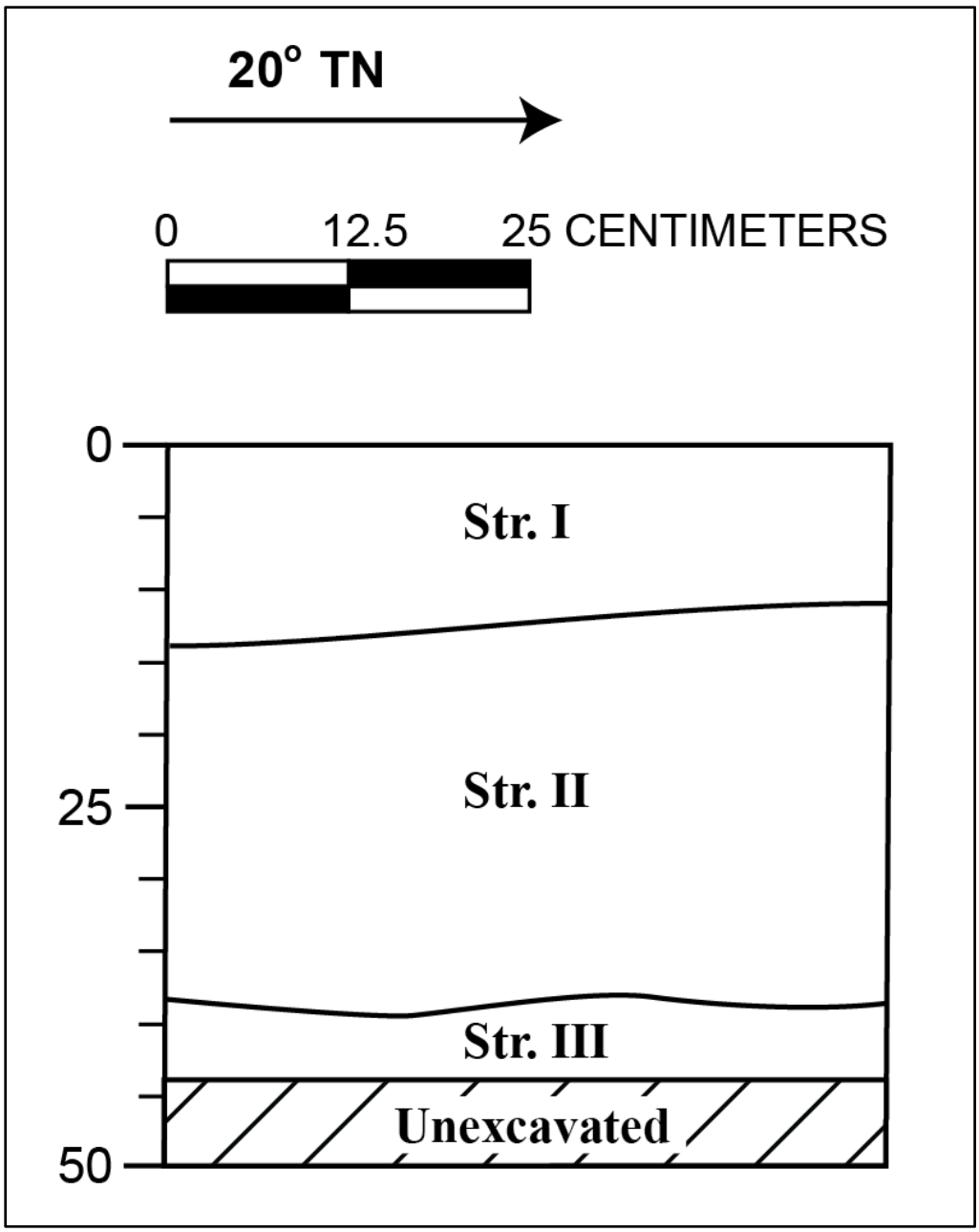

Figure 22. STP-4, west wall profile

Figure 23. STP-4, west wall, view to west

Table 6. Stratigraphic Description of STP-4 West Wall

Stratum	Depth (cmbs)	Description of Sediment
I	0–14	A horizon; 10YR 3/2, very dark grayish brown; clay loam; weak, medium, crumb structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; common, fine, medium, coarse roots observed; current land surface; compacted A horizon, small angular basalt cobbles
II	11–39	Disturbed natural, 10YR 3/3, dark brown, 10% mottles of 2.5YR 4/4; clay loam; moderate, medium, crumb structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; diffuse, wavy lower boundary; no roots observed; previously disturbed natural, likely due to road construction; mottles observed at upper boundary
III	39–44 (BOE)	C horizon; 2.5YR 4/4, reddish brown; clay; strong, medium to coarse, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not visible; no roots observed; angular and subangular basalt cobbles, collected small to large basalt/volcanic pebbles

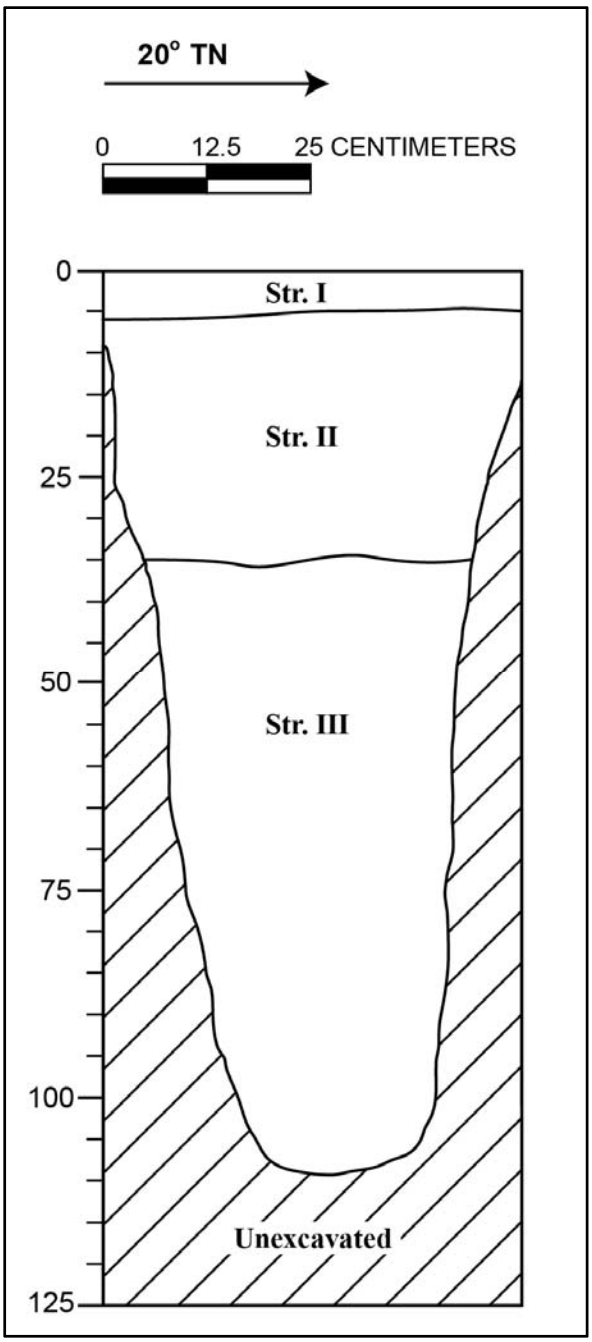

Figure 24. STP-5, west wall profile

Figure 25. STP-5, west wall, view to west

Table 7. Stratigraphic Description of STP-5 West Wall

Stratum	Depth (cmbs)	Description of Sediment
I	0–5	A horizon; 5 YR 3/2, dark reddish brown; clay loam; weak, medium, crumb structure; dry, weakly coherent consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; common, medium, coarse roots observed; current land surface; weak A horizon
II	5–40	B horizon, 5YR 4/3, brown; clay; moderate, medium, crumb structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; few, medium roots observed
III	40–110 (BOE)	C horizon, 7.5YR 4/6, strong brown; clay; moderate, medium, crumb structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; lower boundary not visible; no roots observed; naturally deposited decomposing bedrock (laterite), compaction increases near BOE

4.2.6 STP-6

STP-6 is located west of the bridge, on the north side of the highway, in the western portion of the project area (see Figure 15). STP-6 measured 50 cm long by 50 cm wide. The base of excavation was determined to be approximately 80 cm. The water table was not observed. The stratigraphy of STP-6 consists of a sandy clay loam A horizon (Stratum I) overlying a clay loam B horizon (Stratum II) and a lateritic clay C horizon (Stratum III) (Figure 26, Figure 27, and Table 8). No traditional Hawaiian or historic cultural material was observed.

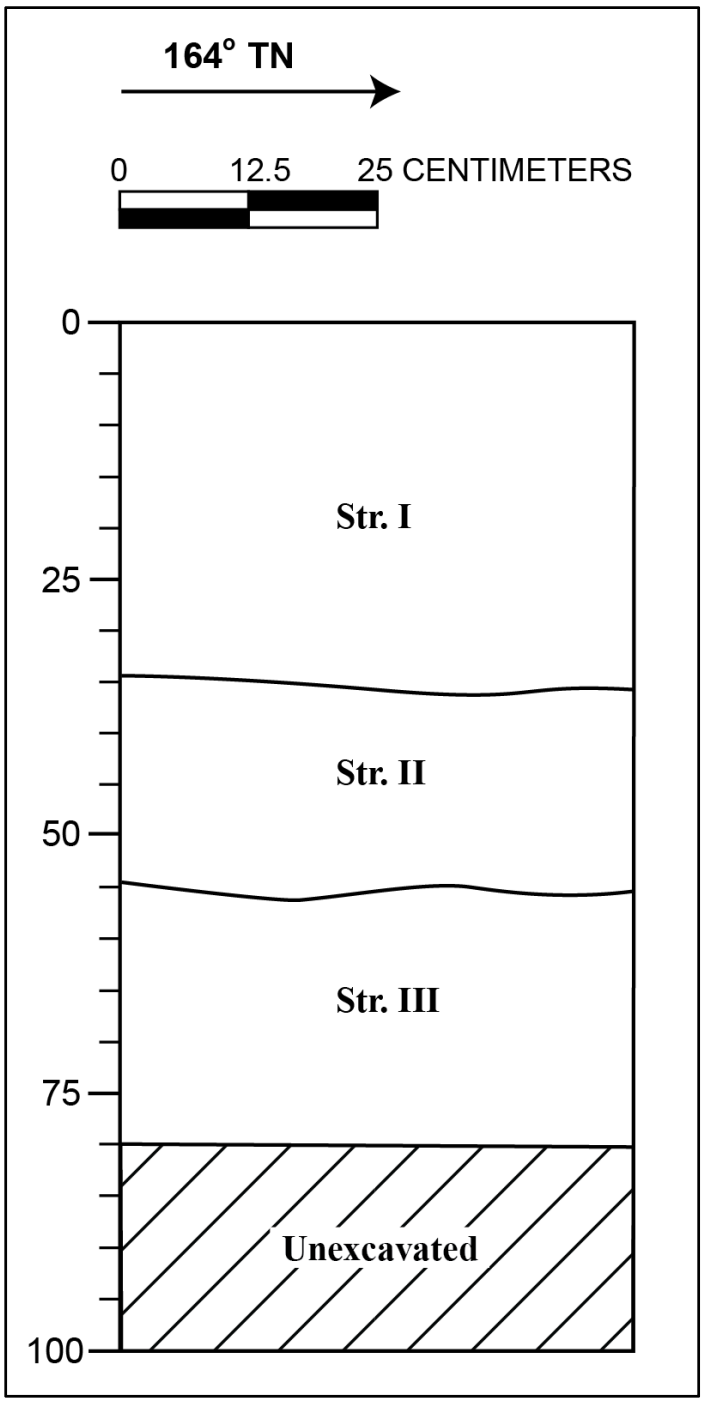

Figure 26. STP-6, east wall, view to east

Figure 27. STP-6, east wall, view to east

Table 8. Stratigraphic Description of STP-6 East Wall

Stratum	Depth (cmbs)	Description of Sediment
I	0–35	A horizon; 10YR 3/4, dark yellowish brown; sandy clay loam; moderate, fine, crumb structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; abrupt, wavy lower boundary; common, fine, roots observed; current land surface
II	35–55	B horizon, 7.5YR 4/6, strong brown; clay loam; strong, fine, blocky structure; moist, very firm consistence; no cementation; plastic; terrigenous origin; diffuse, wavy lower boundary; no roots observed
III	55–80 (BOE)	C horizon, 7.5YR 4/6, strong brown, containing 30%, medium mottles of 5YR 4/6, yellowish red; clay; moderate, fine, blocky structure; moist, extremely firm consistence; no cementation; very plastic; terrigenous origin; lower boundary not observed; no roots observed; naturally deposited decomposing bedrock (laterite), mottling and compaction increases near BOE

Section 5 Results of Laboratory Analysis

One historic artifact was recovered in STP-1 (Table 9). One porcelain body fragment was recovered from STP-1 (Figure 28). Porcelain was used by Euro-Americans as early as the eighteenth century and in Asian cultures starting as early as the first few centuries AD (Barber 1910). Often types of porcelain can be dated and attributed to a geographical area using the decoration techniques. However, the fragment recovered from the project area is very small in size and lacks decoration, therefore little can be said about it.

Table 9 Artifacts Observed and Collected During Subsurface Testing

Acc. #	STP #	Stratum	Depth	Material	Type	Description	Count
0001	1	I	0-16 (cmbs)	Ceramic	Tableware	porcelain body fragment, undecorated, transparent glaze on interior and exterior	1

Figure 28. Acc. # 1, porcelain body fragment

Section 6 Cultural Resource Descriptions

Two cultural resources were identified within the current project area during this AIS. They are summarized in Table 10 and are depicted on Figure 29 and Figure 30.

Table 10. Cultural Resources Identified within the Current Project Area

SIHP #	Formal Type	Function
50-30-10-2285	Bridge (Bridge 7E)	Transportation
50-30-10-2286	Earthen ditch	Water control

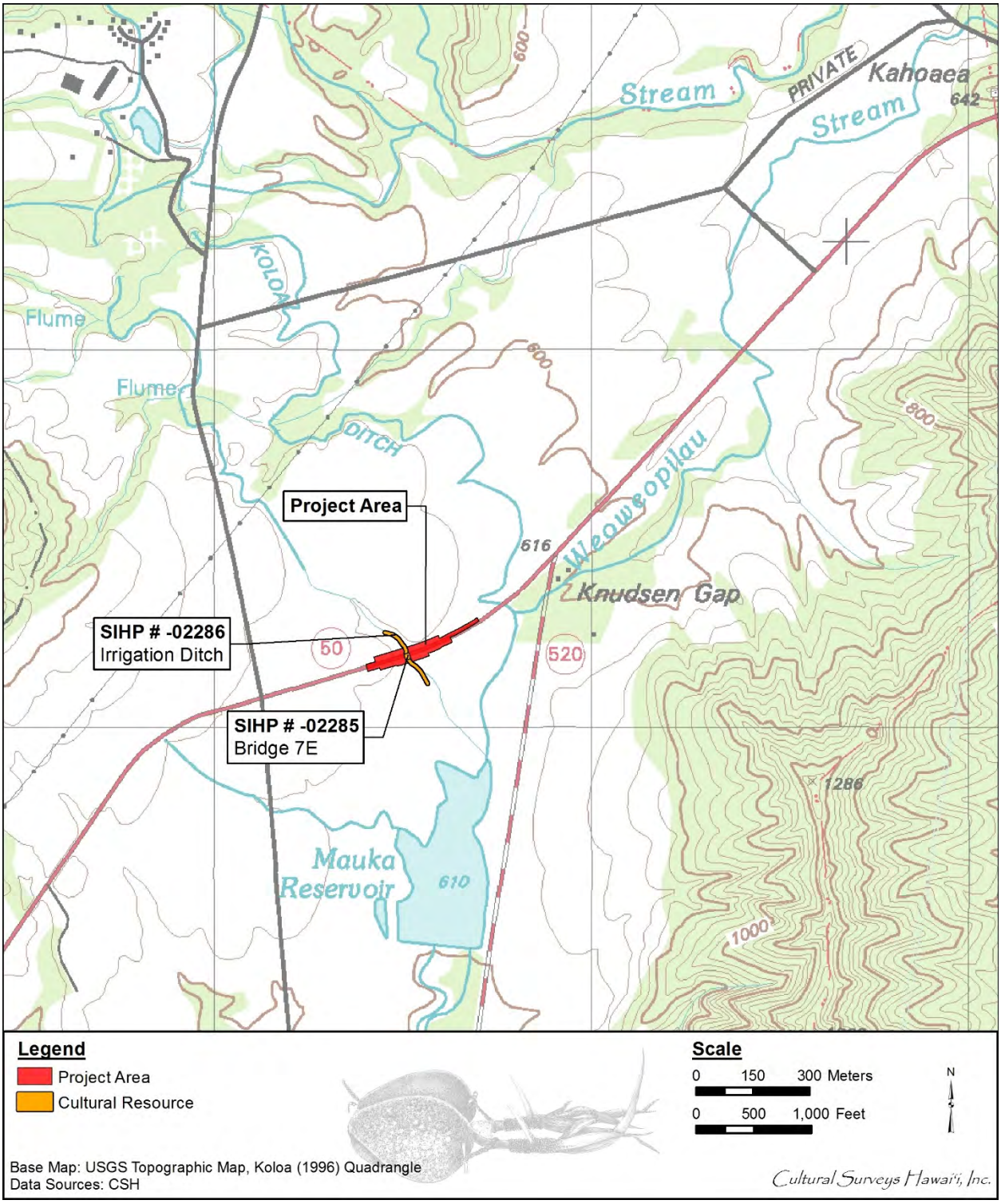

Figure 29. Portion of the 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of cultural resources within the project area

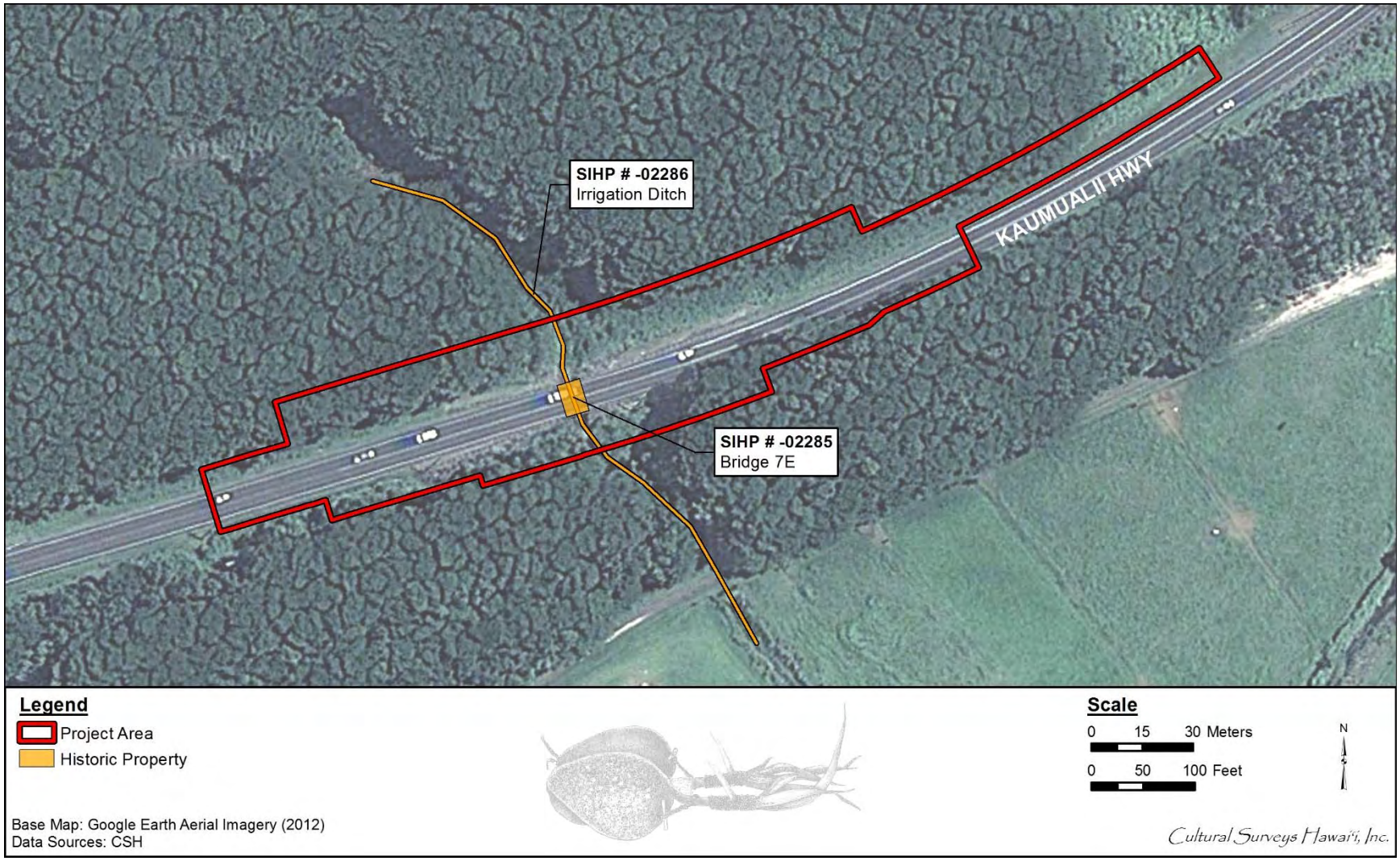

Figure 30. Aerial photograph showing the location of cultural resources within the project area (Google Earth 2012)

6.1 SIHP # 50-30-10-2285

FORMAL TYPE:	Bridge (Bridge 7E)
FUNCTION:	Transportation
NUMBER OF FEATURES:	1
AGE:	Historic (1933)
TEST EXCAVATIONS:	None
TAX MAP KEY:	TMK: [4] 2-7-001 Kaumuali‘i Highway Right-of-Way
LAND JURISDICTION:	HDOT
PREVIOUS DOCUMENTATION:	Spencer Mason Architects 1989; MKE Associates LLC/Fung Associates, Inc. 2013

SIHP # -2285 is Bridge 7E, located along Route 50 (Kaumuali‘i Highway) approximately 800 ft west of the Maluhia Road/Kaumuali‘i Highway intersection. Bridge 7E is identified as a concrete slab bridge constructed in 1933 composed of reinforced concrete consisting of two culvert cells with wing-wall abutments (Figure 31 and Figure 32). Bridge 7E was constructed as part of the second Federal aid highway project on Kaua‘i. W.R. Bartels designed the bridge. The bridge was built by Hawaiian Contracting Company, Ltd. (Spencer Mason Architects 1989:27–28). The bridge has a length of approximately 7.0 m (23 ft) and a width of approximately 9.8 m (32 ft). The bridge surface is paved with asphaltic concrete.

The 1989 State Historic Bridge Inventory Evaluation states that “although the bridge [Bridge 7E] design is an example of Depression-era bridges, it has no artistic value, it is not a unique entity or a diverse resource” and is therefore not eligible for historic status (Spencer Mason Architects 1989:27–28). Similarly, the 2013 State Historic Bridge Inventory Evaluation states, “This culvert does not have distinctive engineering or architectural features that depart from standard culvert design” (MKE Associates LLC/Fung Associates, Inc. 2013:3–6).

Architectural recordation conducted during the current project supports the previous evaluations (Ruzicka 2015). Bridge 7E was evaluated by Ruzicka (2015) as not significant and not eligible for the National Register or the Hawai‘i Register. This is based on the determination that the culvert does not appear to contribute significantly to an understanding of the development of the Kaumuali‘i Highway, and is not a particularly distinctive example of a box culvert; nor is it considered a significant achievement of its designer.

Figure 31. SIHP # -2285, Bridge 7E, view to east

Figure 32. SIHP # -2285, Bridge 7E, view to northeast

6.2 SIHP # 50-30-10-2286

FORMAL TYPE:	Ditch
FUNCTION:	Water control
NUMBER OF FEATURES:	1
AGE:	Historic (plantation)
TEST EXCAVATIONS:	None
TAX MAP KEY:	TMKs: [4] 2-7-001:004 por., [4] 2-7-002:001 por., and [4] 2-7-001 Kaumuali‘i Highway Right-of-Way
LAND JURISDICTION:	HDOT, Eric A. Knudsen Trust, private
PREVIOUS DOCUMENTATION:	None

SIHP # -2286 is an earthen ditch that extends north to south and perpendicular to Kaumuali‘i Highway, passing through the culverts of Bridge 7E (Figure 33). Water flows within the ditch from north to south and into Mauka Reservoir. The width and depth of the ditch is variable. On the south side of Bridge 7E, the ditch has a width of approximately 3.0 m (9.8 ft) with a depth of approximately 2.4 m (7.9 ft) (Figure 34). On the north side of Bridge 7E, the ditch is wider and measures approximately 4.6 m (15.1 ft) with a shallower depth of approximately 1.8 m (5.9 ft) (Figure 35). The portion of the earthen ditch within the project area measures 163.0 m (534.8 ft) long.

The earthen ditch is depicted on a 1929 land court application map, which predates the present alignment of Kaumuali‘i Highway and the construction of Bridge 7E (Figure 36). The map labels the ditch as “Koloa Sugar Cos Ditch”. SIHP # -2286 also is depicted on the 1963 Koloa USGS topographic quadrangle extending to Mauka Reservoir (see Figure 8) and is also clearly visible on the 1978 Koloa USGS orthophotoquad extending through sugar cane fields (see Figure 9).

SIHP # -2286 is interpreted as an historic (plantation) earthen ditch used for water control SIHP # -2286, an earthen ditch, is 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 recommended eligible to both the Hawai‘i and National Registers under Criterion D. The cultural resource possesses integrity of setting, location, design, and materials. The AIS has sufficiently documented the information content of SIHP # -2286 within the APE.

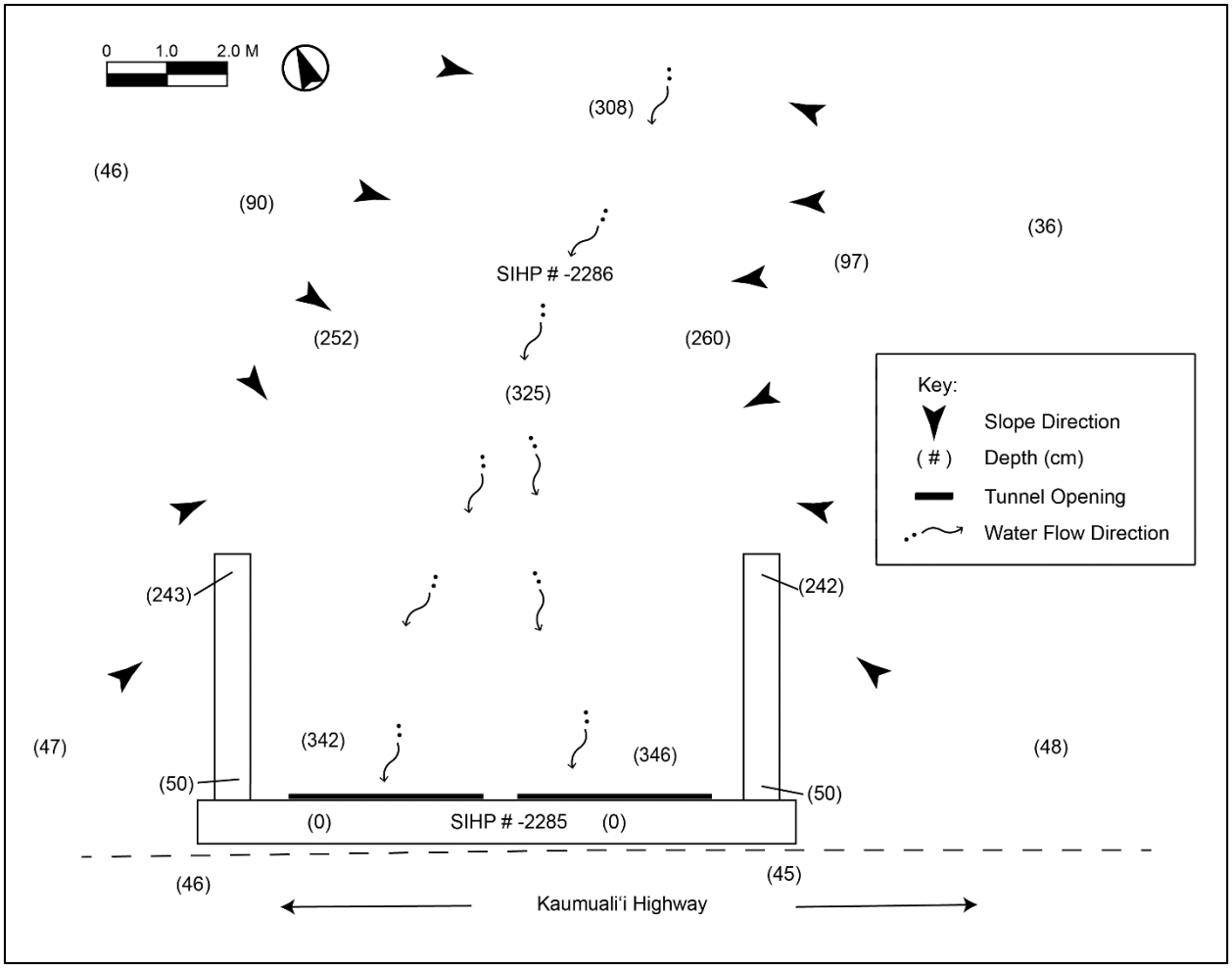

Figure 33. Plan view map of SIHP # -2286 (earthen ditch) in relation to SIHP # -2285 (Bridge 7E) along the northern edge of Kaumuali‘i Highway

Figure 34. SIHP # -2286, earthen ditch south of Kaumuali‘i Highway, view to south

Figure 35. SIHP # -2286, earthen ditch north of Kaumuali‘i Highway, view to northeast

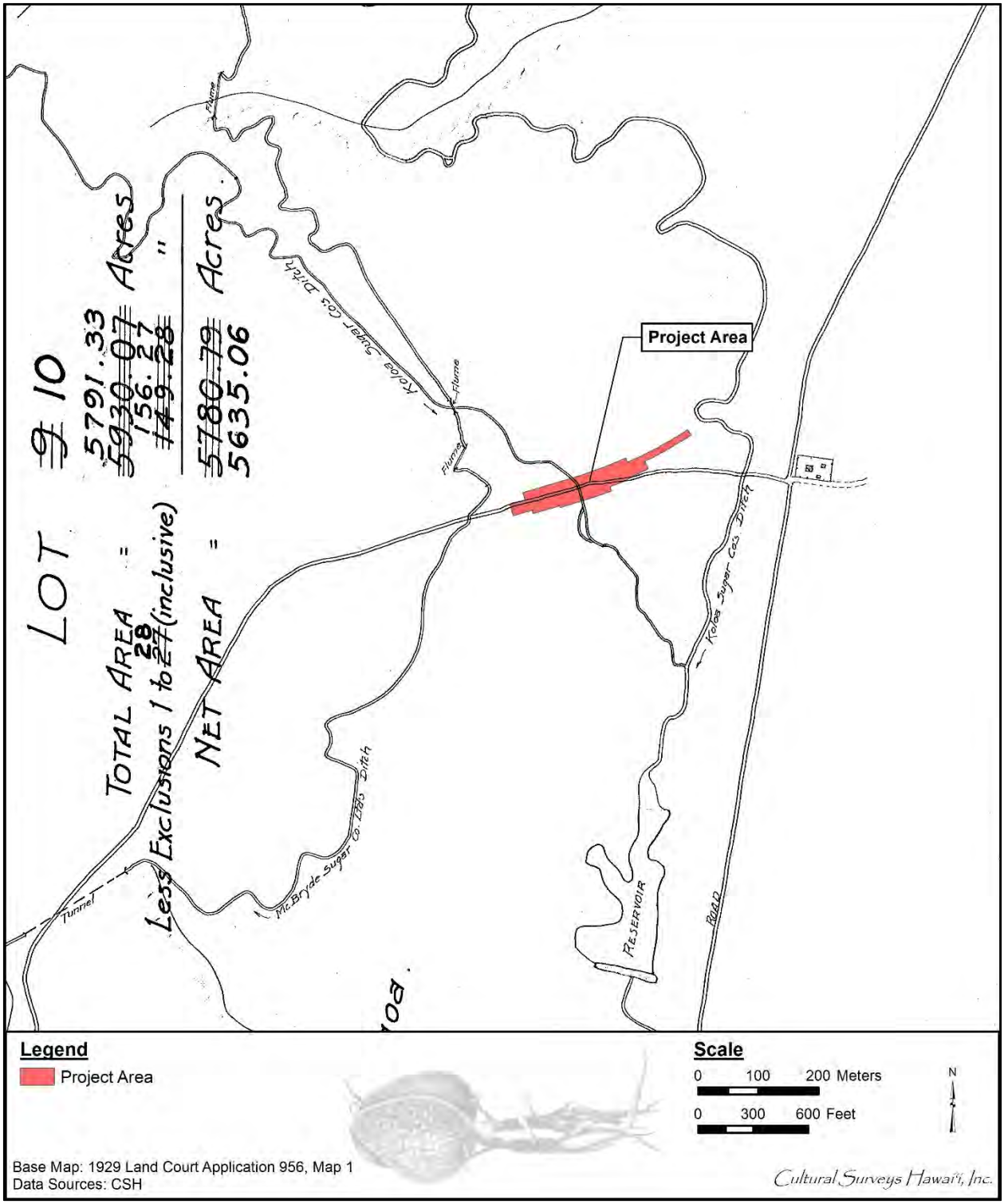

Figure 36. Portion of 1929 Land Court Application 956, Map 1 showing the project area in relation to “Koloa Sugar Cos Ditch” (SIHP # -2286)

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 Bridge7E, Kōloa Ahupua‘a, Kōloa District, Kaua‘i, FHWA/CFLHD Contract DTFH68-13-R-00027, TMKs: [4] 2-7-001:004 por., [4] 2-7-002:001 por., and [4] 2-7-001 Kaumuali‘i Highway Right-of-Way.

Background research included various mythological and traditional accounts as well as early historic information from the Kona District of Kaua‘i as there was little documentation specific to Kōloa Ahupua‘a prior to the nineteenth century. Accounts of the early history of Kōloa (Farley 1907; Jarves 1844; Judd 1935; and Townsend 1839) describe in the lands *mauka* of Kōloa Town a seemingly continuous, well-maintained, agricultural complex of taro, yams, sweet potato, and sugar cane irrigated by an extensive *‘auwai* system siphoned off Waikomo and Pō‘el‘ele streams.

Kōloa is the site of the first organized sugar plantation in Hawai‘i. Ladd and Company leased about 1,000 acres for the sole purpose of growing sugar cane (Palama and Stauder 1973:18). Kōloa Town and Kōloa Landing, at the mouth of Waikomo Stream, became prominent commercial centers during the mid- to late 1800s, exporting a variety of products such as sweet potatoes, sugar, and molasses. Commercial sugar production continued throughout much of the twentieth century in the vicinity of the project area. Most of the *mauka* areas of Kōloa remained under sugar cane cultivation as late as the 1970s, when these cane lands were converted into pasture.

Presently, the project area includes small portions of a eucalyptus tree farm that spans both sides of Kaumuali‘i Highway. Eucalyptus trees are commonly grown as a cash crop for pulpwood, which can be used to make a variety of paper products.

A companion architectural study (Ruzicka 2015) is being conducted by Mason Architects, Inc. in conjunction with this AISR. When applicable, the information from the architectural study has been incorporated into the present AIS document.

The entire current project area has been previously subject to an AIS-level investigation. An AIS for an approximately 11.5-km long portion of Kaumuali‘i Highway including the majority of the Bridge 7E project area was completed by CSH (Hammatt and Chiogioji 1998) with no significant finds. Therefore, the study was termed an archaeological assessment. However, the study did note the location of four cultural resources in the vicinity of the study area including Grove Farm office building in Puhi, Līhu‘e Mill Bridge, Ho‘omana Overpass Bridge, and Līhu‘e Public Cemetery. None of these cultural resources are located in the vicinity of the current project area.

During the current AIS, two cultural resources were identified within the project area. The two cultural resources are Bridge 7E (SIHP # -2285) and an earthen ditch (SIHP # -2286) that extends perpendicular to Kaumuali‘i Highway and passes water through the culverts of Bridge 7E. The earthen ditch is a plantation water control feature that predates the installation of Bridge 7E in 1933. The findings of the AIS are consistent with historical background research, which predicted the likely occurrence of plantation water control infrastructure within the project area.

Section 8 Significance Assessments

As discussed in Section 1.2, cultural resources, 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 cultural resources, however, this report also includes, where appropriate, the architectural cultural resources documented and evaluated in the companion architectural survey conducted by Mason Architects, Inc. (Ruzicka 2015).

For a cultural resource to be significant under HAR §13-275-6, the cultural resource 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.

Cultural resource significance was evaluated and expressed by Ruzicka (2015) as eligibility for listing on the National Register (pursuant to 36 CFR 60.4) and/or the Hawai‘i Register (pursuant to HAR §13-198-8). To be considered eligible for listing on the National and/or Hawai‘i Register, a cultural resource should possess integrity as described above, 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;

SIHP # -2285 has been evaluated in the 1989 State Historic Bridge Inventory Evaluation as not eligible for historic status (Spencer Mason Architects 1989:27–28). Similarly, the 2013 State Historic Bridge Inventory Evaluation states, “This culvert does not have distinctive engineering or architectural features that depart from standard culvert design” (MKE Associates LLC/Fung Associates, Inc. 2013:3–6). Architectural recordation conducted during the current project supports the previous evaluations (Ruzicka 2015). Bridge 7E was evaluated by Ruzicka (2015) as not significant and not eligible for the National Register or the Hawai‘i Register. This is based on the determination that the culvert does not appear to contribute significantly to an understanding of the development of the Kaumuali‘i Highway, and is not a particularly distinctive example of a box culvert; nor is it considered a significant achievement of its designer.

SIHP # -2286, an earthen ditch, is 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 recommended eligible to both the Hawai‘i and National Registers under Criterion D. The cultural resource possesses integrity of setting, location, design, and materials. The AIS has sufficiently documented the information content of SIHP # -2286 within the APE.

Section 9 Project Effect and Mitigation Recommendations

9.1 Project Effect

In accordance with Federal regulations (36 CFR 800.5), CSH's project-specific effect recommendation is "no adverse effect." Under Hawai‘i State historic preservation review legislation, the project's effect recommendation is "no historic properties affected" (in accordance with HAR §13-13-275-7).

9.2 Mitigation Recommendations

No further archaeological fieldwork is recommended for the current project.

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DAVID Y. IGE
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KEKOA KALUHIWA
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JEFFREY T. PEARSON
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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

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

March 22, 2016

J. Michael Will
Federal Highways Administration
Central Federal Lands Highway Division
michael.will@dot.gov

LOG NO: 2016.00576
DOC NO: 1603MN15
Archaeology
Architecture

Aloha Mr. Will:

SUBJECT: **Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review - Revised Archaeological Inventory Survey Report for the Bridge 7E Replacement Project Federal Highway Admin/Central Federal Lands Highway Div Contract: DTFH68-13-R-00027 Kōloa Ahupuaʻa, Kona District, Island of Kauaʻi TMK: (4) 2-7-001:004 por., and 2-7-002:001 por.**

Thank you for the opportunity to review the revised draft report titled *Archaeological Inventory Survey Report for the Bridge 7E Replacement Project, Kōloa District, Kauaʻi, 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. Kaumualiʻi Highway Right-of-Way* (Yucha et al. 2015). We received the draft report in our Kapolei office on January 20, 2016, and reviewed it in a letter dated February 29, 2016 (*Log No.2016.00115, Doc No. 1602MN04*). We conducted a teleconference regarding our requests for revisions on March 11, 2016, and received the revised copy electronically on March 18, 2016.

The project is an undertaking according to 36CFR§800.4.16, due to the provision of federal funding from the Federal Highways Administration and the Federal Lands Highway Division. In consultation with the State Historic Preservation Division (SHPD), and at the request of CH2MHill, Cultural Surveys Hawaii, Inc. conducted an archaeological inventory survey (AIS) to assist in identifying historic properties within the area of potential effect (APE) for the Bridge 7E replacement project. Section 106 consultation is concurrent and ongoing. The AIS fulfills the requirements of Hawaii Administrative Rule (HAR) §13-275 and the *Secretary of the Interior's Standards for Archaeology and Historic Preservation*.

The 2.07 acre APE is within the right-of-way (ROW) of Kaumualii Highway, which is owned by the State of Hawaii, and also extends approximately 20-50 feet within private property. The project includes the procurement of temporary and permanent easements to the private property for construction as well as maintenance of grading and drainage improvements. The proposed undertaking will include the replacement of the existing Bridge 7E and its roadway approaches to maintain the stream crossing on HI-50 as a safe and functional bridge. The existing structure is not eligible for the National Register of Historic Places (NRHP). The new bridge structure will be wider, and will require extending the roadway approaches, and embankment slopes, as well as replacing a double box culvert with a single box culvert. The APE includes construction of a temporary bypass road to facilitate stream crossing while the bridge is being replaced.

Cultural Surveys Hawaii, Inc. conducted 100% pedestrian survey of the APE, including subsurface testing via six trenches. Two historic properties were identified: the Bridge 7E, State Inventory of Historic Places (SIHP) Site 50-30-10-2285, and an earthen ditch perpendicular to the bridge, Site 50-30-10-2286. Site 2285 was evaluated in the 1989 State Historic Bridge Inventory Evaluation (Spencer Mason Architects) and determined not eligible for inclusion in the NRHP or the Hawaii register of historic places. A separate architectural evaluation of the bridge is being conducted and submitted to SHPD. CSH has determined that the earthen ditch, Site 2286 is significant under

criterion d of HAR§13-275-6 for its data potential, and is eligible for the National Register under criterion D. One ceramic fragment was recovered from shovel test pit (STP) 1, but lacks diagnostic qualities, other than being porcelain, which was utilized after 1910. The report proposes that the project will not adversely affect historic properties, and recommends no additional archaeological work for the current project.

The revisions requested in our previous correspondence have been made, and the AIS meets the requirements of the *Secretary of the Interior's Standards for Archaeological Documentation* and HAR§13-276. **The AIS is accepted**. Please send one hard copy of the report, clearly marked FINAL, along with a text-searchable CD to our Kapolei office. Please send one hard copy to the Kaua'i section.

We look forward to receipt of an effect determination letter from the lead agency, which will include a summary of the findings from the Section 106 consultation. You may reach the Kaua'i Lead Archaeologist Mary Jane Naone at Maryjane.naone@hawaii.gov or at (808) 271-4940 if you have questions regarding archaeological concerns. Please contact Architectural Historian Jessica Puff at (808) 692-8023 or Jessica.L.Puff@hawaii.gov for questions related to architecture.

Aloha,

Alan S. Downer, Ph.D.
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc.
Nicole Winterton
Central Federal Lands Highway Division
nicole.winterton@dot.gov

Hallett Hammatt, Ph.D.
Cultural Surveys, Inc.
hhammatt@culturalsurveys.com

Trevor Yucha
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tyucha@culturalsurveys.com

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380A
Lakewood, CO 80228-2583
Office: 720-963-3647
Fax: 720-963-3596
Michael.Will@dot.gov

April 26, 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
BRIDGE NO. 7E REPLACEMENT PROJECT
KOLOA DISTRICT, KAUAI ISLAND, KOLOA AHUPUAA
PROJECT NO. HI STP SR50(2)
TAX MAP KEY: (4)2-7-002:001 (POR.), (4)2-7-001:004 (POR.), AND (4)2-7-001 KAUMUALII 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 replace Bridge Number (No.) 7E on Kaumualii State Highway 50 (HI-50), located at Mile Post (MP) 6.95 (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. A letter dated December 7, 2015 was initially sent 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. In response to SHPD's letter dated February 29, 2016 (Log No.2016.00115, Doc No. 1602MN04) and a subsequent discussion with Ms. MaryJane Naone on March 11, 2016, the Archaeological Inventory Survey (AIS) for the subject undertaking was revised. SHPD accepted the AIS in a letter dated March 22, 2016 (Log No.2016.00576, Doc No. 1603MN15). A hard copy of the Final AIS was submitted on April 14, 2016; an electronic version is contained on the enclosed CD. Based on the additional consultation, the purpose of this letter is to provide updated information relative to the determination of eligibility and effects.

Overview of the Undertaking

The proposed project would replace the existing Bridge No. 7E and its roadway approaches to maintain the crossing over the unnamed intermittent waterway on HI-50 as a safe and functional component of the regional transportation system for highway users. The bridge is located at milepost 7.0 on Kaumualii Highway, approximately 800 feet west of its intersection with Maluhia

Road. The existing structure, which is a double box culvert, would be demolished and replaced with a single-cell box culvert.

The proposed new bridge structure would be approximately 30 feet long and 44 feet wide, to accommodate two 12-foot travel lanes with 8-foot shoulders and guardrails on both sides. The roadway approaches to the bridges would be widened, which would require extending embankment slopes.

During construction, Bridge No. 7E would be closed to traffic, and a temporary bypass road would be constructed to maintain traffic over the stream. A temporary stream crossing upstream of the existing bridge would be provided.

The proposed improvements would occur within the existing HDOT right-of-way and would extend approximately 20 to 50 feet into adjacent private property. Construction parcels (temporary easements) would be needed from the privately owned parcel mauka of the bridge. Permanent easements would be acquired on the makai side for maintenance of grading and drainage improvements. Archaeological monitoring will be voluntary for 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 attached APE Aerial Imagery map, and include both temporary and permanent impact areas. The APE, which has been revised slightly from the version shown in the previous submittal, comprises 2.24 acres and includes the following TMKs: (4)2-7-002:001 (por.), (4)2-7-001:004 (por.), and (4)2-7-001 Kaumualii Highway right-of-way.

Determination of Eligibility

Pursuant to NHPA Section 106 and HRS Chapter 6E, 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, an architectural reconnaissance survey, and an archaeological inventory survey. The surveys identified two cultural resources within the APE: Bridge No. 7E (SIHP #50-30-10-2285) and an earthen ditch (SIHP #50-30-10-2286). FHWA believes all historic properties with potential to be affected by the undertaking have been identified.

Bridge No. 7E is not a distinctive example of a box culvert or considered a significant achievement by its designer and is evaluated by Mason Architects as not eligible for listing on the NRHP or HRHP. Bridge No. 7E was also included in the 2013 Hawaii Historic Bridge Inventory and Evalutation prepared by MKE Associates, LLC and Fung Associates, Inc. as ***not eligible*** for the NRHP or HRHP.

The earthen ditch is interpreted as an historic (plantation-era) feature used for water control. It is evaluated by Cultural Surveys Hawaii for significance under §13-275-6 Criterion "d" as having yielded, or is likely to yield, information important for research on prehistory or history, and is recommended as eligible to both the HRHP and NRHP under Criterion D. The resource possesses sufficient integrity to warrant eligibility for both the HRHP and NRHP. The AIS Report sufficiently documents the information content of the earthen ditch within the APE.

FHWA is in agreement with these recommendations and the findings of the 2013 Hawaii Historic Bridge Inventory and Evaluation and has therefore determined that Bridge No. 7E (SIHP #50-30-10-2285) is ***not eligible*** for the NRHP or HRHP. The earthen ditch (SIHP #50-30-10-2286) is determined to be ***eligible*** for both the NRHP and HRHP under Criterion D. This archaeological resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place.

Detailed information on the cultural, archaeological, and historical settings of the project area and the determination of eligibility are provided in two studies prepared for this project, included on the enclosed CD:

1. Final Archaeological Inventory Survey Report for the Bridge 7E Replacement Project, Koloa Ahupuaa, Koloa District, Kauai (per SHPD acceptance on March 22, 2016)
2. Hawaii SHPD Historic Resource Inventory Form (Reconnaissance Level) for Bridge 7E (revised March 2016)

Determination of Effects

Replacement of Bridge 7E and its associated upgrades would provide for modern improvements over and along the eligible ditch. Improvements would be similar in nature to that which occurred when the existing structure was installed. Continuity of the earthen ditch feature and its role in irrigation would be maintained and no measurable changes in location or setting would result. As such, FHWA has determined that the undertaking will result in a ***No Adverse Effect*** finding in accordance with Federal regulations (36 CFR 800.5) and in a ***No Historic Properties Affected*** finding in accordance with HAR §13-13-275-7.

Consultations

As described in our previous letter, 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 (HPRC) met on October 1, 2015 to discuss the project and provided comments (in form of meeting minutes) on October 28, 2015. No substantive comments were received on the Bridge 7E project. 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.

We received communication from the Office of Hawaiian Affairs suggesting that the following organizations and individual be contacted in regard to the project:

- Royal Order of Kamehameha I, Kamualii Chapter
- Aha Moku Kauai Island, Kona Moku
- Kaahumanu Society
- Lopaka Bukoski

In response to the request from the Office of Hawaiian Affairs, letters were sent to three of these parties on November 11, 2015. No responses have been received. No contact information was available for Aha Moku Kauai Island, Kona Moku.

Request for Concurrence

We request your concurrence with the Area of Potential Effects and Determinations of Eligibility and Effects. Please respond 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 Nicole Winterton, Environmental Protection Specialist, at (720) 963-3689, email: nicole.winterton@dot.gov, if you have any questions. We look forward to working with the SHPO on these needed improvements.

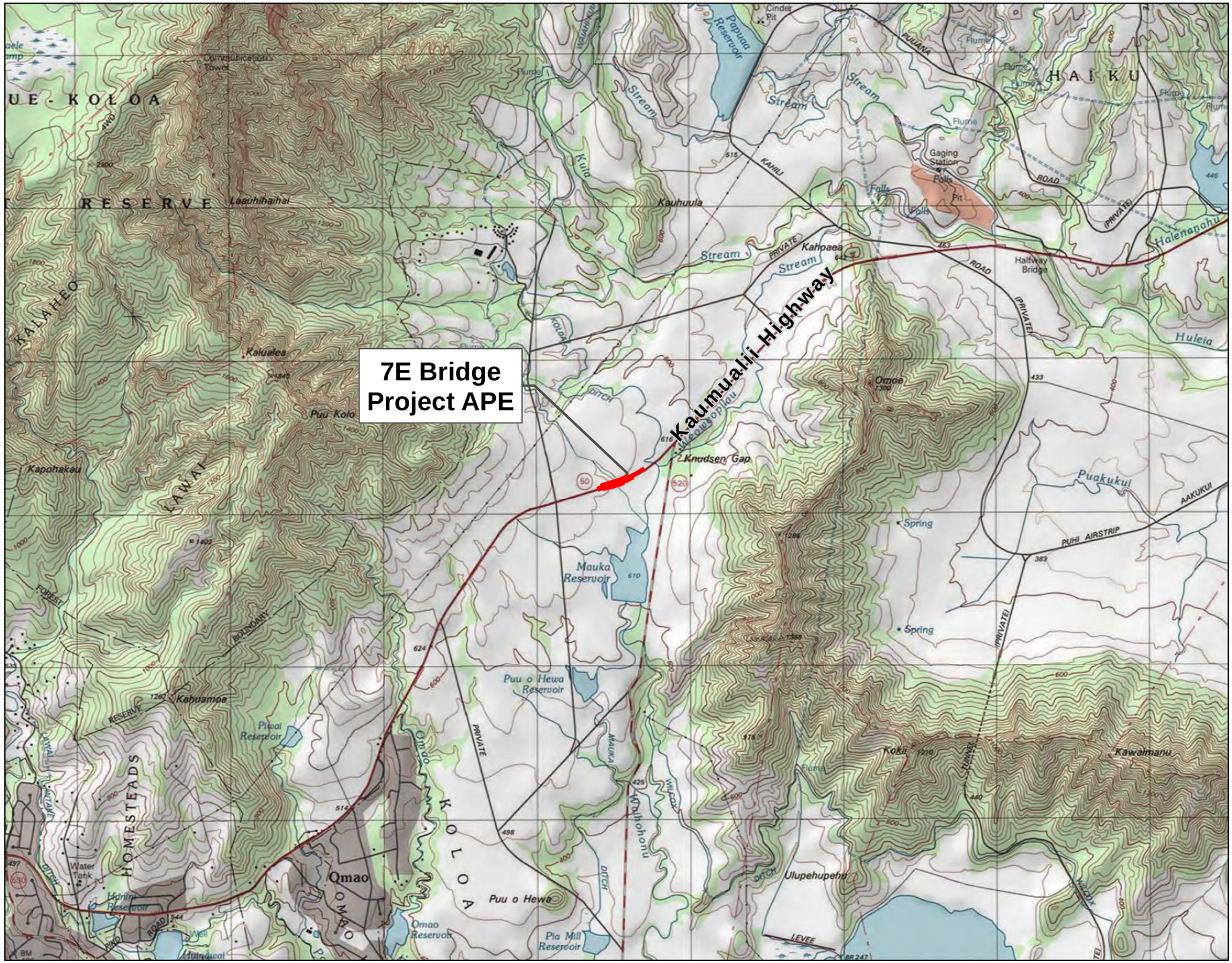
Sincerely yours,

J. Michael Will, P.E.
Project Manager

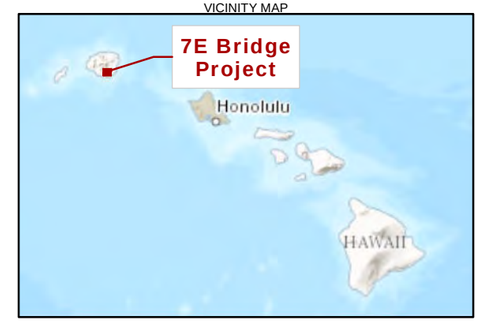
Enclosures:

- Area of Potential Effects (USGS Map)
- Area of Potential Effects (Aerial Imagery)
- Kauai HPRC Comments (October 28, 2015 meeting minutes of October 1, 2015 meeting)
- On CD: Final Archaeological Inventory Survey Report for the Bridge 7E Replacement Project, Koloa Ahupuaa, Koloa District, Kauai
- On CD: Hawaii SHPD Historic Resource Inventory Form (Reconnaissance Level) for Bridge 7E

cc (via email, no enclosures):
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

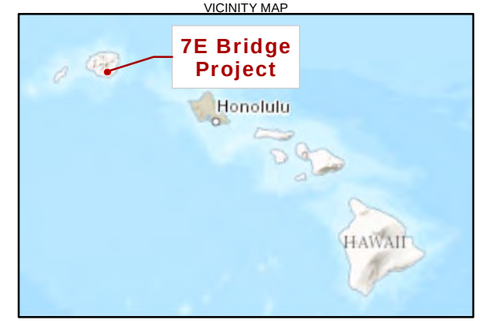
Notes:
1. Imagery Source: ESRI USA Topographic Maps

7E Bridge Project
Area of Potential Effects (USGS Map)
Central Federal Lands - Koloa, Kauai

CH2MHILL

\\CREOLE\Groups\GIS\00_Proj\C\CentralFedLands_HI_499085\MapFiles\APE_062515\7E_USGS_11x17_062915.mxd

VICINITY MAP



LEGEND

- Area of Potential Effects
- Existing Bridge
- TMK
- Detour Route

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0 150 300
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.

7E Bridge Project
Area of Potential Effects (Aerial Imagery)
Central Federal Lands - Koloa, Kauai

CH2MHILL

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 24, 2016

IN REPLY REFER TO:
LOG: 2016.00114
DOC: 1602JLP12
No Adverse Effect
No Historic Properties Affected

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

RE: Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Review
Agency: Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD)
Project Name: Bridge Number 7E Replacement Project, HFPM-16
Location: Koloa Ahupuaʻa, Koloa District, Kauai Island, Hawaii
TMK: (4) 2-7-002:001 (por), (4) 2-7-001:004 (por), and (4) 2-7-001 Kaumualii Highway Right-of-Way

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Dear Mr. Will:

On January 20, 2016, the State Historic Preservation Division (SHPD) received a submittal from Central Federal Lands Highway Division (CFLHD) for the Bridge Number 7E Replacement Project at Koloa Ahupuaʻa, Koloa District, Kauaʻi Island, Hawaiʻi (Log No. 2016.00114). We received a letter initiating consultation on September 9, 2015 (Log No. 2015.03305); a second consultation letter (Log No. 2016.00113), and the draft archaeological inventory survey (AIS) report on January 20, 2016 (Log No. 2016.00115). We requested revisions to the AIS on February 29, 2016 (Log No. 2016.00115, Doc. No. 1602MN04), and received a revised copy via email on March 18, 2016, which was reviewed and accepted on March 22, 2016 (Log No. 2016.00576, Doc. No. 1603MN15). SHPD received the final AIS on April 14, 2016.

The undertaking requires an Army Corps of Engineers 404 permit. CFLHD is the lead federal agency. The revised area of potential effects (APE) totals 2.24 acres. The AIS identified two historic properties within the APE: Bridge No. 7E (SIHP #50-30-10-2285) and a historic earthen ditch (SIHP #50-30-10-2286). SIHP # 50-30-10-2285 was evaluated as not eligible for the Hawaii Register of Historic Places (HRHP) or the National Register of Historic Places (NRHP). SIHP #50-30-10-2286 was evaluated as eligible for both the HRHP and the NRHP under Criterion D chiefly because of what can be learned by data recovery and its minimal value for preservation in place.

SHPD has reviewed the undertaking. Per Section 106 of the National Historic Preservation Act, the State Historic Preservation Officer (SHPO) **concurs** with CFLHD's determination of **no adverse effect** on historic properties within the APE.

Per Chapter 6E-8 of Hawaii Revised Statutes, SHPD has reviewed the undertaking and has found that it is unlikely that historic properties will be affected by the proposed project. Therefore, SHPD has made the determination of **no historic properties affected**.

CFLHD is the office of record for this undertaking. Please maintain a copy of this letter with your environmental review record for this undertaking. If you have any questions about this undertaking or there is a change to the scope of work, please contact Jessica Puff, Architectural Historian, at (808) 692-8023 or at Jessica.L.Puff@hawaii.gov. For archaeological questions please contact Mary Jane Naone, Kauai Lead Archaeologist, at (808) 271-4940 (Oahu number) or at MaryJane.Naone@hawaii.gov.

Mahalo,

Dr. Alan Downer
Deputy State Historic Preservation Officer

In the event that historic resources, including human skeletal remains, cultural layers, cultural deposits, features, artifacts, or sinkholes, lava tubes or lava blisters/bubbles are identified during construction activities, all work should cease in the immediate vicinity of the find, the find should be protected from additional disturbance, and the State Historic Preservation Division should be contacted immediately at (808) 692-8015.

cc: Christine Yamasaki (HDOT), Christine.Yamasaki@hawaii.gov
Todd Nishioka (HDOT), Todd.Nishioka@hawaii.gov
Kiersten Faulkner (HHF), Kiersten@historichawaii.org
Nicole Winterton (FHWA, CFLHD), Nicole.winteron@dot.gov

Appendix E
Final Cultural Impact Assessment for the Bridge 7E Replacement Project, Koloa District, Kauai, May 2016

Final

Cultural Impact Assessment for the Bridge 7E Replacement Project, Kōloa Ahupuaʻa, Kōloa District, Kauaʻi 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. Kaumualiʻi 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
Brittany Beauchan, M.A.,
S. Māhealani Liborio, B.A.,
Nicole Ishihara, B.A.,
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawaiʻi, Inc.
Kailua, Hawaiʻi
(Job Code: KOLOA 67)

May 2016

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Management Summary

Reference	Cultural Impact Assessment Report for Bridge7E 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 (Beauchan et al. 2016)
Date	May 2016
Project Number(s)	• FHWA/CFLHD Contract Code: DTFH68-13-R-00027 • CH2MHILL Project Task ID: 499069.10SU.CS • Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KOLOA 67
Agencies	FHWA/CFLHD, SHPD
Land Jurisdiction	Private; State Department of Transportation (HDOT)
Land Ownership	Kalihi Mountain Farms; Eric A. Knudsen Trust; State of Hawai‘i
Project Proponent	FHWA/CFLHD, HDOT
Project Funding	FHWA/CFLHD
Project Location	The proposed project is located along Kaumuali‘i Highway, Route 50, approximately 800 feet (ft) west of the Maluhia Road/Kaumuali‘i Highway intersection within Kōloa Ahupua‘a, Kōloa District, Kaua‘i. The study area is depicted on a portion of the 1996 Koloa U.S. Geological Survey (USGS) topographic quadrangle.
Project Description	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. The bridge is not eligible for listing on the National Register of Historic Places (NRHP). 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 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.
Project Acreage	The project area includes approximately 0.91 hectares (2.24 acres).
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.
Results of Background Research	Background research for this project yielded the following results: 1. An 1885 interview document states a native named Makea familiar with Kōloa Ahupua‘a knew of 14 *heiau* (pre-Christian place of worship) in the area. Wendell Clark Bennett conducted fieldwork from 1928 to 1929 and reported four *heiau* within Kōloa: Kāneiolouma, Mauli‘ili‘i, Kihouna, and Kanehaule. 2. Previous archaeology and historical accounts indicate the *mauka* lands of Kōloa consisted of a well-maintained agricultural complex of taro, yams, sweet potato, and sugarcane irrigated by an extensive *‘auwai* (irrigated ditch) siphoned off Waikomo and Pō‘ele‘ele streams. 3. Kōloa became the site of the first organized sugar plantation in the Hawaiian Islands. Ladd and Company leased 1,000 acres for the sole purposed of growing sugarcane (Palama and Stauder 1973). The commercialization of sugar in Kōloa had widespread social effects that changed the traditional view of the *‘āina* (land) and responsibility of the *ali‘i* (chief).

	4. Kōloa Town and Kōloa Landing became commercial centers during the mid- to late 1800s with the exportation of sweet potatoes, sugar, and molasses. Whalers also stopped for provisions such as pumpkins, salt, salted beef, pigs, and cattle (Palama and Stauder 1973:20). 5. By 1912, the Koloa Sugar Company built a new and larger mill, which included a railroad track and an asphalt road built to connect the mill to Kōloa Landing. World War I caused a huge demand for sugar. However, in 1925, Kōloa Landing was phased out when McBryde Sugar and Koloa Sugar began to ship their products out of Port Allen in Hanapēpē. The *makai* Kōloa lands were eventually phased out for cattle pastures by the Knudsen family. The *mauka* lands in Kōloa remained under sugar cultivation until the 1970s, when these were also converted to pasture. 6. During the late 1960s, Kōloa experienced a reverse migration back to the *makai* areas. Tourism drove development near the shoreline resulting in construction and service jobs moving away from the town center.
Results of Community Consultation	CSH attempted to contact Native Hawaiian organizations (NHOs), agencies, and community members. Below is a list of individuals who shared their *mana‘o* (thought, idea) and *‘ike* (experience, knowledge) about the project area and Kōloa Ahupua‘a. 1. Billy Kaohelauli‘i, family from Kaua‘i; *lawai‘a* (fisherman), his grandfather was a former policeman in Poi‘pū 2. Rupert Puni Rowe, *kama‘āina* (native-born, local), from one of the oldest families in Kōloa 3. Reginald Gage, retired Chief Appraiser and Real Property Assessor for the County of Kaua‘i; self-interest in Kaua‘i history; trustee of Grove Farm Homestead Museum; Vice President of Waioli Corporation 4. Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano (Branch Harmony), *kupuna* (elder) and *kama‘āina* of Kōloa Ahupua‘a
Non-Cultural Community Concerns and Recommendations	Based on information gathered from community consultation, participants voiced the following non-culturally relevant concern: 1. A community concern expressed during consultation included the impacts of construction on traffic in both directions. The community offered no recommendations regarding traffic mitigation measures.

Impacts and Recommendations	Based on information gathered from the cultural and historical background and the community consultation, CSH identifies potential impacts and makes the following preliminary recommendations: 1. Previous archaeology conducted within the project area indicated four historic-era properties, however, no *iwi kūpuna* (ancestral bones) were discovered. In the event that any potential historic properties are identified during construction activities, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the event that *iwi kūpuna* are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD and Police Department will be notified pursuant to HAR §13-300-40. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended. 2. A community member expressed concerns regarding the effects of construction on individuals who gather or utilize natural resources in the vicinity of the project area; these individuals may include, but are not limited to, fisherman and hunters. The community member offered no recommendations for mitigating the effects of construction on fisherman and/or hunters. 3. Another community concern regards the effects of construction on the surrounding stream and estuarine environment. Concerns were additionally expressed regarding the impacts of construction on water quality and streamflow, and potential impediments to stream access. The community also noted that bridge construction may potentially impact houses, homesteads, and individuals or groups who have rights to the stream. The community recommended the route of the stream be “traced,” and an investigation undertaken to determine which individuals or organizations use the water.

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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 (CIA) report for the Bridge 7E Replacement Project, Kōloa Ahupua‘a, Kōloa (Kona) Moku (District), Kaua‘i, 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 (ROW). The proposed project is located along Kaumuali‘i Highway, Route 50, approximately 800 feet (ft) west of the Maluhia Road/Kaumuali‘i Highway intersection within Kōloa, Ahupua‘a, Kōloa District, Kaua‘i Island. 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). The project area includes approximately 2.24 acres.

The purpose of the project is to replace the existing deficient bridge to meet current design standards for roadway width, load capacity, bridge railings, and transitions. The existing bridge was constructed in 1933 and is composed of reinforced concrete consisting of two culvert cells with wing-wall abutments. The bridge has a length of approximately 23 ft and a width of approximately 32 ft. The bridge surface consists of asphaltic concrete pavement.

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.

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).

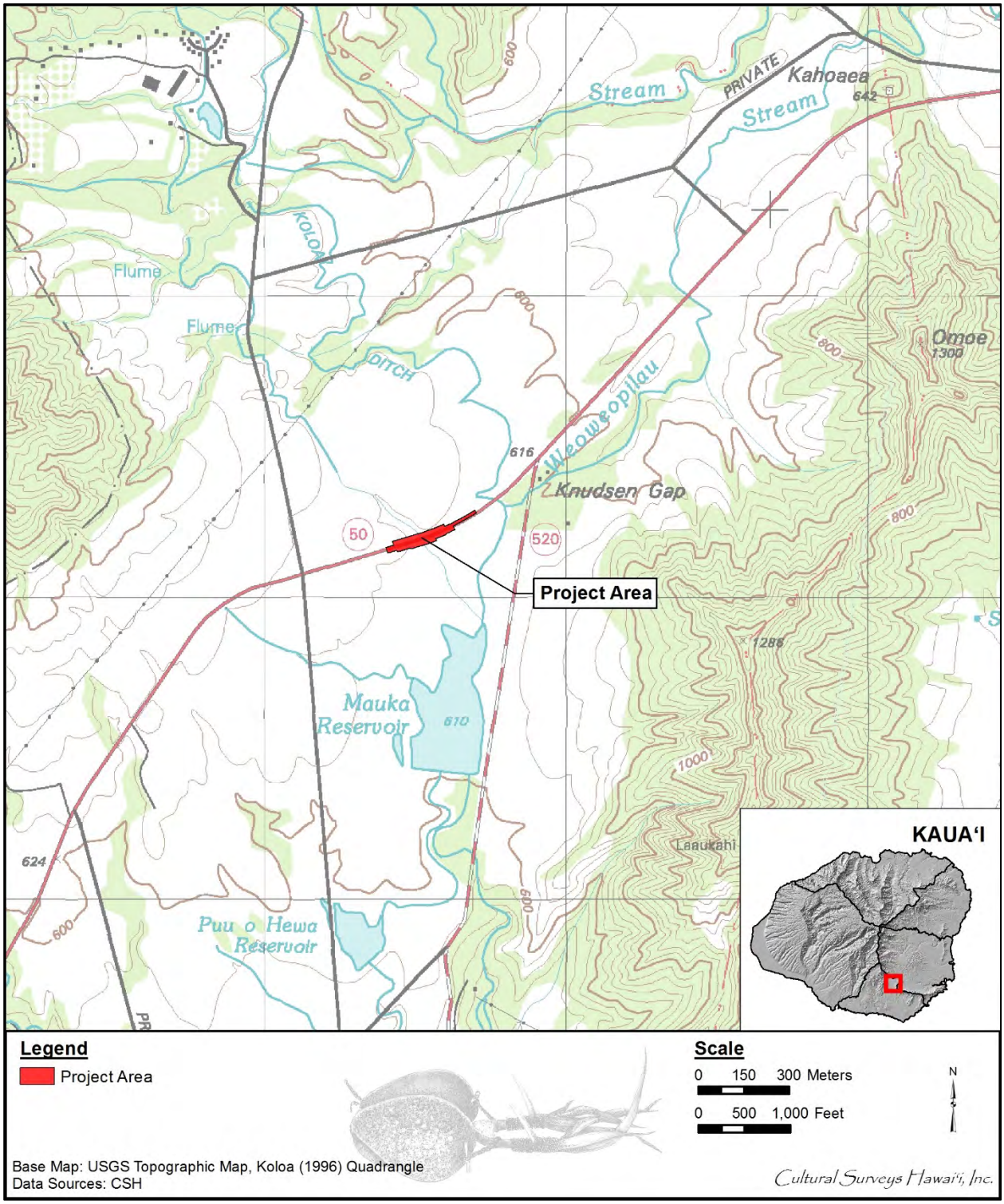

Figure 1. Portion of the 1996 USGS 7.5-minute topographic quadrangle showing the location of the study area

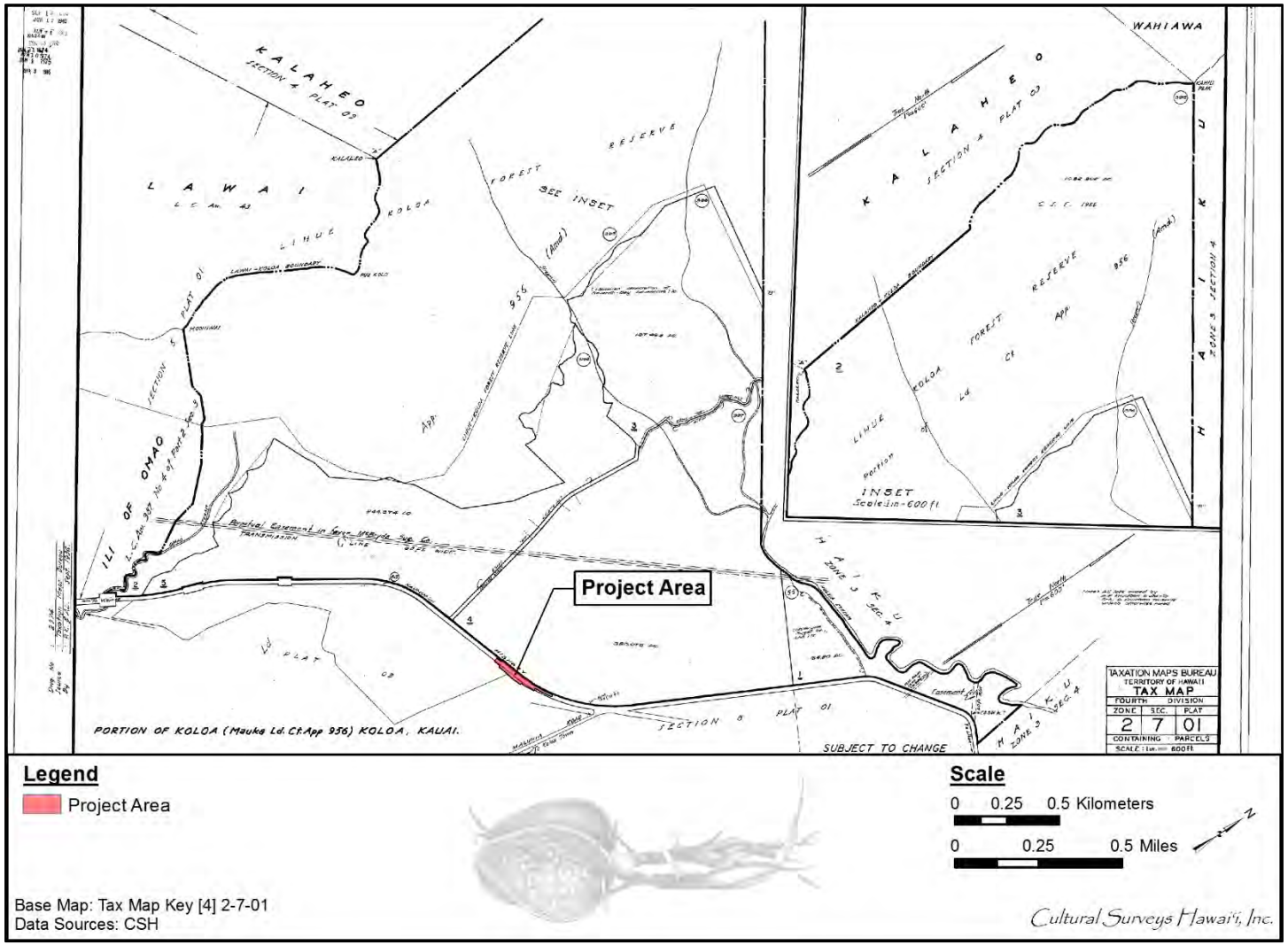

Figure 2. Tax Map Key (TMK) [4] 2-7-01 showing the location of the study area (Hawai‘i TMK Service 2012)

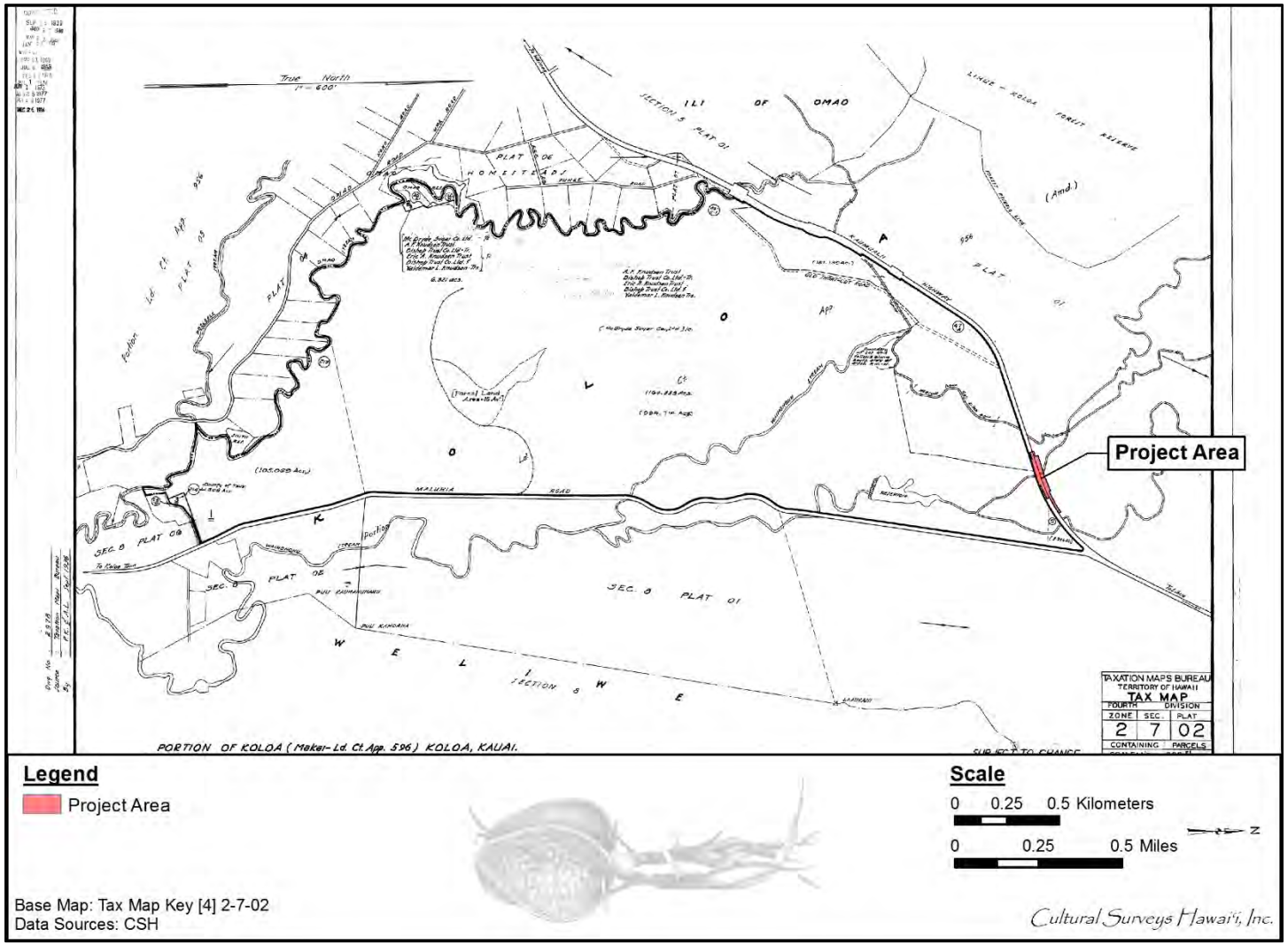

Figure 3. TMK: [4] 2-7-02 showing the location of the study area (Hawai‘i TMK Service 2012)

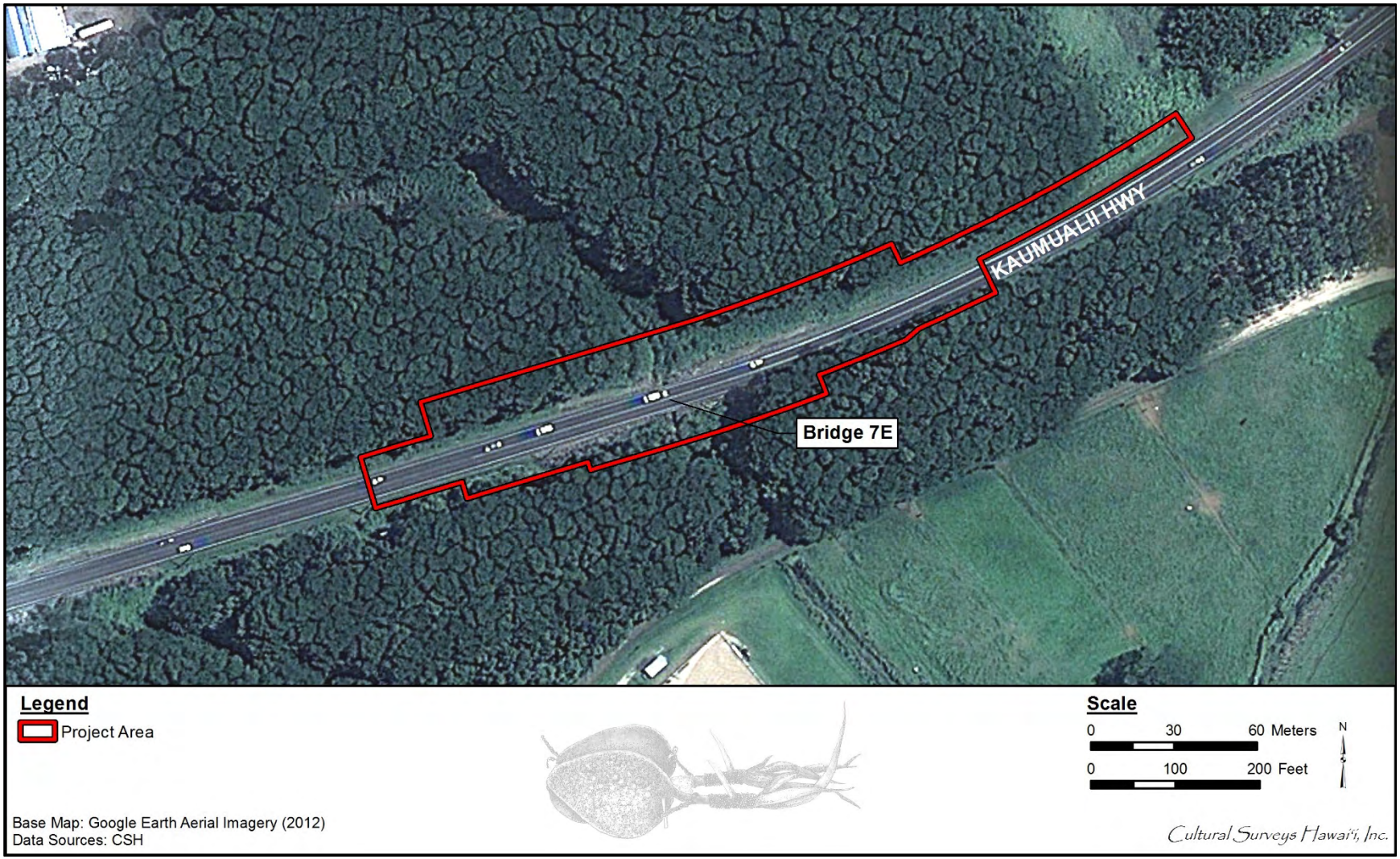

Figure 4. Aerial photograph showing the study area (Google Earth 2012)

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

The *ahupua‘a* (land division usually extending from the uplands to the sea) of Kōloa extends as a fairly large land segment from Mt. Kāhili to the sea. It is bordered by Lāwa‘i Ahupua‘a to the west and Weliweli Ahupua‘a to the east.

1.4.2 *Makani* (Prevailing Winds)

Northeasterly trade winds prevail throughout the year, although their frequency varies from 80 to 95% of the time during the summer months, when high-pressure systems tend to be located north and east of the Hawaiian Islands. During the winter months, the high pressure systems are located farther to the south, decreasing the occurrence of the trade winds to about 50 to 80% of the time (WRCC 2010).

The Wind Gourd of La‘amaomao tells the story of Pāka‘a and his son Kuāpāka‘a, descendants of the wind goddess La‘amaomao, who are given control over the winds of Hawai‘i which are contained in a gourd. Each wind could be called forth by chanting their names (Nakuina 1992). Pāka‘a’s chant traces the winds of Kaua‘i found in the *ahupua‘a* of Kōloa. *Makani* is the general Hawaiian word for wind. There are at least two different Hawaiian names for the winds found in the Kōloa Ahupua‘a: Malanai a gentle breeze, the trade wind of Kōloa (Nakuina 1990:149), and “Holomālani wind” (Ho‘oulumāhiehie 2008:16).

1.4.3 *Ua* (Precipitation)

Precipitation is a major component of the water cycle, and is 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).

The rainfall pattern on Kaua‘i is characterized by Wai‘ale‘ale near the island’s highest point (Kawaikini, 1 598 m [5,243 ft]), and a minimum, Kekaha, along the western coast of the island. The rain gauge at Mt. Wai‘ale‘ale receives more rainfall than any other gauge in the world. With an annual median of 11,415 mm (449 inches), it is one of the wettest locations on earth. Southwest of Wai‘ale‘ale, the Kekaha annual minimum is less than 500 mm (19.7 inches) (Giambelluca et al. 1986:17).

1.4.4 *‘Āina* (Soil Survey)

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 study 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 Kapa‘a Series are described as follows:

> This soil is on broad ridges in the uplands. Included in mapping were about 300 acres on Kauai, south of Puu Kolo peak and southwest of Knudsen gap. This soil formed in volcanic ejecta. The surface layer and the upper part of the subsoil contain less gibbsite than is typical.
>
> In a representative profile the surface layer is dark yellowish-brown silty clay about 14 inches thick. The subsoil, about 46 inches thick, is yellowish-red and reddish-brown silky clay that has subangular blocky structure. The substratum is soft, weathered rock. The surface layer is strongly acid. The subsoil is medium acid to very strongly acid.
>
> Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places root penetrate to a depth of 5 feet or more. [Foote et al. 1972:61]

Soils of the Halii Series are described as follows:

> This soil occurs on ridgetops and side slopes on uplands. In a representative profile the surface layer is very dark grayish-brown gravelly silty clay about 6 inches thick. The upper part of the subsoil is dark reddish-brown and strong-brown silty clay and clay loam that has subangular blocky structure. Red bands up to 2 inches thick are common. The lower part of the subsoil consists of bands of red clay loam that continue to a depth of more than 60 inches. The substratum is soft, weathered rock. The soil is very strongly acid in the surface layer and very strongly acid to extremely acid in the subsoil. Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. In places roots penetrate to a depth of 5 feet or more. [Foote et al. 1972:34]

1.4.5 *Nahele* (Vegetation)

Vegetation observed within the study area included exotic grasses, eucalyptus, and Albizia trees.

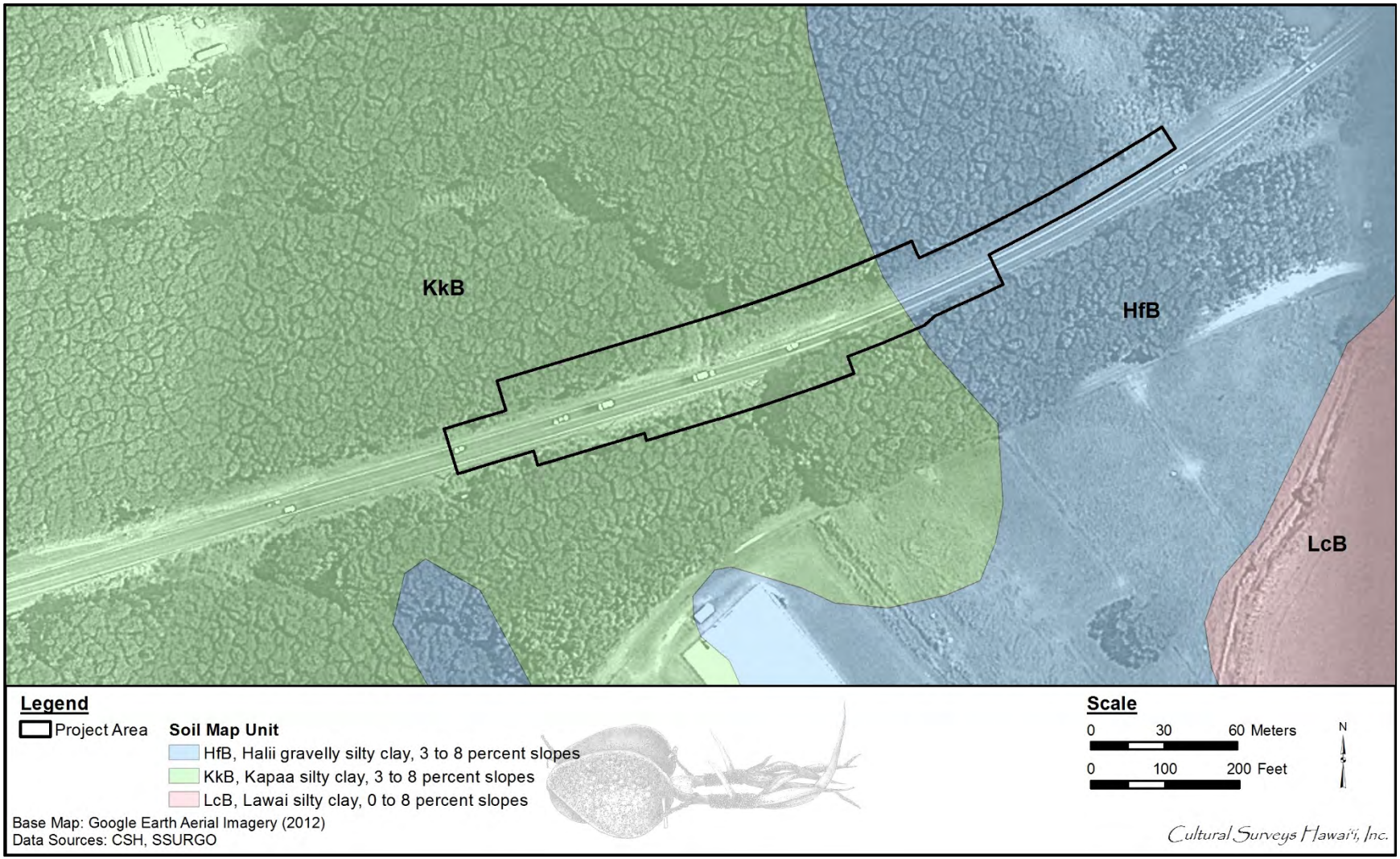

Figure 5. Aerial photograph (Google Earth 2012) showing the study area with an overlay of the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972)

1.4.6 Built Environment

The study area’s built environment includes a portion of Route 50 (Kaumuali‘i Highway) and Bridge 7E, the focus of the current project. Bridge 7E, also known as Hoinakaunalehua Bridge, was constructed in 1933. The area surrounding the highway is understood to be agricultural land used for sugarcane cultivation, now cultivated with eucalyptus and Albizia trees for renewable energy projects.

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* (chants), *mele* (songs), 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 accessed 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 by 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 on 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 the participant’s 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 interviewees' 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 with identifying past and current traditional cultural practices of the study area. Those aspects include general history of the *ahupua‘a*; 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," is 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 did 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 *kūpuna* who have passed on 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* of Kōloa

3.1 Traditional Legends Associated with Kōloa

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 parts of Hawaiian lifestyles, genealogy, history relationships, arts, and the natural environment. *Ka‘ao* are often full of hidden and double meanings (Pukui and Green 1995:ix).

Beckwith notes that Hawaiians use the term *ka‘ao* "for a fictional story or one in which fancy plays an important part" while *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. Originating before the time of the first Hawaiian in an age of mythical characters, these epic adventures inadvertently led to the Hawaiian race of *ali‘i* (chiefs) and *maka‘āinana* (commoners) alike. The *ka‘ao* from in and around the project area shared below 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 The Story of Pumaia

Hawaiian legends are filled with clever characters and mythical figures. The story of Pumaia tells the adventures of a man and his friend Wakaina. They traverse the two realms of the living and the dead and run into many creatures of different temperaments along their way home: a strong man who kills them, an evil prophet who seeks to kill them, and a wise owl deity who intervenes in the pursuit from the evil prophet (Fornander 1919:550–554).

> Pumaia was born in Koloa, Kauai. Malaihi was the father and Kuhihewa was the mother. They lived together until the child had grown up, and his body had acquired strength, when Pumaia said to his father, 'You will please let me go to see the club of my grandmother.' The father gather his consent. The son went, and arriving at the house of Kiha, his grandmother, he asked, 'Where is the club?' 'Here it is,' said the grandmother . . . He shouldered the club and commenced his journey. He caught up with Wakaina, and the latter inquired, 'Where are you journeying to?' 'Going sightseeing,' replied Pumaia. 'Please let me go with you.' Pumaia consented and they went along.
>
> Puukolea stood forth and called out, 'Whose offspring are you?' 'Our own,' replied Pumaia. 'If you excel in strength, you are saved; if your strength is meager, I will kill you.' Then they commenced to fight. That man, however, had a dual body, while these had the ordinary living body. Pumaia asked Wakaina, 'Which of us

shall be the first one to fight with this man?' The other replied, 'It is better that I do it.' Pumaia consented and Wakaina went to fight Puukolea. Before they commenced fighting, however, he chanted a portion of a song, thus:

Behold! Behold! The mere lehua of Puuoni,
Struggling with the clouds of the air,
Now above, now below the rain clouds.

. . . They kept on fighting until Pumaia was weakened. He thought of his club; so when Wakaina came back and inquired, 'How are you?' he answered, 'I am weak; go and fetch my club; perhaps it can do something.' While they yet spoke the other man appeared in a different body. The fought on, and before Pumaia could reach for his club, he was killed by this man; Wakaina also was killed. Their spirits returned on their parents and were seen by them . . .

Fear is creeping over us,
Coming for us to go;
We can not; we are held by Waiauau.
Come to give us life!
Life—indeed.

When these ghosts finished their chant the parents came out immediately, but they saw nothing. They looked here and there, but they would not see them. Meanwhile the two had gone as spirits until they met Pupuilima. Some people saw these two coming, but Pupuilima said: 'Those are not men; those are ghosts.' 'How do you know those are ghosts?' said the others. So they laid wagers. Pupuilima then said to them, 'I will spread an ape leaf on the ground; and if it breaks, then they are men, but if it does not, then they area spirits.' He spread it. Meanwhile Pumaia said to Wakaina, 'There is our death being prepared.' 'How shall we be saved?' Pumaia explained: 'Where my feet tread there you tread; because I was raised from my young days until I died, and until I found you; for this process is like that done to Pamano when by the spreading of an ape leaf he was saved.' So when they proceeded Pumaia trod on the ape leaf and it broke through; the friend treaded after him. They were chased by the prophet until they were caught. This is what I have obtained.

While they were going along they were given chase. They came along until they caught up with Pueonuiokona. The owl, however, did not catch sight of them while they were coming. When they had passed ahead the prophet who was chasing them caught up with Pueonuiokona. The owl asked, 'What is the cause of this heavy breathing and this perspiring?' This one answered, 'That you should be asking "what"? Spirits! And there they are! I am chasing them, but can not catch them; I have been wishing to get near them so that I can kill them, for I am possessed with great anger towards them.'

When the owl heard what the prophet had said, he said to him, 'You are a prophet, and I am a prophet, still I did not see them; and now I hear you saying that if you catch then they die.' Where they were holding this conversation, however, was on the plain of Kamaomao. While the others prepared to come for the spirits, Pumaia

said to his friend, ‘Here comes our death; but we will wait. If the new one gets ahead of the old one then we have hope for life.’

. . . While the prophets were following, and because Pueonuiokona was the faster, an idea occurred to one of them, and he said to himself, ‘If I catch up to that prophet I shall kill him, for he is simply going after my enemies to save them.’ The owl went along slowly until his fellow prophet thundered after him and gave his hand a jerk. Pueo asked, ‘What wrong has a fellow committed that you should tug at the arm from behind and thereby nearly tripping me?’ The other replied with blazing eyes, ‘Who told you to go after my enemies with the intention of saving them? Why don’t you look for your own, and on them practice saving?’ The owl replied: ‘If you excel in strength you can obtain them, but if you are weak you can not have them; because I, even I, am an old resident of the plain. When spirits from the dead arrive I cause them to revive. Also no prophet comes to this plain; this is the first time that I have seen a prophet on this plain, and that is yourself. Because you complained of my desire to give life to those spirits, so be it! By a test of strength will [we know] whether you obtain them or I do.’

They immediately commenced to fight. Where they fought was at Kalepolepo, near the isthmus. The prophet was killed and his entrails were disemboweled by Pueonuiokona and placed on the *akolea*. That shrub used to be plentiful at that place, but it is destroyed now on account of numerous animals.

August 8, 1872

Kiliona

[Fornander 1919:550–554]

3.1.2 Maulili Pool

The following *ka‘ao* names the pool Maulili in the Kōloa Moku as the headwaters of two major *‘auwai* (irrigated ditch) that flow throughout the *ahupua‘a*.

The pool of Maulili, on Waikomo stream, in Koloa District, Kauai, is a few hundred feet south of the Maulili road bridge. It was a sacred and noted place of olden times. The gods Kane, and his brother, Kanaloa, are said to have once slept above it, on its eastern bank and left the impress of their forms as can be seen in the apapa [stratum, flat, especially a coral flat]. The apapa in the vicinity is called ‘Unu’ and a ‘Heiau,’ but was never walled in, it is said. On the nights of Kane the drums are heard to beat there, also at the sacred rocks, or unu’s, of Opuokahaku and Kanemilohae, near the beach of Poipu, Ahupuaa of Koloa.

In the Maulili pool lived a large Moo, named ‘Kihawahine.’ At the brink of the waterfall into the pool once stood a sharp pointed rock, named Laaukahi (Puukaua), blasted away to make room for a water gate a few years ago. To the west of the waterfall, down in the pool is the flat rock named Kahonunuimaeaeae. The eastern was in the pool, just below the resting places of Kane and Kanaloa, for a short distance, only, is called ‘Pali o Koloa.’ The District of Koloa is named from this Pali. We are told by old Hawaiians. To the south of the Pali o Koloa, in the wall is a rocked named ‘Waihanau’; as one of their meles has it:

> ‘Aloha wale ka Pali o Koloa,
>
> Ke Ala huli i Waihanau e, hanau.’
>
> To the south of Waihanau is a projecting rock named ‘Ke elelo o ka Hawaii’—the tongue of Hawaii,—said to have been wrested and brought from Hawaii by the Kauai warrior Kawelo, of Wailua.
>
> At the southern end of the Maulili pool start two large auwai’s, that watered the land of East and West Koloa. [Thrum 1905:92–93]

Kamakau offers a more complete version of this same *mele*, the only different is the word “*ala*” which has been recorded as “*alo*” it could either be a misprint or misunderstanding

> *Aloha ka pali o Koloa,*
>
> *Ke alo huli i Waihanau e,*
>
> *Hanau, Hanau,*
>
> *Aloha wale ka hoahanau,*
>
> *Ka ho‘i wale i ke Kahaloa e*
>
> *Ho‘i wale--ho‘i wale.*
>
> Greeting to the cliffs of Koloa
>
> That turn to face Waihanau,
>
> Hanau, Hanau,
>
> True aloha to my kinsmen
>
> Who turn to go on the long trail
>
> Empty handed! Empty handed!
>
> [Kamakau 1961:344]

3.1.3 Ke Kōloa o Kaikapū

Kaikapū was a *mo‘o* (lizard, water sprit) who guarded the Kōloa shoreline keeping residents and visitors away from swimming holes and food sources on the reef and offshore (Wichman 1991:88). Her favorite trick was to hide herself in the rocks near the mouth of Waikomo Stream, listening for sounds of people. When she heard voices, she would swim furiously around the point and grab the fishermen from the rocks or a swimmer near the shore. The residents of Kōloa feared Kaikapū and soon no one came close to the ocean. As a result of Kaikapū’s antics, no one ate any fish; gathered the *līpoa* (bladelike, branched brown seaweed; *Dictyopteris plagiogramma*) used to flavor their food; or worked at the salt pans along the shoreline (Wichman 1991:88).

Liko and his grandmother stared at the Kōloa shoreline hopeless and angry. Liko’s grandmother sighed:

> ‘I would like a taste of i‘a ho‘omelu,’ she said. ‘I dream of the delicious pieces of raw hīnālea [wrasse; *Labridae*] fish mixed with red salt, roasted kukui [candlenut; *Aleurites moluccana*] nuts and brown līpoa seaweed.’ Even though some people thought this fermented relish had an offensive smell, Liko’s grandmother loved to

> spice her poi [Hawaiian staff of life made with cooked taro corms] with it. [Wichman 1991:88]

Liko decided his grandmother would have what she wanted and headed to the shore. Liko stared at Kaikapū and watched her movements. When it reached low tide and the waves became flat, he looked along the coastline remembering where he once gathered *līpoa* and caught *hīnalea* (wrasse; *Labridae*) (Wichman 1991:89). Kaipapū dove under the water and hid, while Liko stood on a bluff and observed that the *mo‘o* did not come up.

> ‘Lizard or no lizard,’ he muttered, ‘I’m going to catch a hīnālea and gather some līpoa.’
>
> Below him a wave surged up through the hole in the rocks. The water poured back into the hole and Liko smiled. He had an idea.
>
> He ran home and got his sport spear made of heavy kauila wood, sharp at both ends and very strong. He picked up his funnel-mouthed hīnālea trap wove from ‘inalua vine. He returned to the edge of the rocks, grasped his spear and fish trap and dove into the water, kicking hard to reach some rocks where he anchored the fish trap. His lungs grew tight, hurting from the lack of air, and he surfaced. [Wichman 1991:89]

Liko resurfaced and heard a snort. It was Kaikapū, smiling, and opening her jaws to swallow Liko. He yelled and hit the water vigorously. Kaikapū was surprised at how defiant Liko was but did not hesitate to try and eat him. Opening her jaws to swallow Liko, she instead felt a sharp pain as the *kauila* (native tree in the buckthorn family; *Alphitonia ponderosa*) spear pierced her mouth. Screaming, Kaikapū tossed her head to rid herself of the spear.

Liko’s grandmother stood on the shoreline and watched:

> ‘Kaikapū!’ she called, ‘Here I am. Take me instead!’
>
> ‘No!’ Liko yelled. ‘Grandmother, go back!’

Kaikapū was enraged and could only think of Liko who was still in the water. Liko dove down to find the opening in the lava tube that led to the rocky shoreline. He struggled to find the opening. Kaikapū saw his feet fluttering as he slipped into the narrow lava tube. Never considering her own size, Kaikapū chased Liko into the lava tube. At that moment, a surge of water pushed through the lava tube and Liko managed to pull himself onto the rocks where his grandmother met him. Just then another wave surged and a roar resonated through the lava tube. It was Kaikapū. She was stuck in the lava tube. From that day on, the seashore was free for everyone to use.

3.2 *Wahi Pana*

3.2.1 Kōloa

There are place names within Kōloa that have legendary associations. The name Kōloa itself has several derivations. Kōloa is the name of a steep rock on the banks of Waikomo Stream, from whence the *ahupua‘a* got its name. This bank of the river was called Kōloa after the native Hawaiian duck (*Anas wyvilliana*) (Kikuchi 1963:46; Pukui et al. 1974:116). The presence of freshwater ponds in the *makai* portion of Kōloa attracted the *koloa maoli* (*Anas wyvilliana*) or

native duck; their attraction to the freshwater may have also influenced Kōloa's place name (Handy and Handy 1972:428).

3.2.2 Maulili Pond

Maulili translates as "constant jealousy." It is a deep pool in Waikomo Stream in the uplands of Kōloa mentioned in the *mo‘olelo* above. When the gods Kāne and Kanaloa first came to Kaua‘i, legends say they explored the island and came to the pool at Maulili at evening. They stretched out beside the pool for their night's sleep on its eastern bank and left the impression of their forms within the rock, as can be seen in the *‘āpapa* (a flat area). Kiha-wahine, a fearsome *mo‘o* goddess, lived in Waihānau Pool, near Maulili Pond. When she was there in residence, the water turned red and no one dared to swim there (Wichman 1998:40).

3.2.3 Palila

Palila was the son of Ka-lua-o-pālena and Maihi-iki (Wichman 2003:45). He was taken from his mother since birth and raised by his grandmother, Hina, in the temple of Alana-pō where he trained to be a warrior. He only ate bananas from two patches grown for him. One patch was located along a bank in Wailua, while the other was located in the *mauka* section of Makaleha. Palila trained hard and demonstrated his skills to his grandmother who replied, "Yes, you are halfway through your learning . . . You only use your right arm. Now learn to use your left arm," (Wichman 2003:45). His teachers were astounded but Palila continue to train. On the day he completed his training, he heard a battle echoing over the ridge that divided the plains of Puna from Kōloa. Curious about the commotion, he wanted to ask his grandmother, but she was nowhere to be found. Hina was in the battlefield to warn Ka-lua-o-pālena that his son Palila would be coming to assist:

> Hina said to Ka-lua-o-pālena, ‘Be on your guard. Three warriors will come before you today. The first will be Ka-kohu-koko from Moloa‘a. He claims it takes forty men to carry his war club. Do not choose him. The second will be Lupe-a-ka-wai-o-Wainiha. He will claim it takes 120 men to carry his war club. Do not choose him. Then will come a third warrior, twirling his war club in his right hand, then in his left hand. He will be the warrior by whose help you will conquer all of Kaua‘i.' [Wichman 2003:45]

Ka-hoku-koko and Lupe-a-ka-wai-o-Wainiha both showed up and Ka-lua-o-pālena denied both of them. Both warriors were shamed and returned to their homes. However, Palila did not present himself and Hina's words were not fulfilled. Ka-lua-o-pālena drew up his army and prepared for battle.

Palila continued to follow the noises of the battle over the ridge. He looked down on Kōloa, Weliweli, and Pā‘ā and saw two armies facing each other. One army was led by his father, Ka-lua-o-pālena, while the other was led by the Kona chief, Ka-maka-o-ka-lani. Palila stood on a point called Ke-komo-o-ke-anu ("coming of the cold") where he was seen by both armies. From Palila's vantage point, he could see that his father had a standard war formation while Ka-maka-o-ka-lani's was thin. The remainder of the Kona chief's men were hidden in the surrounding forests and ready to ambush Ka-la-o-pālena. Outraged, Palila went to the edge of the forest and with a blow of his club, knocked down a tree which began a domino effect until the entire forest had fallen. Ka-maka-o-ka-lani's hidden army was then killed. Palila walked into the battlefield to face the Kona chief,

challenging him to a one-on-one combat. Palila held his club in his right hand and a dagger in the left. Ka-maka-o-ka-lani did not notice the dagger and died (Wichman 2003:46).

Ka-lua-o-pālena approached his son and stretched out on the ground offering himself as a sacrifice. Palila raised his club, lowered it, rested it on the ground, and leaned on it. The club sank into the ground and as Palila pulled it up, a spring emerged. Hina crossed the field and welcomed Palila. Ka-lua-o-pālena and his army rose, welcoming and thanking Palila. The army turned to the fallen forest where the spring now created a lake, which is still in Kōloa (Wichman 2003:47). Within days a messenger came from the ruling chief of O‘ahu who requested Palila’s help. Palila had many adventures on O‘ahu and Hawai‘i, eventually becoming the ruling chief of Hilo. Hina predicted Palila would eventually reign Hilo, thus naming him after the honeycreeper only found on Hawai‘i island.

3.3 *Heiau* (Temple)

3.3.1 Kāneiolouma Heiau

The *heiau* (pre-Christian place of worship) was first surveyed by Thomas G. Thrum and later published in *The Hawaiian Almanac and Annual* (1907), which documented *heiau* throughout the Hawaiian Islands. Wendell Clark Bennett also surveyed *heiau* on Kaua‘i between 1928 and 1929, later documenting and publishing his finds for Bishop Museum (Bennett 1931:3). Kāneiolouma Heiau is located along the shores of Po‘ipū near Kihouna Heiau (see Section 3.3.3). Kāneiolouma, being the larger of structure of the two, consists of three large sections and four rooms with limestone slabs in the middle section (Bennett 1931:119). Mary Kawena Pukui offers *mo‘olelo* on the structure below:

> O Olouma kekahi haiau, aia no i Koloa, Kauai, mauka ae o Hooleina-ka-puaa, he loko mauka o na hale, a o ka haiau iho e pili pu ana, o Kiha no ke alii nona ia haiau. He unu hai puaa i-a ula a pela aku. O lonoikaoualii ke alii, o Wakea ke kahuna, mai Oahu mai ka pohaku i hana ia ai o ka haiau na ka menehune i hana.
>
> Louma was another heiau, which also stood in southern Koloa on the mountainward side of Ho‘oleina-ka-puaa (Place-to-throw-in-the-pig), a pond on the mountainward side of the houses. The heiau was close by. Kiha was the chief to whom it belonged. It was a heiau in which hogs, red fishes etc. were offered. Lonoikaouali‘i was the chief and Wakea was the priest who brought the stones from Oahu. The menehune built the heiau. [Pukui 1936]

3.3.2 Maulili Heiau

The Maulili Heiau was first built by Ka-pueo-maka-walu, the son of Kapu-lau-kī. It was a place of human sacrifice (Wichman 1998:12). In 1885, a Lahainaluna document was published based on an oral history project. On 7 September 1885, a student from Lahainaluna Schools interviewed Makea—“a native who is well acquainted with Kōloa”—and recorded “what she said about the well-known places in the olden times” (Lahainaluna Schools 1885). Makea also discussed Maulili Heiau:

> Maulili was the first heiau of south Koloa. Kapulauki was the first chief of Koloa, Kiha came next. That is the chief that I know of. He was a ruling chief of Kauai in the olden days, when the heiau was standing there. It had already been built and men had been sacrificed on its altars. This Kiha was called Kiha-of-the-luxuriant-

> hair. Another rname for him was Kakae and another was Ka-pueo-make-walu (Eight-eyed-owl).
>
> This heiau was also famous for this reason—that was the heiau to which Kawelo was carried after he had swooned in Wahiawa in the battle where stones were used as missiles.
>
> The location of this heiau was not known, but a deaf mute knew and it was he who pointed it out to the chiefs and that is how it was rediscovered in the olden days. Kiha lived on the eastern side of the heiau and Aikanaka lived on the northeastern side. This chief Aikanaka was the one with whom Kawelo fought and he was the owner of this heiau at that time. [Lahainaluna Schools 1885:165]

3.3.3 Kihouna Heiau

This *heiau* sits near Kāneiolouma Heiau also located on the shores of Po‘ipū. The single walled enclosed *heiau* consists of walls measuring in 4 to 6 ft in height (Bennett 1931:118–119).

> Kihouna Heiau, which is also spelled Kihahouna, is 100 feet by 125 feet and is believed to have been dedicated to fishing and agricultural deities. The walled structure had virtually disappeared until it was reconstructed in 1984. [Friends of the Koloa Community 1985:22]

3.3.4 Kānehaule Heiau

Located in Kaunuieie, Kōloa, the site occupies the *mauka* portions of the *ahupua‘a*, along a small tributary of Omao Stream (Bennett 1931:122). Thrum described the *heiau* as: “A paved walled enclosure of large size, destroyed some time ago: a heiau where the rites of circumcision were performed” (Thrum 1906:36).

3.4 *‘Ōlelo No‘eau*

Mary Kawena Pukui is known as one of the greatest contributors to the preservation of the Hawaiian language, a scholar, and ethnographer. Hawaiian knowledge was shared by way of oral history and many often competed in poetic battles of wit to see who could ascribe the most *kaona* (layered hidden meaning) to the simplest phrase. The following section draws from Pukui’s knowledge of Hawaiian folk tales, proverbs, and sayings to describe the *‘āina* (land) in the project area. The *‘ōlelo no‘eau* is first described, followed by the Hawaiian phrase and English translation.

3.4.1 ‘Ōlelo No‘eau #47

The proverb uses a play on words to express the feeling of drunkenness.

Aia i Kōloa.

Is at Kōloa.

A play on *kō* (drawn) and *loa* (long)—drawn a long way under. Drunk.

[Pukui 1983:8]

Section 4 Traditional and Historical Accounts

4.1 Historical Accounts

4.1.1 Captain Cook's Visit to Kaua‘i 1778

Kaua‘i Island was the first island in the archipelago to be approached by western explorers. The first Hawaiians to engage in trade with the outside world were from Kōloa. The event took place off Makahū‘ena Point, and Cook recorded this in his journal of 19 January 1778:

> seeing some Canoes come off from the shore towards the Ships, I brought to give them time to come up . . . they exchanged a few fish they had in the Canoes for any thing we offered them, but valued nails, or iron above every other thing . . . [Donohugh 2001:50]

Bernice Judd, writing in 1935, summarized most of what was known of the traditional Hawaiian life of Kōloa:

> In the old days two large *‘auwai* or ditches left the southern end of the Maulili pool to supply the taro patches to the east and west. On the *kuāuna*s [embankments] the natives grew bananas and sugar cane for convenience in irrigating. Along the coast they had fish ponds and salt pans, ruins of which are still to be seen. Their dry land farming was done on the *kula* (dry land), where they raised sweet potatoes, of which both the tubers and the leaves were good to eat. The Hawaiians planted *pia* (arrowroot) as well as *wauke* (paper mulberry) in patches in the hills wherever they would grow naturally with but little cultivation. In the uplands they also gathered the leaves of the *hala* (screwpine) for mats and the nuts of the *kukui* (candlenut) for light. [Judd 1935:53]

Beginning possibly as early as 1450, the "Kōloa Field System" was planned and built on the shallow lava soils to the east and west of Waikomo Stream. The Kōloa Field System is characterized as a network of fields of both irrigated and dryland crops, built mainly upon one stream system. Waikomo Stream was adapted into an inverted tree model with smaller branches leading off larger branches. The associated dispersed housing and field shelters were located among the fields, particularly at junctions of the irrigation ditches. In this way, the whole of the field system was contained within the entire *makai* portion of the *ahupua‘a* of Kōloa, stretching east and west to the *ahupua‘a* boundaries.

The field system, with associated clusters of permanent extended family habitations, was in place by the middle of the sixteenth century and was certainly expanded and intensified continuously from that time. Long *‘auwai* were constructed along the tops of topographic high points formed by northeast-to-southwest-oriented Kōloa lava flows, and extended all the way to the sea. Habitation sites, including small house platforms, enclosures and L-shaped shelters were built in rocky bluff areas that occupied high points in the landscape and were therefore close to *‘auwai*, which typically ran along the side of these bluffs (Hammatt et al. 2004). From AD 1650-1795, the Hawaiian Islands were typified by the development of large communal residences, religious structures, and an intensification of agriculture. Large *heiau* in Kōloa may date to this period.

The manufacture of salt was important for Native Hawaiians. Many of the larger salt pans on Kaua‘i are located near Nōmilu, “where people came in the summer to gather salt when the winds blow the salt across the surface of the pond at the edge of the pond where it was carefully scooped out with the hands or with pieces of gourd shell and dried” (Wichman 1998:35). The importance of salt manufacture in the area was illustrated in the 1874 Boundary Commission determination for Kōloa, where the oral testimony of Pene Kalauau claimed he had come all the way “from Koolau to go to Koloa for salt” (Boundary Commission, 1874, Kaua‘i 1:124).

4.1.2 Early Historic Period

By the early 1800s, Kōloa Landing had become the principal port of Kaua‘i. Shipments of North American furs and pelts to the Orient depended on the provisioning of ships at Kōloa Landing, as well as other Hawaiian ports. As the fur trade grew, markets in China became aware of sandalwood grown in the Hawaiian Islands. The shipment of most of Kaua‘i’s sandalwood to the Orient took place at Kōloa Landing, until the supply of the fragrant wood was exhausted around 1830.

Accounts by visitors and settlers at Kōloa focused on the early westerners’ own concerns—religious and commercial—as these concerns appeared within the historical record of Kōloa in the 1800s. However, scattered throughout the accounts are occasional references to the Hawaiians of Kōloa that give some insight into their lives.

The American Board of Commissioners for Foreign Missions (ABCFM) missionary Samuel Whitney described in a *Missionary Herald* article (June 1827:12) an 1826 visit to Kōloa with Kaikio‘ewa, the governor of Kaua‘i:

> The people of this place were collected in front of the house where the old chief lodged in order to hear his instructions. After a ceremony of shaking hands with men, women, and children they retired . . .
>
> Our company consisted of more than a hundred persons of all ranks. The wife of the chief, with her train of female attendants, went before. The governor, seated on a large white mule with a Spaniard to lead him, and myself by his side, followed next. A large company of *aipupu* [*‘ā‘īpu‘upu‘u* (stewards)], cooks, attendants came on in the rear. [*Missionary Herald* June 1827:12]

Whitney’s account suggests something of the deference paid to the *ali‘i* (chief) by the local populations and the scale at which the *ali‘i* carried out their functions. An even grander view of that deference was provided in an account of a later visit by an *ali‘i* to Kōloa. John Townsend, a naturalist staying in Kōloa in 1834, described a visit by Kamehameha III:

> In the afternoon, the natives from all parts of the island began to flock to the king’s temporary residence. The petty chiefs, and head men of the villages, were mounted upon all sorts of horses from the high-headed and high-mettled California steed, to the shaggy and diminutive poney [*sic*] raised on their natives hills; men, women, and children were running on foot, laden with pigs, calabashes of *Poe* [*sic*], and every production of the soil; and though last certainly not least, in the evening there came the troops of the island, with fife and drum, and ‘tinkling cymbal’ to form a body guard for his majesty, the king. Little houses were put up all around the vicinity, and thatched in an incredibly short space of time, and when Mr. Nuttall, and myself visited the royal mansion, after nightfall, we found the whole

> neighborhood metamorphosed; a beautiful little village had sprung up as by magic, and the retired studio of the naturalists had been transformed into a royal banquet hall. [Palama and Stauder 1973:18]

On 31 December 1834, Peter Gulick and his family arrived in Kōloa. Apparently the first foreigners to settle in the *ahupua‘a,* they initiated the process of rapid change that would reshape the life of Kōloa in the nineteenth century. In 1835, a 30 by 60-ft grass house was erected as a meeting house and school near the Maulili Pond. Mr. Gulick cultivated sugarcane and collected a cattle herd for the Protestant Mission. In 1837, a 45 by 90-ft adobe church was built where Kōloa Church stands today, and the first mission doctor, Thomas Lafon, arrived to assist Mr. Gulick (Damon 1931:179, 187). The Kōloa mission station apparently flourished immediately. Navy Lieutenant Charles Wilkes, a member of the U.S. Exploring Expedition, during his visit to Kōloa in 1840 recorded the following:

> The population in 1840, was one thousand three hundred and forty-eight. There is a church with one hundred and twenty-six members, but no schools. The teachers set apart for this service were employed by the chiefs, who frequently make use of them to keep their accounts, gather in their taxes &c. The population is here again increasing partly by immigration, whence it was difficult to ascertain its ratio. [Wilkes 1845:64]

Kōloa Village and Kōloa Landing, at the mouth of the Waikomo Stream, became flourishing commercial centers as trade with Americans and Europeans grew (Figure 6). An estimate in 1857 stated that “10,000 barrels of sweet potatoes were grown each year at Kōloa, and that the crop furnished nearly all the potatoes sent to California from Hawai‘i” (Judd 1935:326). Sugar and molasses were also chief articles of export. Whalers used the Kōloa “Roadstead” from 1830 to 1870, and took on provisions of squashes (pumpkins), salt beef, pigs, and cattle (Damon 1931:176). Hawaiians grew the pumpkins on the rocky land north of the landing. There were also numerous salt pans along the shore near the landing that were used to make the salt (Palama and Stauder 1973:20).

4.1.3 The Māhele and the Kuleana Act

To try to maintain sovereignty of the land, the *mō‘ī* (king, sovereign) 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* 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 were set aside to generate revenue and were managed by the government. In 1850, these three categories of land were subject to the rights of the *maka‘āinana* (commoners) 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 a specified time period 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

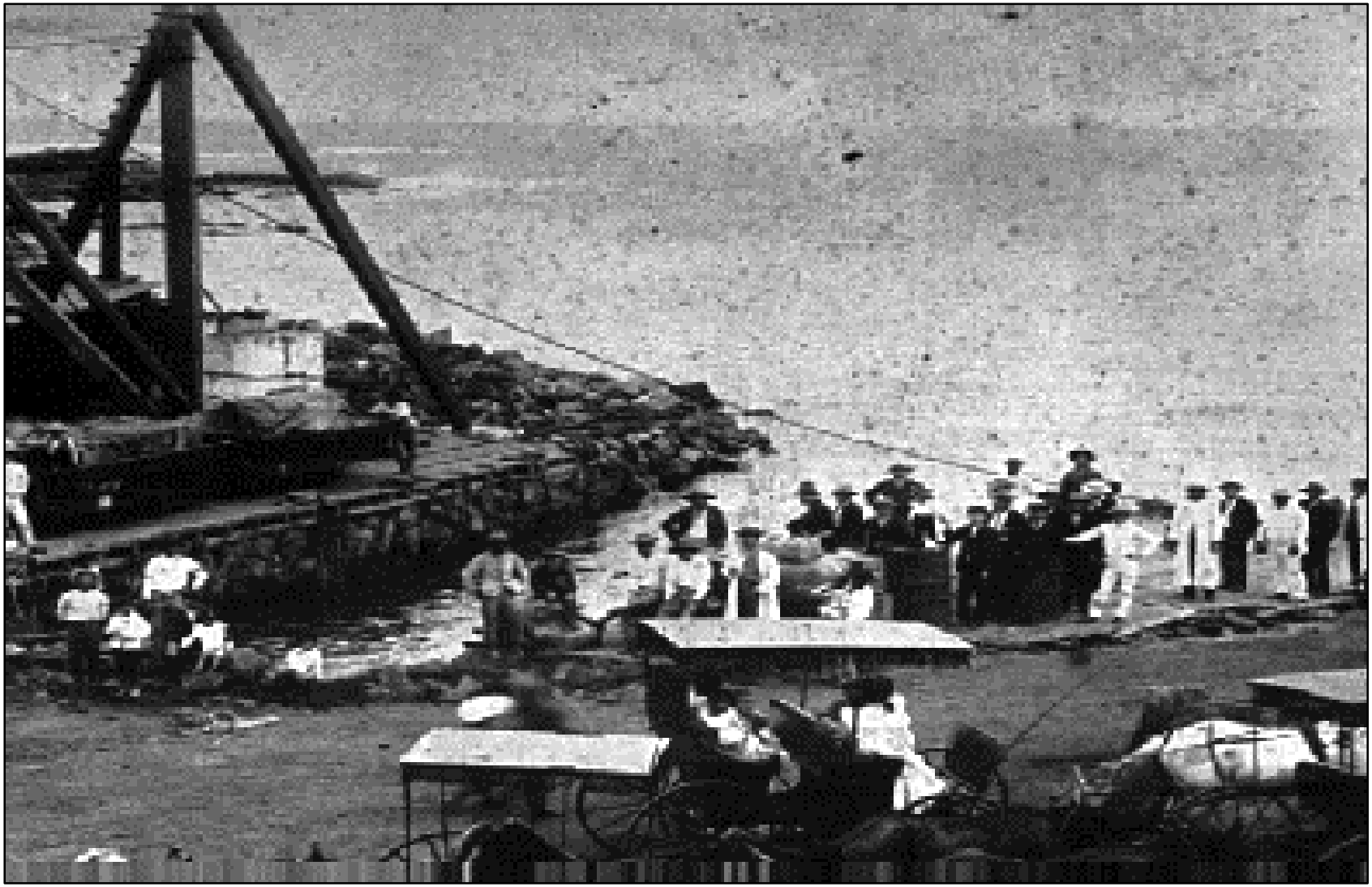

Figure 6. Photo of Kōloa Landing (Hawai‘i State Archives n.d.)

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* (native land rights) 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 1992:295). The small number of *kuleana* awards and their small size prevented the *maka‘āinana* from maintaining their independent subsistence, often forcing them to abandon their newly acquired property (Chinen 1958:32).

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. Many of these patterns probably had existed for centuries. Eighty-nine *kuleana* awards were given to individuals within Kōloa Ahupua‘a. The majority of these Land Commission Awards (LCAs) were located in and around Kōloa Town itself. No LCAs were granted within the vicinity of the study area.

4.1.4 Mid-1800s

The Koloa Sugar Company began commercial operation in the late 1840s with about 450 acres of Kōloa land under cultivation. Development of additional acreage continued gradually. An 1891 map of Kōloa by Monsarrat depicts a fence line extending through the current study area. The study area is depicted in an undeveloped area between the government road to the east and a trail to the west. A cane field is depicted approximately 1.0 km to the southwest.

In 1874, a dispute over the northern boundary of Kōloa Ahupua‘a led to a hearing before Duncan McBryde, the Commissioner of Boundaries for Kaua‘i (Figure 7). One native witness, Nao (who described himself as born in Kōloa but presently living in Ha‘ikū), in order to show that Hoaea (the area in dispute) was indeed at the northern boundary of Kōloa, testified: “At Hoaea, tea [*sic*] leaves were hung up to show that there were battles going on” (Boundary Commission, Kaua‘i 1874:1:124). That there were traditional “warning systems” well-known to all natives suggests Kōloa may well have been the scene of some serious conflicts. Throughout the early settlement history of Kōloa, conflicts must have occurred at intervals often enough and serious enough to warrant having to devise such a system.

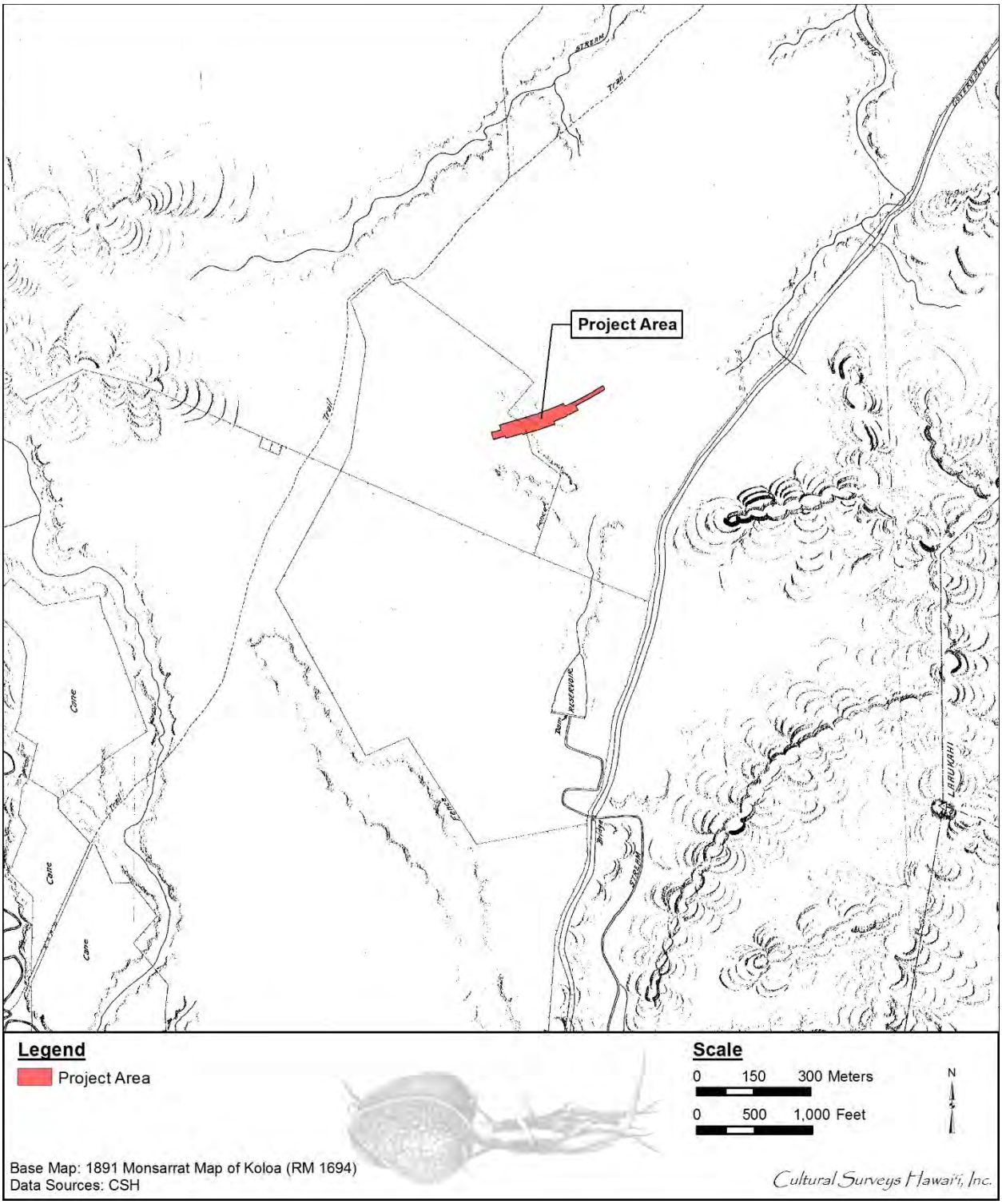

Figure 7. 1891 Monsarrat map of Kōloa depicting the current study area

4.1.5 1900s

The Koloa Sugar Company had previously purchased the *ahupua‘a* of Pā‘ā southeast of Kōloa Town, and a large parcel of it was unproductive. A new and much larger mill was built there in 1912 about a mile from Kōloa. New railroad track was laid, and an asphalt road was built to connect the new mill with Kōloa Landing. World War I caused a huge demand for sugar. By the end of hostilities in 1918, the Koloa Sugar Company was producing 9,000 tons of sugar each year, and adding additional acreage. A road alignment, later to become Kaumuali‘i Highway, is depicted in the 1910 Lihue USGS topographic map (Figure 8) extending through the current study area. No other development is depicted in the vicinity of the study area.

Kōloa Landing was phased out around 1925 when McBryde Sugar Company and the Koloa Sugar Company began shipping their product out of Port Allen Harbor at Hanapēpē. The McBryde Plantation had been improving the facilities at ‘Ele‘ele Landing since the turn of the century and a private company, the Kauai Terminal Limited Railway, had developed a modern bridge crossing the Hanapēpē River. Soon after this, the Koloa Sugar Company ceased to use the *makai* Kōloa fields, and much of the area was converted into cattle-grazing pasture by the Knudsen family. Most of the *mauka* areas of Kōloa remained under sugarcane cultivation as late as the 1970s, when these cane lands were converted into pasture.

It was during the 1930s, when Federal funds became available to assist the Territory of Hawaii’s highway construction program, that development of the Kaumuali‘i Highway project accelerated. On 10 October 1933, Hawaiian Contracting Company, Ltd. was awarded a $354,355.63 contract for construction of a 5.066-mile long portion of the Kaua‘i Belt Road (i.e., the present Kaumuali‘i Highway) extending west from the junction with the road to Kōloa. The project, identified as NRH 12-B, was funded by the National Recovery Highway Fund, the Federal Aid Fund, and a contribution by the County of Kaua‘i.

Following the merger of the plantation lands of the Koloa Sugar Company and Grove Farm Company in 1948, the combined lands under cultivation required new sources of irrigation water. In 1965, Grove Farm built a tunnel to bring the waters from Ku‘ia directly into the Waitā (Kōloa) Reservoir. Grove Farm leased these cane lands to McBryde Sugar Company when it terminated sugar operations in 1974 (Wilcox 1996). The mill in Pā‘ā was finally closed in 1996, and remains a landmark of the countryside.

4.1.6 Modern Land Use

By the late 1960s, the main town of Kōloa experienced a type of reverse migration back to the shoreline. Although the town had established a Civic Center in 1977, the pace of tourism-driven development at the shoreline had been drawing construction and service jobs away from the town center. The Kīahuna Plantation Resort opened in 1967, followed by the construction of various condominiums throughout the 1970s and 1980s. Finally, the Hyatt Regency Resort, with its expansive golf course, opened in 1991.

The 1963 Koloa USGS topographic quadrangle (Figure 9) depicts the modern alignment of Kaumuali‘i Highway extending through the study area. A drainage is shown extending perpendicular to and underneath the highway at the location of Bridge 7E. The drainage extends from a flume in the northwest to Mauka Reservoir located south of the study area.

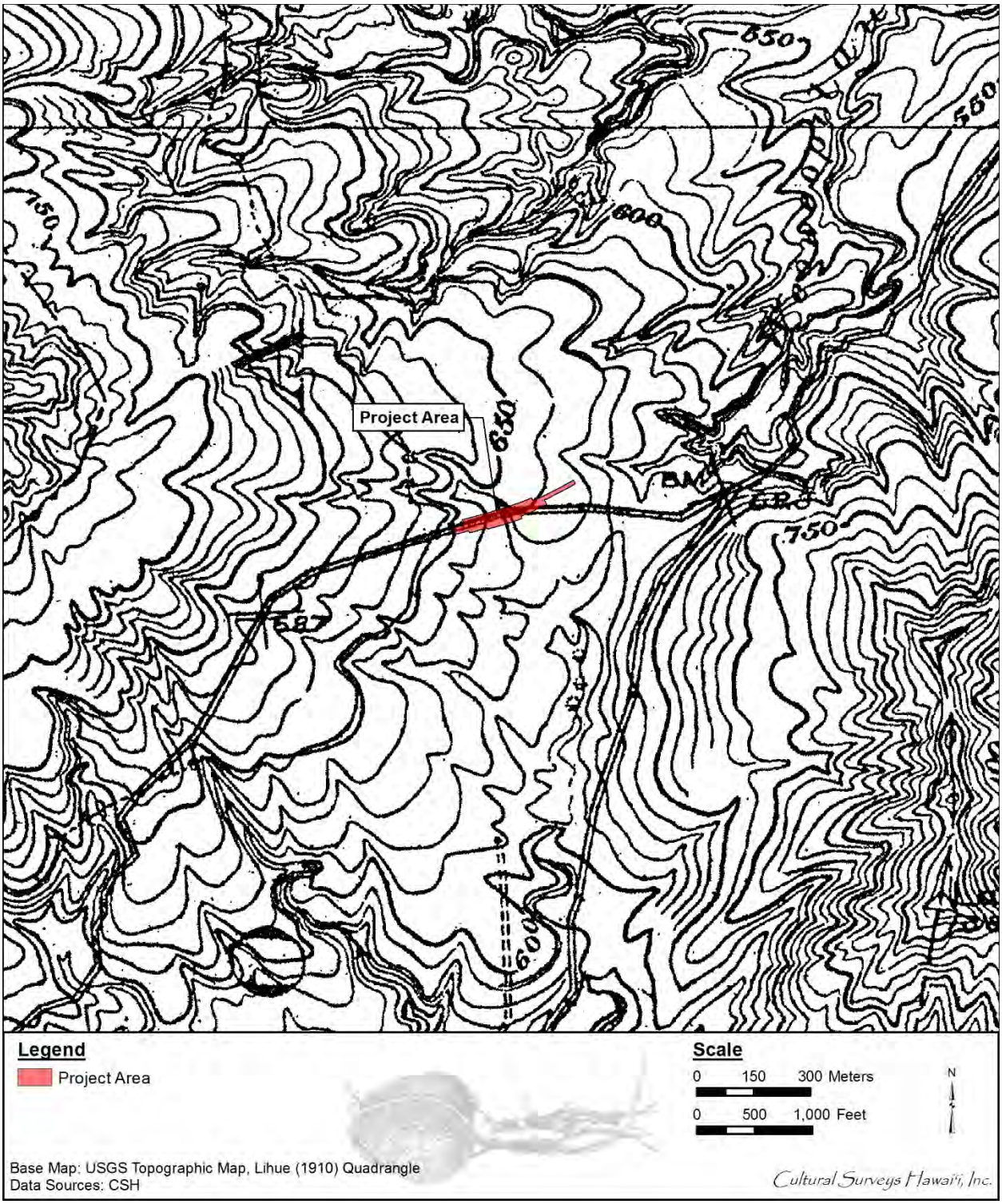

Figure 8. Portion of the 1910 Lihue USGS topographic quadrangle showing the location of the study area

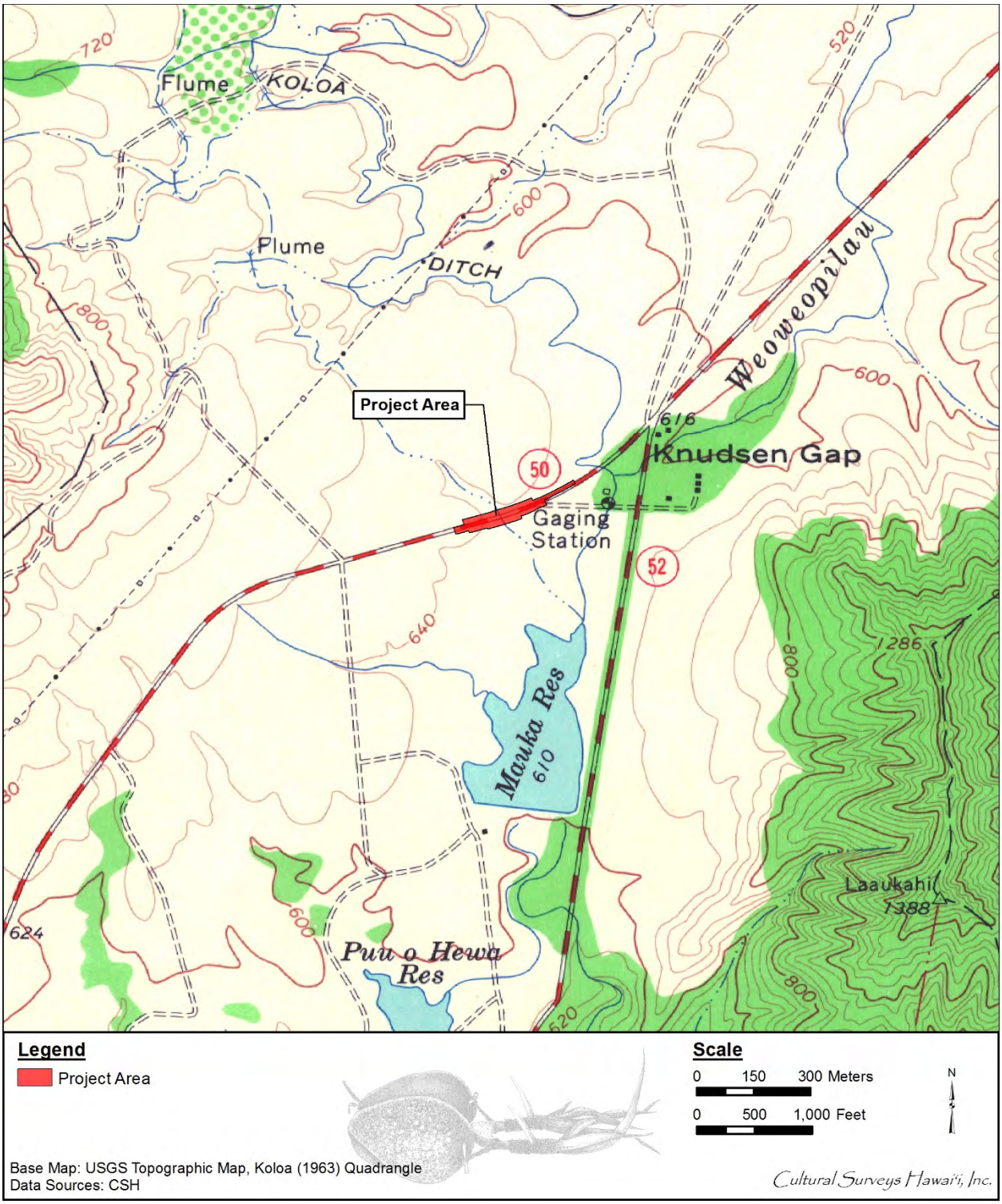

Figure 9. Portion of the 1963 Koloa USGS topographic quadrangle showing the location of the study area

By the early 1990s, the tourist industry had successfully attached the name “Po‘ipū Beach” to the entire coastline beginning at Kōloa Landing and continuing east to Makahū‘ena Ledge. With the development of the Po‘ipū Bay Resort Golf Course and the Hyatt Regency Kaua‘i Resort Hotel, the Po‘ipū Beach name became synonymous with all 2 miles of coastline fronting the Wai‘ohai, Kiahuna, and Sheraton developments, ending at Po‘ipū Beach Park (Donohugh 2001).

The 1978 Koloa USGS orthophotoquad aerial photograph (Figure 10) depicts fields of sugarcane in cultivation surrounding the study area. The drainage that extends through Bridge 7E is clearly visible. On September 1996, the last sugar crop was harvested ending 179 years of Koloa Plantation. Since then the area in and around the study area has remained the same. Remnants of sugarcane were visible until the late 1990s.

Future plans within the Kōloa District will place more demands on beachfront properties along the coastline. Over 1,000 acres of former sugar plantation lands are slated for hotel and condominium development surrounding both Lāwa‘i and Po‘ipū coastal resort areas (Donohugh 2001). Future development plans for the upland areas involve large tracts of land as well as regional redevelopment within Kōloa Town itself. The area within the current project is cultivated with eucalyptus and Albizia trees for renewable energy projects. In 2008, the County Planning Commission approved use permits to allow a company, Green Energy Hawaii, to proceed with its plan to build a 7,100-kilowatt facility in Knudsen Gap.

4.1.7 Conservation and Agricultural Lands

Mauka portions of Kōloa Ahupua‘a are zoned as conservation and agricultural lands. Lands currently zoned for conservation are those owned by A & B – Hawaii Inc., and the State of Hawai‘i. Lands currently zoned for agriculture include those owned by the Eric A. Knudsen Trust, Green Energy Team, LLC, Anuhea Properties, LLC, and Kahi Na Wai Pu‘ili LLC. Regarding conservation lands, the department, defined as the Department of Land and Natural Resources per HRS §183C-2,

> shall adopt rules governing the use of land within the boundaries of the conservation district that are consistent with the conservation of necessary forest growth, the conservation and development of land and natural resources adequate for present and future needs, and the conservation and preservation of open space areas for public use and enjoyment. [HRS §183C-4(b)]

Accordingly, the “department shall establish zones within the conservation district, which shall be restricted to certain uses” (HRS §183C-4[d]). Specifically:

> The department, by rules, may specify the land uses permitted therein which may include, but are not limited to, farming, flower gardening, operation of nurseries or orchards, growth of commercial timber, grazing, recreational or hunting pursuits, or residential use. The rules may control the extent, manner, and times of the uses, and may specifically prohibit unlimited cutting of forest growth, soil mining, or other activities detrimental to good conservation practices. [HRS §183C-4(d)]

According to *The Garden Island*, the “conservation of necessary forest growth,” and the “development of land and natural resources” (HRS §183C-4[b]) is increasingly threatened by feral pigs (Lyte 2015). The newspaper states,

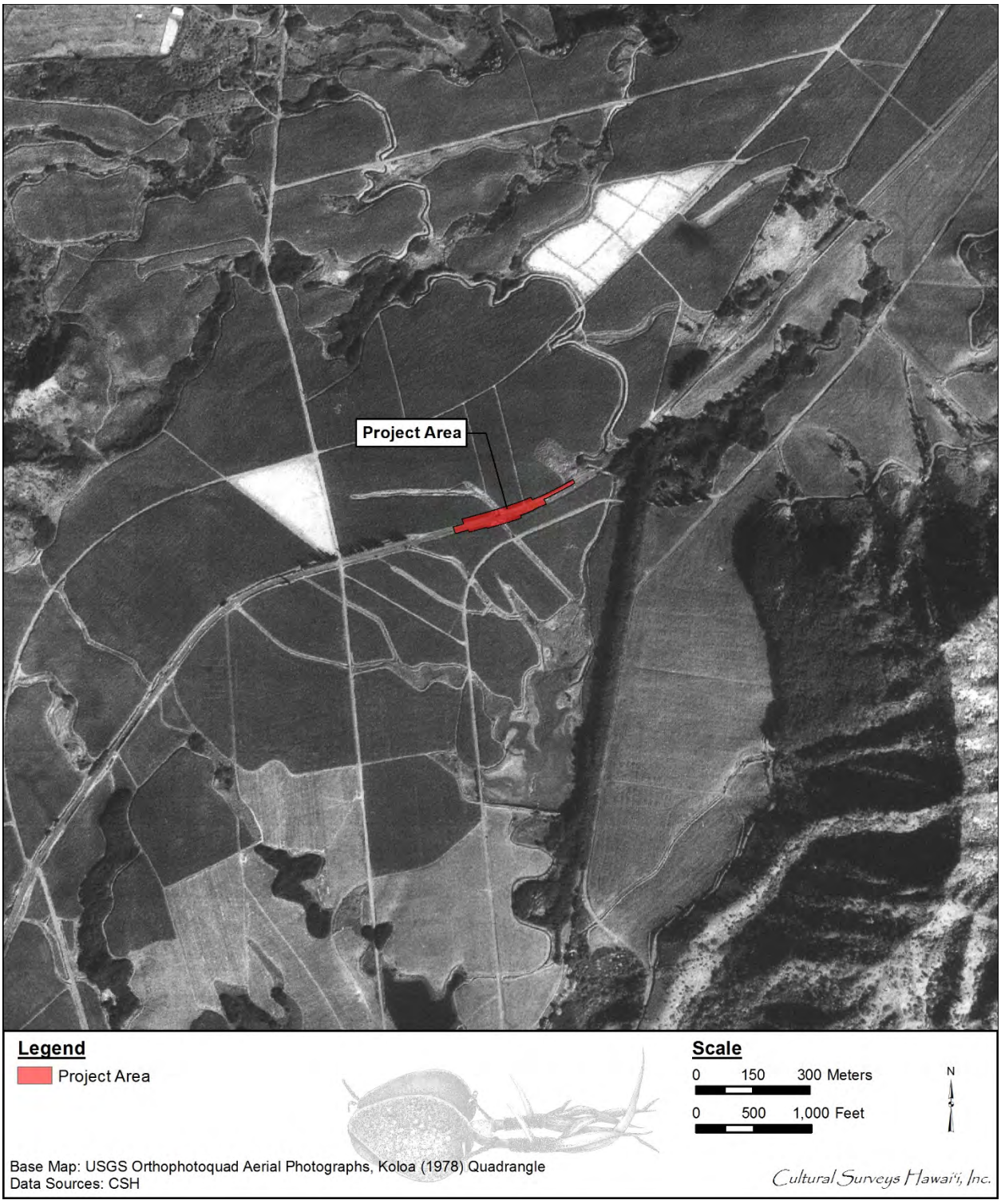

Figure 10. Portion of the 1978 Koloa USGS orthophotoquad aerial photograph showing the location of the study area

> Ubiquitous, menacing and ruinous to crops and native plantings, Kauai's feral pigs are a problem. They are widespread, found everywhere except isolated parts of the Napali Coast. And they're capable of year-round breeding. [Lyte 2015]

The introduction of European swine by westerners coupled with the introduction of alien species such as earthworms, mango, and guava resulted in the unchecked explosion of feral pig populations in *kula* and *mauka* lands. In time, the effects of feral animal populations upon the forested uplands were observed. Delicate native flora and streams were ravaged, resulting in the watershed crisis of the late nineteenth century (Maly et al. n.d.:3). In response, *kama‘āina* across all islands initiated mitigation measures in the form of fencing, feral animal control, and reforestation; King Kalākaua himself aided in these measures in 1878, leading a reforestation effort in Nu‘uanu Valley, O‘ahu (Maly et al. n.d.:3). Currently on Kaua‘i, it appears the feral pig population is growing (Lyte 2015). The growing population has spurred the development of a feral pig eradication program, focused on removing feral populations known to decimate *mauka* native forests.

Hunting aids in the management of *mauka* lands in Kōloa Ahupua‘a. Initially, western-style hunting was adopted as a means of resource management; additionally, the skills learned by *kama‘āina* to manage feral animal populations have been passed down from one family generation to the next for nearly 150 years (Maly et al. n.d.:4). Pig hunting, "a cherished modern practice" (Maly et al. n.d.:4), represents an aspect of modern land use in Kōloa Ahupua‘a. Kaua‘i hunters also acknowledge that hunting is not only a component of resource managment, but also an important subsistence practice: "Even though we eradicate and we call it eradication, we don't truly want to eradicate because that's what we use for food and for sport" (Lyte 2015). Currently, portions of conservation land in the *mauka* portion of Kōloa Ahupua‘a and comprising a part of the Lihue-Kōloa Forest Reserve are designated as a public hunting area per HAR §13-123-15(4).

4.2 **Previous Archaeological Research**

The majority of the previous archaeological investigations conducted within the *ahupua‘a* of Kōloa have been in conjunction with the burgeoning development of the areas located south of the study area. Only one modern systematic study has been conducted in the study area and no other archaeological studies have been conducted within a 0.8-km (0.5-mile) radius of the study area. The location of this previous archaeological study is shown in Figure 11 and in Table 1.

Evidence of the importance of Kōloa to pre-Contact traditional Hawaiians was indicated in the Lahainaluna Schools document produced in 1885. An interviewee named Makea was able to describe 14 *heiau* within Kōloa Ahupua‘a. Of the 14 *heiau,* five were associated with human (*luakini*) and animal blood sacrifices (*po‘okanaka*), five with fishing, two medicinal, and one agricultural, with one of unknown function (Lahainaluna Schools 1885:165–166).

Thomas Thrum was the next to document sites in the Kōloa area in his list of the *heiau* of Kaua‘i (Thrum 1907). He discussed six *heiau* in the district of Kōloa, which once extended from Hanapēpē to Māhā‘ulepū (Table 2).

The earliest systematic archaeological survey on the Island of Kaua‘i was conducted by Wendell Bennett in the late 1920s. Bennett examined and recorded 202 sites on the island. The following are sites recorded within Kōloa Ahupua‘a:

Site 72	Niu Kapukapu Heiau—on the top of Niu Kapukapu Hill on the east bluff of Lāwa‘i Valley.
Site 73	Stone work on the hill just in-land from Site 72
Site 74	Fishing shelter on the shore near the mouth of Kukui‘ula valley.
Site 75	Kūhiō Park, west of Waikomo Stream with taro patches, a small *heiau*, an oven, paved house platform, fish pond, game ground with seats and a fishing shrine.
Site 76	Salt pans east of Waikomo Stream
[Sites 77–84]	Located east of Kōloa Ahupua‘a
Site 85	Walls, enclosures and house sites in the cactus covered country around the Kōloa reservoir and extending to the sea.
Site 86	House site in the area described in Site 85

[Bennett 1931:116–117, 120]

A comparison of two photographs taken from nearly identical positions, one in 1998 (from Hammatt and Chiogioji 1998) and the other in 2014 (from the current archaeological reconnaissance), documents a significant change in vegetation across the landscape in the vicinity of the study area (Figure 12 and Figure 13).

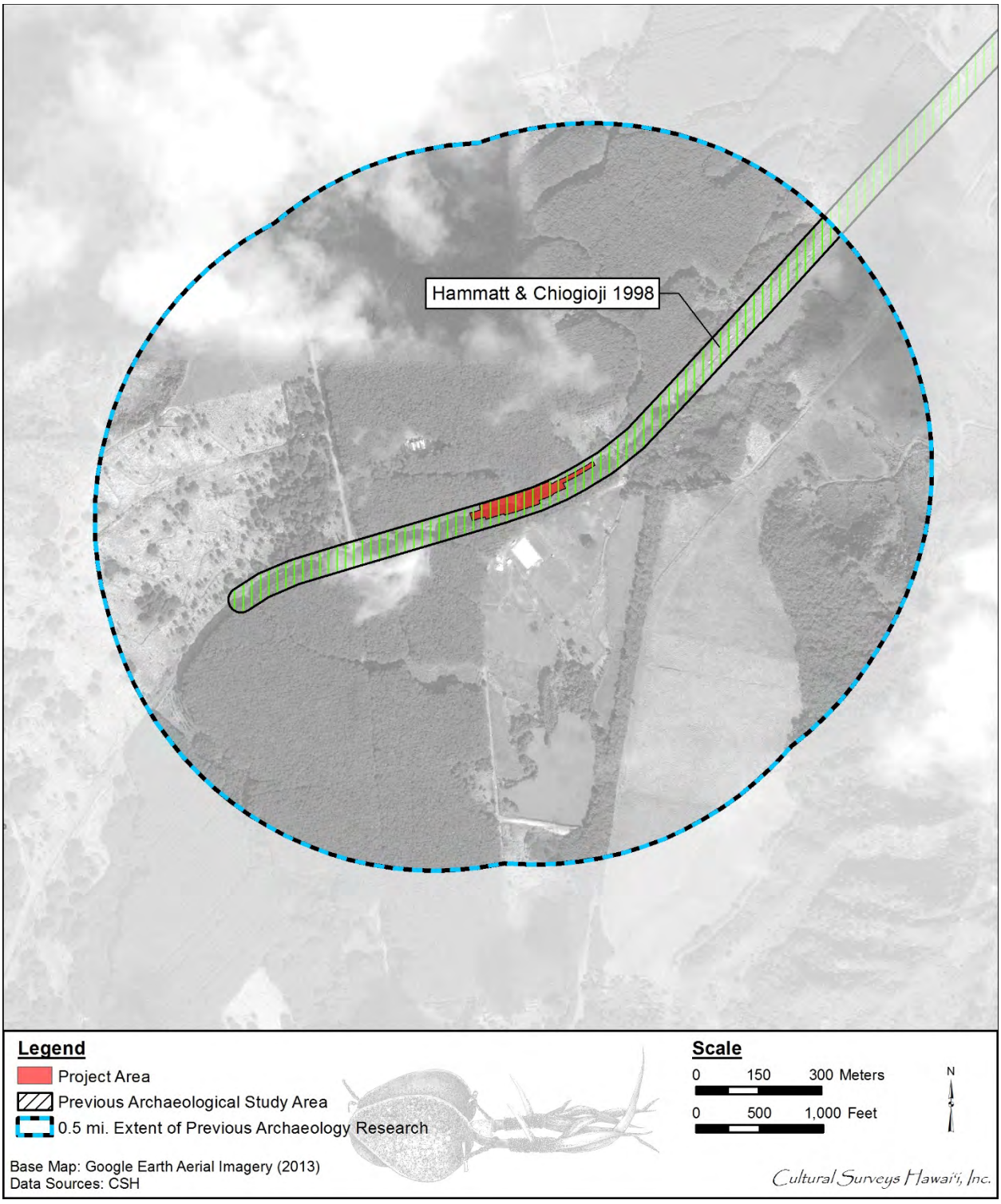

Figure 11. Aerial photograph depicting one previous archaeological study within a 0.8 km (0.5 mile) radius of the study area (Google Earth 2013)

Table 1. Previous Archaeological Investigations within a 0.8-km (0.5-mile) Radius of the Study Area

Reference	Type of Investigation	Location	Results
Hammatt and Chiogioji 1998	Archaeological assessment	Approximately 11.5-km long portion of Kaumuali‘i Hwy	Four historic-era sites and areas of concern within or adjacent to hwy corridor identified: Grove Farm office building in Puhi, Līhu‘e Mill Bridge, Ho‘omana Overpass Bridge, and Līhu‘e Public Cemetery

Table 2. Kōloa *Heiau* Documented by Thrum in 1907

Name	Location	Remarks
Hanakalauae	Māhā‘ulepū, Kōloa	Of large size, destroyed years ago by Fredenberg to erect cattle pens with its stones
Kanehaule	Kaunuieie, Kōloa	Paved walled enclosure of large size, destroyed some time ago; a *heiau* where rites of circumcision were performed
Kihouna	Po‘ipū, Kōloa	Single walled *heiau* situated a short distance west of Kanehaule Heiau (above), 100 x 125 ft, enclosed on all sides by walls 4 to 6 ft high with entryway near middle of *mauka* wall; *makai* wall 8 ft thick; a section of stones as of pavement shows nearly whole length near *makai* wall and in NE corner is section said to have been its altar stones
Kāneiolouma	Po‘ipū, Kōloa	Size 102 x 180 ft, lying nearly east and west along shore close to beach; of three terraces, with two prominent and other room divisions at east or inner end, west end open; side walls 3 to 5 ft high; seaward wall 9 ft thick; east end wall very crooked, 11 ft thick, 6 ft high; inner terrace stone paved, middle terrace partly so, with flat slabs of coral or limestone
Weliweli	Weliweli, Kōloa	Paved *heiau* of large size; Po‘okanaka class; walls 4 ft high: portions of same said to be still standing
Waiopili	Māhā‘ulepū, Kōloa	Oblong *heiau* of good size, walls still standing

Figure 12. Overview of Kaumuali‘i Highway and surrounding area, view to east (from Hammatt and Chiogioji 1998)

Figure 13. 2014 matching overview of Kaumuali‘i Highway and surrounding area from current archaeological reconnaissance, view to east

4.3 **Background Summary and Predictive Model**

Although much of the seaward portion of Kōloa is a relatively dry area with approximately 30 inches of rain per year, the perennially flowing streams provided a resource for the development of a rather expansive agricultural system. Accounts of the early history of Kōloa (Farley 1907; Jarves 1844; Judd 1935; and Townsend 1839) describe in the lands *mauka* of Kōloa Town a seemingly continuous, well-maintained, agricultural complex of taro, yams, sweet potato, and sugarcane irrigated by an extensive *‘auwai* system siphoned off Waikomo and Pō‘ele‘ele streams. This system had a significant influence on later commercial endeavors in Kōloa.

Kōloa is the site of the first organized sugar plantation in Hawai‘i. Ladd and Company leased about 1,000 acres for the sole purpose of growing sugarcane (Palama and Stauder 1973). The commercialization of sugarcane in Kōloa had widespread social effects. The traditional view of the *‘āina* being a responsibility of the *ali‘i* was being transformed.

Kōloa Town and Kōloa Landing, at the mouth of Waikomo Stream, became prominent commercial centers during the mid- to late 1800s, exporting a variety of products such as sweet potatoes, sugar, and molasses. Whalers also stopped for provisions of squash, salt, salt beef, pigs, and cattle (Palama and Stauder 1973:20). This heightened activity dramatically altered the social structure and landscape of Kōloa.

While clearly most of the infrastructure supporting historic agriculture lies well seaward of the present study area, during the later historic period the upper elevations of Kōloa became important collection areas for irrigation water. It is possible that historic ditches, flumes, pipelines, and other features related to collection of irrigation water exist within or in the immediate vicinity of the study area.

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 (NHOs), agencies, and community members. CSH initiated the outreach effort in August 2015 to May 2016 through letters, email, telephone calls, and in-person contact.

5.2 Community Contact Letter

In the majority of cases, letters (Figure 14) along with a map, aerial photograph of the project area, and TMK maps 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 Bridge 7E, Kōloa Ahupua‘a, Kōloa (Kona) Moku, Kaua‘i Island, TMKs: [4] 2-7-001:004 por., and 2-7-002:001 por. The project area is located along Kaumuali‘i Highway, Route 50, approximately 800 ft west of the Maluhia Road/Kaumuali‘i Highway intersection within Kōloa, Ahupua‘a, Kōloa District, Kaua‘i Island. The project area is depicted on a portion of the 1996 Kōloa U.S. Geological Survey (USGS) topographic quadrangle and a 2013 aerial photograph (see attachments).
>
> 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. During construction, a temporary bypass route would be provided adjacent to and *mauka* of the highway.
>
> The project area includes approximately 2.07 acres. 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.**

Cultural Surveys Hawai'i, Inc.
Archaeological and Cultural Impact Studies
Colette H. Hanna, Ph.D., President

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 Bridge 7E, Kōloa Ahupua'a, Kōloa (Kona) Moku, Kaua'i Island. TMKs: [4] 2-7-001:004 por., and 2-7-002:001 por. The study area is located along Kaumuali'i Highway, Route 50, approximately 800 ft west of the Maluhia Road/Kaumuali'i Highway intersection within Kōloa Ahupua'a, Kōloa District, Kaua'i Island. The study area is depicted on a portion of the 1996 Kōloa U.S. Geological Survey (USGS) topographic quadrangle and a 2013 aerial photograph (see attachments).

The purpose of the project is to replace the existing deficient bridge to meet current design standards for roadway width, load capacity, bridge railings, and transitions. The existing Bridge 7E, also known as Hoinakaunalehua Bridge, was constructed in 1933 and is composed of reinforced concrete consisting of two culvert cells with wing-wall abutments. The bridge has a length of approximately 23 ft and a width of approximately 32 ft. The proposed replacement structure is a single cell box culvert in the same location. During construction, a temporary bypass route would be provided adjacent to and mauka of the highway.

The study area includes approximately 4.5 acres. 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 *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: mhibono@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 14. Community consultation letter sent to NHOs, agencies, and the community

- **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.**

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 2.07 acres; the new project area, however, was enlarged to include approximately 2.24 acres. This represents a total change of approximately 0.17 acre to the total project area. The project area remains located along Kaumuali‘i Highway, Route 50, approximately 800 ft west of the Maluhia Road/Kaumuali‘i Highway intersection within Kōloa Ahupua‘a, Kōloa District, 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 15):

> 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 Bridge 7E, Kōloa Ahupua‘a, Kōloa (Kona) Moku, Kaua‘i Island, TMKs: [4] 2-7-001:004 por., and 2-7-002:001 por. We would once again like to thank you for your assistance and your valuable *mana‘o* on this project. However, in recent days, 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 figures noting 'Original Project Area' and 'New Project Area as of March 9, 2016' to observe the changes to the project area). The original project area included approximately 2.07 acres, the new project area, however, includes approximately 2.24 acres; this represents a total change of approximately .17 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 these changes to the project area.
>
> The project area remains located along Kaumuali‘i Highway, Route 50, approximately 800 ft west of the Maluhia Road/Kaumuali‘i Highway intersection within Kōloa, Ahupua‘a, Kōloa District, Kaua‘i Island. The new project area is depicted on a portion of the 1996 Kōloa U.S. Geological Survey (USGS) topographic quadrangle and a 2013 aerial photograph (see attachments labeled 'New Project Area as of March 9, 2016').

Cultural Surveys Hawai‘i, Inc.
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Hallett H. Hammatt, Ph.D., President

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Job code: KOLOA 67 bbeauchan@culturalsurveys.com amitchell@culturalsurveys.com www.culturalsurveys.com

March 9, 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 Bridge 7E, Kōloa Ahupua‘a, Kōloa (Kona) Moku, Kaua‘i Island, TMKs: [4] 2-7-001:004 por., and 2-7-002:001 por. We would once again like to thank you for your assistance and your valuable *mana‘o* on this project. However, in recent days, 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 figures noting "Original Project Area" and "New Project Area as of March 9, 2016" to observe the changes to the project area). The original project area included approximately 2.07 acres, the new project area, however, includes approximately 2.24 acres; this represents a total change of approximately .17 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 these changes to the project area.

The project area remains located along Kaumuali‘i Highway, Route 50, approximately 800 ft west of the Maluhia Road/Kaumuali‘i Highway intersection within Kōloa, Ahupua‘a, Kōloa District, Kaua‘i Island. The new project area is depicted on a portion of the 1996 Kōloa U.S. Geological Survey (USGS) topographic quadrangle and a 2013 aerial photograph (see attachments labeled "New Project Area as of March 9, 2016").

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. During construction, a temporary bypass route would be provided adjacent to and *mauka* of the highway.

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.
Archaeological and Cultural Impact Studies
P.O. Box 1114
Kailua, Hawai‘i 96734 Ph.: (808) 262-9972"

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Figure 15. Community consultation letter regarding change to project area

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. During construction, a temporary bypass route would be provided adjacent to and *mauka* of the highway.

5.3 Community Contact Table

Table 3 contains the names, affiliations, dates of contact, and comments from NHOs, individuals, organizations, and agencies contacted for the current project.

Table 3. Results of Community Consultation

Name	Affiliation	Comments
Aipoalani, C. Kunane	Chair, Kauai-Ni‘ihau Island Burial Council	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Blaich, Beryl	Executive Secretary to the Board, Mālama Māhā‘ulepū Group Coordinator, Board of Advisors of Mālama o Mānoa Board Member, Mānoa Valley Heritage Foundation	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Burgess, Stella	Cultural Specialist	CSH mailed the first community consultation letter out 12 August 2015 18 August 2015, Mr. Makali’i responded to CSH’s letter on behalf of Stella Burgess. He regretfully informed us that Mrs. Burgess passed away last year February 2014. He also stated he is willing to offer as much assistance as possible, and offered to reach out to *kūpuna* from the area that may have any recollection.
Cataluna, Don (trustee)	Kaua‘i-Ni‘ihau Office of Hawaiian Affairs (OHA)	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Chang, Pi‘ilani	Cultural Historian	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015

Name	Affiliation	Comments
Ching, Francis	Hawaiian Resource Specialist, Kamehameha Schools	CSH emailed the first community consultation letter out 13 August 2015
Cobb, Rowena	Principal Broker, Cobb Realty in Kōloa	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Dahilig, Michael A.	Planning Director, Kaua‘i County Planning	CSH mailed the first community consultation letter out 12 August 2015
Dias, David	Former employee of McBryde Sugar Company	CSH mailed the first community consultation letter out 12 August 2015 17 August 2015 letter returned to CSH by U.S. Postal Service (USPS)
Gage, Reginald	Former Chief Appraiser and Real Property Assessor, County of Kaua‘i Interest in Kaua‘i history Trustee, Grove Farm Homestead Museum Vice President, Waioli Corporation	CSH mailed the first community consultation letter out 12 August 2015 25 August 2015: Reginald called CSH, stating he would like to participate in an interview and would prefer a phone interview rather than in-person. He is 80 years old and prefers to be contacted in the morning. 26 August 2015: Spoke with Mr. Gage to set up a recorded interview for 28 August 2015 and offered him some information he was looking for about the 2015 SHA conference and the monthly SHA newsletter. He has a paper on an artifact in the John Webber collection in Switzerland, a necklace made from an endemic land snail claimed to be from Tonga, but Mr. Gage has evidence it is a Kaua’i Island land snail. 28 August 2015: CSH conducted a recorded phone interview with Mr. Gage. Received signed Authorization and Release forms 7 March 2016. Consulted with Mr. Gage regarding change to project area on 7 March 2016, he stated change in project area does not affect or change his previous statements. 23 May 2016: Mr. Gage added statements to summary, gave final approval to summary.

Name	Affiliation	Comments
Hartwell, Blake	Kōloa Community Association	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Hayes, Terrie	*Kama‘āina*, partner of Mr. Billy Kaohelauli‘i	At the request of Mr. Billy Kaohelauli‘i and Mr. Rupert Rowe, CSH reached out to Ms. Terrie Hayes and conducted an in-person interview on 20 April 2016 (with Mr. Billy Kaohelauli‘i, Mr. Rupert Rowe, and Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano also in attendance). Ms. Terrie Hayes contacted CSH regarding edits to transcription and summary on 10 May 2016. Ms. Hayes said: *Aloha,* *Got the attachments opened. Mahalo.* *Billy reviewed and thought it was fine,* *I suggest you put a clarification about the pipe Branch refers to.* *Is it as a (sewer) pipe that dumps (into the ocean) 1/4 mile out?* *Prehaps Branch can clarify.* *Mahalo, for you efforts to protect our cultural resources, our Ahupua'a.*
Isoda, Stanley	*Kama‘āina*	CSH mailed the first community consultation letter out 12 August 2015 17 August 2015 letter returned to CSH by USPS
Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano (Branch Harmony)	*Kupuna*	At the request of Mr. Billy Kaohelauli‘i and Mr. Rupert Rowe, CSH reached out to Mr. Zacheriah Branch Harmony or Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano and conducted an in-person interview on 20 April 2016 (with Mr. Billy Kaohelauli‘i, Mr. Rupert Rowe, and Ms. Terrie Hayes also in attendance). Kalanikumai contacted CSH regarding edits to transcription and summary on 10 May 2016. Kalanikumai said: *‘Ano ‘ai, Aloha,* *I apologise for the delay in responding to your email. My main concern with your*

Name	Affiliation	Comments
		summary transcription is that you identify me correctly. While my "nom-de-gurre" is Zacheriah Branch Harmony, it is an assumed public identity I have inhabited for the past forty years. My "Inoa Maoili" is Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano, as written on the back of my original birth certificate. My grandfather's name was Carl Maka‘uli‘uli ‘O Kalanikumai, Puamo‘i ‘O Nā Ali‘i Hanohano. *Accepting the investment bequeathed to me as the Hiapo of my "branch" of our Mo‘okuauhau, "Manaweolani Lōkahi" translates to "Branch Harmony" ; (Zacheriah, in it's original translation means "rememberence of God", a Sufi Practice or Practitioner). Kaona nō ho‘i pela.* *A decade ago, I sucessfully petitioned the Lt. Governor and had my birth certificate re-issued bearing the name (abbreviated as) "Kalanikuma Ka Maka ‘O Nā Ali‘i Hanohano." The full name (further above), specifically identifies my lineage. It is a heritage I have accepted and "stepped-up" (Kumai) to, and invest into. A Kuleana.* *Therefore, While you may use my "nom-de-gurre" to otherwise identify me, I would request, that in testimony, you refer to my Inoa Maoli.* *Otherwise, I accept the transcripted Summary.* *Māhalo for your Diligence,* *Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano* *Hānai Kuahu ‘O Nā Hui Hānai I Ka Honua La‘a* *Waiuka Pō‘ele‘ele, Awāwā Lawa‘i, I ka pae ʻ‘Aina Kaua‘i.*

Name	Affiliation	Comments
Kamai, Grace	Former Kaua‘i-Ni‘ihau Island Burial Council Member	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Kane, Suzette	*Paniolo* (cowboy)	CSH mailed the first community consultation letter out 12 August 2015 17 August 2015 letter returned to CSH by USPS
Kaohelauli‘i, Billy	*Kama‘āina* of Kōloa Caretaker, Kaneholumalu Heiau	CSH mailed the first community consultation letter out 12 August 2015 3 September 2015: CSH contacted Uncle Billy Kaohelauli‘i over the phone asking to use a previous interview conducted by CSH Cultural Director Aulii Mitchell (3 August 2006). Uncle Rupert agreed. 7 October 2015: CSH edited the original transcriptions and summary for the review and approval of Mr. Kaohelauli‘i. 26 February 2016: CSH called Mr. Kaohelauli‘i for verbal confirmation to use edited transcriptions and summary in report, and to confirm address to mail Authorization and Release forms for Signature. Authorization and Release forms were mailed that day. Left voice message regarding change to project area, awaiting Mr. Kaohelauli‘i’s call back. Mailed letters and figures regarding change to project area on 9 March 2016. Requested from CSH on 6 April 2016 an additional interview to discuss project and changes. Requested that CSH reach out to Ms. Terrie Hayes and Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano, and include both individuals for the next in-person interview. Conducted an in-person interview on 20 April 2016 (with Mr. Billy Kaohelauli‘i, Mr. Rupert Rowe, Terrie Hayes, and Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano also in attendance).

Name	Affiliation	Comments
Kaohi, Lionel	Kaumuali‘i Hawaiian Civic Club	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015 28 September 2015 letter returned to CSH
Kaholokula, Robbie	Administrator, Kaua‘i Museum	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Kauwe, Chris	Cultural Practitioner *Kānaka Maoli* of Hui Mālama Kāne I olo Uma	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Kimokeo, James	*Kama‘āina* of Kōloa	CSH mailed the first community consultation letter out 12 August 2015 17 August 2015 letter returned to CSH by USPS
Kōloa Neighborhood Center		CSH mailed the first community consultation letter out 12 August 2015 17 August 2015 letter returned to CSH by USPS 21 August 2015 email copy of the community consultation letter sent to Koloa Neighborhood Center due to the returned letter to CSH
McMahon, Nancy	Park Planner, Kaua‘i Department of Parks and Recreation Former archaeologist, State of Hawai‘i	CSH mailed the first community consultation letter out 12 August 2015
Muraoka, Satoshi	*Kama‘āina* of Kōloa	CSH mailed the first community consultation letter out 12 August 2015
Muraoka, Ikito “Ike”	*Kama‘āina* of Kōloa	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Nāmu‘o, Clyde	Former CEO, OHA	CSH mailed the first community consultation letter out 12 August 2015 17 August 2015 letter returned to CSH by USPS

Name	Affiliation	Comments
Perry, Warren	Royal Order of Kamehameha, Kaumuali‘i Chapter No. 3	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Puni-Rowe, Rupert	*Kama‘āina* Caretaker, Kāneiolouma Heiau	CSH mailed the first community consultation letter out 12 August 2015 3 September 2015: CSH contacted Uncle Rupert Puni by phone asking to use a previous interview conducted by CSH Cultural Director Aulii Mitchell (3 August 2006). Uncle Rupert agreed. 17 October 2015: CSH edited the original transcriptions and summary for review and approval of Mr. Rowe. 27 October 2015: Mr. Rowe called and clarified an edit to the birthplace of Mr. Kaohelauli‘i’s mother, who was born on Kaua‘i Island. 29 February 2016: CSH contacted Mr. Rowe for verbal confirmation to use edited transcriptions and summary in report. Called Mr. Rowe on 7 March 2016 regarding change to project area; he requested that CSH mail him new figures depicting the change to the project area. Mailed letters and figures regarding change to project area on 9 March 2016. Requested from CSH on 6 April 2016 an additional interview to discuss project and changes. Requested that CSH reach out to Ms. Terrie Hayes and Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano, and include both individuals for the next in-person interview. Conducted an in-person interview on 20 April 2016 (with Mr. Billy Kaohelauli‘i, Mr. Rupert Rowe, Terrie Hayes, and Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano also in attendance). CSH called Mr. Rowe on 16 May 2016 regarding final approval of transcription and summary for interview conducted on

Name	Affiliation	Comments
		20 April 2016; Mr. Rowe gave verbal final approval.
Oi, Tommy	Retired State of Hawai‘i Land Division Manager	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Shigematsu, Jenichi	*Kama‘āina* of Kōloa	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Sakimae, Bruce	*Kama‘āina* of Kōloa	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015
Souza, Walter	*Kama‘āina* of Kōloa Former Grove Farm and McBryde Sugar Company machinist	CSH mailed the first community consultation letter out 12 August 2015 17 August 2015 letter returned to CSH by USPS
Torres, Johnny	Retired from McBryde Sugar Company	CSH mailed the first community consultation letter out 12 August 2015 CSH mailed out a second community consultation letter 10 September 2015

5.4 *Kama‘āina* Interviews

Kama‘āina and *kūpuna* with knowledge of the proposed project and study area participated in semi-structured interviews from August 2015 to May 2016. CSH initiated the interviews with questions from the following five broad categories: *wahi pana* and *mo‘olelo*, agriculture and gathering practices, freshwater and marine sources, cultural and historic properties, and burials.

The authors and researchers of this report extend our deep appreciation to everyone who took time to speak and share their *mana‘o* with CSH whether in interviews or brief consultation, including contacts who opted not to contribute to the current cultural impact assessment, but nevertheless spent time explaining their position on the proposed project. 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 Summary of Billy Kaohelauli‘i and Rupert Puni Rowe Interview

CSH interviewed Mr. Billy Kaohelauli‘i and Mr. Rupert Puni Rowe on 3 August 2006 in Billy’s backyard for a different project occurring within Kōloa Ahupua‘a. Follow-up phone calls were made by CSH to discuss the information the men had shared, regarding Kōloa Ahupua‘a, for a different project in 2006, and to discuss potential concerns in regards to the current Bridge 7E project. The following is a summary of the interview conducted in 2006 for a different project occurring in Kōloa Ahupua‘a, and follow-up interviews made in 2015 and 2016 regarding the current Bridge 7E project occurring in Kōloa Ahupua‘a:

Billy Kaohelauli‘i can trace his family from across the Hawaiian Islands. His mother was originally from Kaua‘i, and his father was originally from Ni‘ihau; his grandfather, who was originally from the island of Hawai‘i, later became a policeman in Poi‘pū, Kaua‘i. Rupert Puni Rowe, whose *‘ohana* originates from the area, belongs to one of the oldest families in Kōloa. The two of them offered their *mana‘o* on the area of Kōloa.

Mr. Kaohelauli‘i shared his remembrance of local fishing areas around Kōloa. He fishes the entire coast for many varieties of Hawaiian fish,

> Yeah there is a lot of fish. You just have to know the right time to go get them . . . But I don’t know, too many people. Fishing over here is getting scarce because of too many fishermen . . . When I fish on the rocks I can see that the rocks are all dead. The water is still, it kills everything, all the *limu* (seaweed) on the rocks it just dies. It’s not only in the Poi‘pū area, it’s all over the island.

Mr. Rowe explained that there was once a bartering system between *mauka* and *makai* communities. *Kalo* (taro; *Calocasia esculenta*) and *kī* (ti; *Cordyline fruticosa*) from *mauka* communities were traded for *limu*, fish, and *pa‘akai* (salt) with *makai* communities. The equitable division of resources ensured all members of the community at large shared a common commitment to each other and to *aloha ‘āina* (“cherish the land”). That lifestyle, including the aforementioned system of reciprocal exchange, is being threatened.

Regarding Waikomo Stream, Mr. Kaohelauli‘i shared his remembrance of finding freshwater fish such as mullet (*Mugil cephalus)*, *āholehole* (Hawaiian flagtail; *Kuhlia sandvicensis*), *‘o‘opu* (general name for fishes in *Eleotridae, Gobiidae*, and *Blennidae*) and even *‘ōpae kuahiwi* (prawn;

Atyoida bisulcata). Regarding the current state of freshwater resources, Mr. Kaohelauli‘i commented,

> […] I don’t know about now because they ruined the stream. I don’t know if there is any fish in there now. They ruined the stream because most of the people take water out of that stream. They’re raking all of the water out. There’s hardly any water coming down Waikomo Stream anymore.

Regarding the gathering of plant resources within Kōloa Ahupua‘a, Mr. Kaohelauli‘i recalled gathering the Black-eyed Susan vine (*Thunbergia alata*), an introduced species, and stringing the tubular orange or yellow flowers to make *lei*. Of endemic species, Mr. Kaohelauli‘i recalled gathering various herbs in the area such as *pilo* (*Capparis sandwichiana*) (also known as *maiapilo* or Hawaiian caper), *‘uhaloa* (*Waltheria* indica) and *pōpolo* (*Solanum sandwicense*). Such herbs were traditionally utilized in *lā‘au lapa‘au* (Hawaiian healing medicine) or *kāko‘o ‘awīwī* (first aid) in the treatment of pain, injury, or general malaise.

Another cultural point of interest are the rock formations (near Kāneiolouma Heiau). Mr. Kaohelauli‘i shared, “There are a lot of *heiau*, and a lot of caves, a lot of birth places. They had birth rocks and bell stones. They had all kinds of big stones in there.”

Mr. Kaohelauli‘i described the bell stones he had referenced. “It looks like a big rock. You hit it from the back the thing goes ‘baaaaannnng.’ There are a lot of caves, there used to be a lot of artifacts but everybody already took [them].”

The two men are key figures in the preservation of “Ke Kahua o Kāneiolouma.” Mr. Rowe stated,

> […] we took and cleaned the *heiau* and we still will bring it back to its original existence. That’s how you protect the culture […] we became the stewards of the culture. That’s the important part. When you become a steward you identify yourself of a race, not a liquid measurement that deprives you of your identity. Because if you recognize the culture, then you recognize the race. And if you recognize the race then you cannot continue on the road of reckless development because it will show the true owner, not the one you think owns it.

Mr. Kaohelauli‘i added, “We take care of the land and then deal with the state and county and the archaeologist. We cleaned the *heiau*.”

5.4.2 Summary of Billy Kaohelauli‘i, Rupert Rowe, Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano (Zacheriah Branch Harmony), and Terrie Hayes Interview

In March 2016, CSH was contacted by CH2M HILL, acting on behalf of the Federal Highway Administration Central Federal Lands Highway Division, regarding a change to the project area. The original project area was approximately 2.07 acres, the new project area, however, was enlarged to approximately 2.24 acres, representing a total change of approximately 0.17 acre to the total project area. All interviewees were informed of this change to the project area. Upon contacting Mr. Kaohelauli‘i and Mr. Rowe regarding the changes to the project area (see Section 5.2), a second consultation was requested by the pair to address new concerns. In addition to their presence during the second consultation, they requested that Ms. Terrie Hayes and Mr. Zacheriah Branch Harmony be included so that they could share their *mana‘o* regarding the project as well.

On 20 April 2016, CSH conducted a second interview with Mr. Billy Kaohelauli‘i, Mr. Rupert Rowe, Ms. Terrie Hayes, and Mr. Zacheriah Branch Harmony or Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano. The following is a summary of that interview.

Mr. Kaohelauli‘i and Mr. Rowe identified themselves and stated they were from Po‘ipū and Kōloa, respectively. Mr. Harmony provided to CSH his *inoa maoli* (native or true name), identifying himself as Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano, and iterated his connections to Kōloa, Ma‘ulili, Lāwa‘i, and Waipouli. Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano clarified:

> While my ‘*nom-de-guerre*’ is Zacheriah Branch Harmony, it is an assumed public identity I have inhabited for the past forty years. My ‘Inoa Maoli’ is Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano, as written on the back of my original birth certificate. My grandfather’s name was Carl Maka‘uli‘uli ‘O Kalanikumai, Puamo‘i ‘O Nā Ali‘i Hanohano. Accepting the investment bequeathed to me as the *Hiapo* of my ‘branch’ of our *Mo‘okuauhau, ‘Manaweolani Lōkahi*’ translates to ‘Branch Harmony’; (Zacheriah, in its original translation means ‘remembrance of God,’ a Sufi Practice or Practitioner). *Kaona nō ho‘i pela*. A decade ago, I successfully petitioned the Lt. Governor and had my birth certificate re-issued bearing the name (abbreviated as) ‘Kalanikuma Ka Maka ‘O Nā Ali‘i Hanohano.’ The full name (further above), specifically identifies my lineage. It is a heritage I have accepted and ‘stepped-up’ (*Kumai)* to, and invest into. A *Kuleana*.

Throughout the report, Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano is used in place of Mr. Zacheriah Branch Harmony. The name Mr. Zacheriah Branch Harmony is only utilized to clarify between the “*nom-de-guerre*” and the preferred *inoa maoli*.

Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano began by expressing concerns regarding the status of an AIS, as well as streamflow and the discharge location of Waikomo Stream. Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano clarified that the Waikomo Stream is fed by the *mauka* reservoir. He additionally stated that the current bridge crosses over the drainage area for Waikomo Stream. Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano pointed out: “I’m just tracing where the water comes from and where the water is going . . . and what temporary impact that may be made by the work.” He further expressed the importance of tracing the route of these streams to gauge the impacts of bridge construction on the surrounding local estuarine environment, in addition to houses and homesteads. He stated,

> That is why I am trying to trace it down there . . . to see what housing or homesteads or land use. I would suggest as due diligence you guys would normally trace the route where the water goes to . . . and . . . who uses it? I don’t know . . . does it go to Wellington Ranch? Does it go on the other side?

Shortly thereafter, upon further discussion with CSH, the group of Mr. Kaohelauli‘i, Mr. Rowe, and Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano made clear that the project must take into account the routes of all tributaries, the individuals or groups who access and utilize the water, and how construction work may impact the ability to *mālama ke kahawai* (to take care of the stream). Mr. Kaohelauli‘i added that previous construction work had an impact on his plants; he stated that “you have to watch cause last time they did something they killed my plants and

everything.” Following Mr. Kaohelauli‘i’s comment regarding the health of his plants, Mr. Rowe stated that he supports the project, and believes there are no graves in the vicinity of the project area. Mr. Kaohelauli‘i concurred with Mr. Rowe, and offered his support of the project. Mr. Rowe posed to Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano the question if they were all in support of the project, and if they were in concurrence that no burials are in the vicinity of the project area. Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano subsequently answered with his agreement. Mr. Kaohelauli‘i elaborated further that the project is specifically for bridge repairs: “The only thing they going do is fix that bridge . . . the reason is because they fixing all the bridges, too much weight. The Hanapēpē Bridge they going fix that one.” Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano concluded with his one major concern:

> My only concern is the temporal or temporary one and it comes from the tradition that the estuary . . . you know is affected by what comes down from the stream. Case in point, you know my family had land there where Waikomo Stream Village is, we had first water rights. Which meant that the plantation had to guarantee us enough before they could take theirs off. Because, we had to *mālama* [to take care of] that estuary there, but you know under the *‘aha moku* [district court or council] as far as the fishing grounds grow . . . you know . . . just like out here they have that pipe out about a quarter mile out and it all comes back.

The interview concluded with Mr. Rowe stating that traditional cultural practitioners for the area include pig hunters and that “hunters still use the area.” He also added a non-cultural concern, expressing that “there will also be the impact of traffic. The project will impact the flow of traffic both ways.” Mr. Kaohelauli‘i and Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano had no further concerns to add to Mr. Rowe’s final statements.

5.4.3 Summary of Reginald Gage Interview

CSH conducted a phone interview with Kōloa resident Reginald Gage on 28 August 2015. The following is a summary of that interview:

Mr. Gage grew up as a child on O‘ahu Island, in Mānoa Valley during the late 1940s. His first visit to Kaua‘i took place while he was still in high school, around 1956 or 1957, where he took a trip to Kalalau Valley; he later moved to Kaua‘i in 1958 to live in Kalaheo. Mr. Gage is a retired Chief Appraiser and Real Property Assessor for the County of Kaua‘i. He is also a retired Navy Commander and describes himself as having a lifelong interest in the history of Hawai‘i, including the natural and physical history of the Islands. Mr. Gage currently sits as a trustee of Grove Farm Homestead Museum, and additionally holds the position of Vice President of Waioli Corporation. He is the past President of the Kauai Historical Society and is its current Vice President. He is also a member of several other Hawai‘i institutions.

Over the years, Mr. Gage has seen many changes to the island and community alike. He witnessed the various economic upheavals that accompanied Hawai‘i’s numerous industry changes. In particular, he commented on the transition from sugar and pineapple to seed corn, as well as the general labor reduction and transition of skilled plantation workers to general labor workers (such as yard work and housekeeping). Still in heavy cultivation on Kaua‘i is the *kalo* plant. This Hawaiian staple food is still grown in Hanapepe Valley, Waimea Valley, Olokele Valley, and of course Hanalei. Mr. Gage is a trustee of Grove Farm Homestead Museum. The

museum is affiliated with a non-profit body known as Waioli Corporation that owns approximately 50% of the *kalo* acreage in Hanalei.

When asked about any cultural sites, such as *heiau,* in the area, Mr. Gage was able to recall the location of one such site. “There’s a *heiau*, the one that I can think of immediately, is next to the Waiohai Hotel. There’s a little *heiau* on the peninsula.”

The *heiau* discussed by Mr. Gage is known as Kihāhonua. This *heiau* is a recognized stop on the Kōloa Heritage Trail. This *heiau* once occupied a portion of the shoreline area adjacent to the current Waiohai Hotel. Currently, three *hala lihilihi ‘ula* (*Pandanus tectorius*) trees signal the location of the *heiau*. A hedge of *naupaka kahakai* (*Scaevola gaudichaudiana*) encircles the site (Holoholo Kōloa 2016).

The temple was erected by the second chief of Kōloa, Kiha-ke-oho-lupalupa (Kiha with the luxuriant hair), and was dedicated to four Hawaiian gods: Ku-hai-moana and Ka-moho-alii, the shark god brothers of Pele, Hulukoki, a bird god thought to be one of the grandsons of Kāne, and Kāne (information provided by Stella Burgess for the Kōloa Heritage Trail Sites; O’Malley 2004).

Mr. Gage also discussed the extinct, endemic, *Carelia* land snail, found only on the island of Kaua‘i. He has been a malacologist since 1950 and is now the oldest member of the Hawaiian Malacological Society. In addition to being a malacologist, Mr. Gage is a member of the Society for Hawaiian Archeology.

The relevant collection (he collects and discusses) are land snail shells endemic to Kaua‘i and Ni‘ihau. The primary focus of his collection is the genus *Carelia* belonging to the endemic family *Amastridae*. All the species in this family are endemic to Hawai‘i. Mr. Gage recently authored a paper correcting the provenance of a Hawaiian *lei pūpū* (shell garland) in the John Webber Collection of the Bern Historical Museum. Mr. Gage provided CSH with a draft of his article entitled: *A Tongan Artifact in the John Webber Collection of the Bern Historical Museum* (see Appendix E). He has given permission for this paper to be utilized in conjuction with this CSH consultation. His article was published in the *Journal of the Captain Cook Society*.

Mr. Gage has worked with David Burney, Pila Kikuchi, Patrick Kirch, and others in the sinkhole of the Makauwahi Cave Preserve. This reserve borders the boundary of Pā‘ā and Māhā‘ulepū in the District of Kōloa. Mr. Gage has explored extensively in the Kōloa District and knows its fossil locations. Primarily, these locations are composed of beach sand. Calcium carbonate sand buffers the acidic soil of Hawai‘i and preserves fragile fossil shells. Fossil locations are typically near or on the shoreline, but may also occur inland in wind-driven sand dunes a mile or so from the ocean and in an area he describes as, “about 800 feet above sea level; such locations hold many species of fossil shells and sometimes bird fossils." Ancient “shells occasionally erode from inland fossil deposits and are seen as beach shells on the shoreline” (Gage 2016:3). Regarding shell deposits, Mr. Gage added,

> […] David Burney doesn’t know where these shells are, I do, but he doesn’t […] Actually there’s a lithified sand dune, do you know what lithified means? Turns to stone. There’s a lithified sand dune and the shells are in the lithified material of the sand dune, and they’re virtually hanging on the sea cliff. And in some cases if you go two feet in the *makai* direction you’ll be in the water. That’s why most people

> can’t find it because they don’t know where to look, it’s a difficult area. It’s a very difficult area. [Gage 2016:3]

Mr. Gage also noted that nearly all *Amastridae* species, including all species in the genus *Carelia*, are extinct.

From the shells he has gathered from excavations and lithified sand dunes, Mr. Gage has intentions of recreating the *Carelia cochlea lei pūpū* discussed in his paper (Figure 16). Mr. Gage stated,

> Actually I have a little bag of *Carelia cochlea*, after I saw the *lei*, I got the notion in my head that since I didn’t have the *lei*, that I would make a replica, so I started collecting shells for a replica. I think there are 40 some odd shells in the *lei*, the paper mentions the number of shells to make a *lei*, and I have almost enough to make a replica, but the shells in the *lei* are much better quality than those that I have from excavations.

Mr. Gage mentioned the Kōloa Village as a heritage site under conservation by Hal Hammatt. Located behind Joe’s on the Green, the site is an interpretive site, featuring a self-guided tour using signage and pathways.

A possible historic property exists in the *mauka* region of Kōloa, in the foothills of Hau‘upu; the nearby Kalepa Peak rests within Knudsen Family Trust lands. The trust was originally established by famed Hawaiian folklorist Eric “Elika” Alfred Knudsen to maintain lands between Po‘ipū to Mount Kahili.

Knudsen garnered fame in a Kaua‘i radio studio during the height of World War II. During blackout nights, Knudsen broadcast out across the Islands in his “Teller of Hawaiian Tales” show, recalling the myths and legends of old Hawai‘i and Kaua‘i Island to a vast audience (A. Grove Day in Knudsen 1946). On numerous occasions the protagonists of those tales were Kaua‘i *paniolo* (cowboy). Mr. Gage made reference to the *paniolo* (cowboy) presence within the area through his descriptions of the Wellington Ranch, a lessee of the Knudsen Trust who is still raising cattle on the property.

Mr. Gage concluded by suggesting a site visit to a possible historic property, a hydroelectric plant associated with Koloa Sugar Plantation (State Inventory of Historic Properties [SIHP] # 50-30-10-9302); the plant was subsequently abandoned in 1965 (Wilcox 1998:168). On the condition of the site, he commented, “The condition now is very similar to when the hydroelectric plant was shut down.”

Figure 16. The *lei pūpū* in the John Webber Collection of the Bern Historical Museum; interviewee Reginald Gage is currently recreating this *lei* with *Carelia cochlea* he has gathered on Kaua‘i (image provided by Reginald Gage, courtesy of Ursula Mollet, Curator of Ethnology, Bern Historical Museum, Switzerland, and Mike Severns Photography, Keehi, Maui, Hawai‘i)

5.5 Summary of Kama‘āina Interviews

Based on the reviewed and approved interview summaries of Mr. Kaohelauli‘i, Mr. Rowe, Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano, Ms. Hayes, and Mr. Gage, the following is a synthesis of findings within Kōloa Ahupua‘a.

Billy Kaohelauli‘i and Rupert Puni Rowe were interviewed by CSH on 3 August 2006 in Mr. Kaohelauli‘i’s backyard for a different project occurring within Kōloa Ahupua‘a. CSH followed up with both Mr. Kaohelauli‘i and Mr. Rowe in a series of telephone calls between 26 February 2016 and 1 March 2016 to discuss the information they had shared, regarding Kōloa Ahupua‘a, for a different project in 2006, and to discuss potential concerns in regards to the current Bridge 7E project. During these consultations both men reiterated their concerns regarding traditional practices and *wahi pana*, and the need, as *kānaka maoli,* to safeguard these practices and sacred sites.

As a *lawa‘ia*, Mr. Kaohelauli‘i was most concerned with impacts to local freshwater resources, particularly surrounding Waikomo Stream. While discussing Waikomo Stream, Mr. Kaohelauli‘i listed the varieties of freshwater fish he had gathered from the stream. These included *‘ama‘ama*, *āholehole*, *‘o‘opu*, and *‘ōpae kuahiwi*. Regarding the current state of freshwater resources, Mr. Kaohelauli‘i believed Waikomo Stream to be in a ruinous state, with populations of the aforementioned freshwater fish species either threatened or non-existent. Gathering for Mr. Kaohelauli‘i extended beyond aquatic resources and included numerous plant materials as well. For *lei* making, he gathered the Black-eyed Susan vine; for the practice of *lā‘au lapa‘au* or *kāko‘o ‘awīwī* he gathered herbs such as *pilo*, *‘uhaloa*, and *pōpolo*.

Mr. Rowe continued the discussion of traditional practices by explaining the once widespread practice of exchange between *mauka* and *makai* communities. In the balanced reciprocity system described by Mr. Rowe, *mauka* and *makai* communities established themselves as distinct entities through their production and cultivation of particular goods or resources. *Mauka* communities focused on the cultivation of *kalo* and *kī*, while *makai* communities focused their production and cultivation efforts on goods such as *pa‘akai*, *limu,* and fish; both communities, however, remained equally committed to *aloha ‘āina,* to protecting their respective land and water resources from depletion. The traditional system of exchange within Kōloa Ahupua‘a is a model for sustainability. Although this system is an exemplary model for sustainability, Mr. Rowe lamented that it is a threatened traditional system.

Mr. Kaohelauli‘i and Mr. Rowe guided the conversation to the discussion of *wahi pana*, or the safeguarding and maintenance of cultural sites. Mr. Kaohelauli‘i shared that he has observed *pōhaku ho‘ohānau* (birthing stones), *pōhaku piko* (stone containing the newborn’s umbilical cord), and bell stones (to announce births). In addition to the *pōhaku* (rock, stone), Mr. Kaohelauli‘i observed numerous caves. He commented that some of these cave systems once contained traditional Hawaiian artifacts. Both men concluded the consultation session by discussing their involvement in the preservation of “Ke Kahua o Kāneiolouma” complex. As *kīa‘i* (guardians) and *po‘o* (leaders) of Kāneiolouma, they are committed to maintaining and restoring the site to its original condition.

Due to a change in the original project area, specifically the enlargement of the project area from approximately 2.07 acres to 2.24 acres, all interviewees were informed of the change and

provided the opportunity to request additional consultation. This notification regarding the change to the project area resulted in a request for a new consultation from both Mr. Kaohelauli‘i and Mr. Rowe. Both individuals deemed it necessary to conduct an additional interview; this interview would specifically discuss the changes to the project area. In addition to the second interview, they requested that Ms. Terrie Hayes and Mr. Zacheriah Branch Harmony be included so that they may share their *mana‘o* regarding the project as well. On 20 April 2016, CSH conducted a second interview with Mr. Billy Kaohelauli‘i, Mr. Rupert Rowe, Ms. Terrie Hayes, and Mr. Zacheriah Branch Harmony (otherwise referred to as Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano within this report).

The second interview began with Mr. Harmony providing to CSH his *inoa maoli* (native or true name), identifying himself as Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano, and sharing his connections to Kōloa, Ma‘ulili, Lāwa‘i, and Waipouli. Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano had very specific concerns regarding the status of an AIS, and the impacts of construction on water quality within the project area. His concerns particularly revolved around streamflow and the discharge location of Waikomo Stream. Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano was able to trace the route of Waikomo Stream utilizing maps provided by CSH. Upon tracing the route, he shared that the Waikomo Stream is fed by the *mauka* reservoir. From the *mauka* reservoir, the stream continues *makai*, draining in the area below the current project area and bridge. Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano pointed out: “I’m just tracing where the water comes from and where the water is going . . . and what temporary impact that may be made by the work.” He noted bridge construction may potentially impact the surrounding local estuarine environment in addition to houses, homesteads, and individuals or groups who have rights to the stream. All parties at the second interview, Mr. Kaohelauli‘i, Mr. Rowe, and Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano, were in concurrence that the project must take into account the routes of all tributaries, the individuals or groups who access and utilize the water, and how construction work may impact the ability to *mālama ke kahawai*. Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano especially stressed his concern of bridge construction adversely affecting stream health, as there is a continued responsibility of the *‘aha moku* to *mālama* the estuary and the offshore fishing grounds.

Mr. Kaohelauli‘i added that previous construction work had a negative impact on his plants. Mr. Rowe stated that he supports the project, and believes there are no graves in the project area. Mr. Kaohelauli‘i elaborated further that the project is specifically for bridge repairs: “The only thing they going do is fix that bridge . . . the reason is because they fixing all the bridges, too much weight. The Hanapēpē Bridge they going fix that one.” They voiced agreement over improvements to the bridge, and had no additional concerns regarding impacts to cultural resources and traditional practices. Interviewee Rupert Puni Rowe added that “hunters still use the area” in the vicinity of the project area. Although today’s populations of feral pigs “bear little physical or cultural resemblance” to the animals traditionally domesticated by Hawaiians (Maly et al. n.d.:1), and pig hunting for recreation and subsistence is a western-inspired practice, it represents a continuity of traditional cultural knowledge, of *ho‘onohonoho* (management) (Chun 2011:257), within contemporary contexts. Of non-cultural concerns, Mr. Rowe stated that traffic would be impacted in both directions by construction.

Kōloa resident and historian Reginald Gage was interviewed on 28 August 2015 via telephone. Mr. Gage was also contacted in a series of telephone calls and emails from 26 February 2016 to 1 March 2016. Mr. Gage, who is knowledgeable in land use patterns, cultural sites, and general history and archaeology of Kōloa, discussed at length with CSH his involvement with preservation and research. As a trustee of the Grove Farm Homestead Museum and its affiliate, Waioli Corporation, and as a primary witness to Kaua‘i’s transition from the agricultural industry to the visitor industry, he expressed concerns for Kaua‘i Island’s agricultural future. As outlined in their mission statement, the organization, as well as Mr. Gage, believe it is their shared *kuleana* “to preserve Grove Farm and Waioli Mission House museums, and other important properties, buildings, and collections […]” (Grove Farm Museum 2012). Also in their charge are ancient pre-Contact taro fields and *‘auwai* systems of the Waioli Valley, and Lepeuli Ahupua‘a, a protected area designated for the conservation of “reef, sea, avian, flora and [historic or cultural sites] in their unaltered native habitat” (Grove Farm Museum 2012). Mr. Gage discussed his passion for the history and archaeology of Kaua‘i. His passion has blossomed into years of dedicated research of cultural sites and deposits, especially sites within Kōloa. He described the location of Kihāhonua Heiau. The *heiau* was commissioned by the second chief of Kōloa, Kiha-ke-oho-lupalupa (Kiha with the luxuriant hair) and dedicated to four Hawaiian gods: Ku-hai-moana and Ka-moho-alii, the shark god brothers of Pele, Hulukoki, a bird god thought to be one of the grandsons of Kāne, and Kāne (information provided by Stella Burgess for the Kōloa Heritage Trail Sites; O’Malley 2004).

Mr. Gage’s interest in the past has also resulted in his work with David Burney at Makauwahi Cave Reserve, and with famed Kaua‘i archaeologist Pila Kikuchi. As a conchologist and historian, Mr. Gage has participated in archaeological investigations, contributed to articles in peer-reviewed journals, and has submitted a paper to the Society of Hawaiian Archaeology (SHA) 2015 Conference. During his archaeological fieldwork, he identified a lithified sand dune containing endemic land snail shells of the *Carelia* genus (*Amastridae* family). He noted that the *Carelia* are an extinct genus, and all but two of the land snails belonging to the *Amastridae* of Hawai‘i are also extinct. He has also written papers contesting the provenance of a land snail *lei* within the Bern Historical Museum’s John Webber Collection. As part of his consultation, Mr. Gage provided CSH with his original article entitled, *A Tongan Artifact in the John Webber Collection of the Bern Historical Museum, its Hawaiian Provenance* (see Appendix E). The rareness of the Kaua‘i land shell *lei* has inspired Mr. Gage to replicate the original *lei* utilizing *Carelia cochlea* land shells he has gathered from excavations and lithified sand dunes.

Mr. Gage concluded his interview by describing a possible historic property in the *mauka* region of Kōloa. He made particular note of a possible Pelton Wheel. The site is a hydroelectric plant associated with Koloa Sugar Plantation (SIHP # -9302) and is located in the foothills of Hau‘upu, in the vicinity of Kalepa Peak. The plant was subsequently abandoned in 1965, and was described as almost being “frozen in time” (Wilcox 1998:168). Mr. Gage suggested a possible site visit if CSH is conducting additional work in Kōloa. However, he additionally noted that Kalepa Peak rests within Knudsen Family Trust lands, thus requiring the permission of the landowners (Knudsen Family Trust) before any possible reconnaissance can begin.

Section 6 Traditional Cultural Practices

6.1 Gathering of Plant and Food Resources

Kaua‘i was the first island in the archipelago to be approached by western explorers. Writings of foreigners documenting Hawaiian life describe the cultural landscape being full of *‘auwai*. Along the *‘auwai* were bananas and sugarcane. The coastal areas consisted of fishponds and salt pans while the *kula* or plains consisted of sweet potatoes, *pia* (arrowroot; *Tacca leontopetaloides*), and *wauke* (paper mulberry; *Broussonetia papyrifera*). The *mauka* sections were cultivated in *hala* (pandanus; *Pandanus* tectorius) and *kukui*. The *hala* was used for mats while the nut of the *kukui* was used for light (Judd 1935:53).

The Kōloa Field System was a large network of fields, both irrigated and dryland, comprised of shallow lava soils and irrigated by the Waikomo Stream. Mr. Kaohelauli‘i listed freshwater resources that had once been readily available in the stream, including *‘ama‘ama, āholehole, ‘o‘opu,* and *‘ōpae kuahiwi*. Housing and shelters could be found amongst the field system, and remained within access to Waikomo Stream resources. The field system stretched across the entire Kōloa Ahupua‘a. Handy and Handy (1972) commented that an extensive system of *kalo* terraces once existed in the area of Kūhiō Park, however, those lands were subsequently covered with sugarcane (Handy and Handy 1972:428). The planting of sugarcane also resulted in the diversion of Waikomo Stream; Handy and Handy made note of a few upland terraced areas in Kōloa, but the lands had turned “dry because water is diverted upstream for sugar-cane irrigation” (Handy and Handy 1972:428).

The shoreline of Kōloa consisted of salt pans. Winds blew the salt water into shallow ponds where the community carefully gathered *pa‘akai*. Salt manufacturing was an important industry in Kōloa Ahupua‘a. It was noted in Boundary Commission testimony that people “from Koolau go to Koloa for salt” (Boundary Commission 1874, Kaua‘i 1:124). Freshwater ponds were also located in the *makai* portion of Kōloa, attracting *koloa maoli* (*Anas wyvilliana*) or native duck. Handy and Handy surmise in *Native Planters in Old Hawaii: Their Life, Lore, and Environment* that this may have influenced Kōloa’s place name (Handy and Handy 1972:428).

Mr. Kaohelauli‘i discussed the gathering of plant resources within Kōloa Ahupua‘a. He recalled gathering the Black-eyed Susan vine, an introduced species with tubular orange or yellow flowers, to make *lei*. Of endemic species, Mr. Kaohelauli‘i recalled gathering various herbs in the area such as *pilo* (also known as *maiapilo* or Hawaiian caper), *‘uhaloa*, and *pōpolo*. Such herbs were traditionally utilized in *lā‘au lapa‘au* or *kāko‘o ‘awīwī* in the treatment of pain, injury, or general malaise.

Mr. Rowe added that pig hunters utilize the area within the vicinity of the project area. It must be noted that the feral pigs hunted today “bear little physical or cultural resemblance to the smaller, domesticated pigs brought to the islands by voyaging Polynesians” (Maly et al. n.d.:1). In the paper *Pigs in Hawai‘i, from Traditional to Modern* (Maly et al. n.d.), the authors underscore:

> […] pigs were never hunted game for ancient Hawaiians. The Polynesian interaction with these animals was one of near-complete domestication. Despite references to hunting rats with bow and arrow, no historic or traditional knowledge sources describe ancient Hawaiians hunting pigs for either food or recreation. Even

> in the legend of Kamapua‘a where the demi-god is pursued by man, he is sought so that he might be punished for his mischievous actions, not for sport or sustenance. [Maly et al. n.d.:2]

Although pig hunting is not a traditional cultural practice, it remains a “cherished modern practice for island sportsmen” (Maly et al. n.d.:4), and plays a role in conservation land management. Additonally, conservation land in the *mauka* portion of Kōloa Ahupua‘a forms a small part of the Lihue-Kōloa Forest Reserve designated as a public hunting area per HAR §13-123-15(4).

6.2 *Lei* Making

Mr. Kaohelauli‘i recalled gathering the Black-eyed Susan vine, an introduced species with tubular orange or yellow flowers, to make *lei*. While some *lei* created with various plants and other perishable items were ephemeral, *lei* made with feathers, seeds, dog teeth, coral, bone, or shell were intentionally created as permanent and lasting *lei*. *Lei pūpū* are included within the category of lasting *lei*.

Production of the rarer land shell *lei* has been restricted to Kaua‘i due to the endemism of the species of land snail (*Carelia cochlea*) utilized for this variety of *lei pūpū* (Gage 2016:3; See Appendix E). The land shell *lei* was made up with snail shells native only to Kaua‘i and Ni‘ihau, and threaded with cordage made of *hau* (*Hibiscus tiliaceus*) (Gage 2016:2; Hiroa 1957:542).

According to interviewee Reginald Gage, *hau* or *‘ili hau* was utilized for a Kaua‘i land shell *lei* currently held within the John Webber Collection of Cook Voyage artifacts at the Berne Historical Museum, Switzerland. This artifact consists of 27 *Carelia cochlea* shells and one *Carelia dolei* shell threaded with *‘ili hau* in a *kui lau* pattern (this pattern mimics a leaf design with shells alternating from side to side) (Gage 2016:3) (see Figure 16). Although the museum’s research on provenance indicated the artifact originated from Tonga, Mr. Gage asserts he has observed these shells along the narrow shoreline between Kalihikai Beach and Kalihiwai Valley on the northeast shore of Kaua‘i. He has additionally gathered shells from excavations and lithified sand dunes along the southern shore of Kaua‘i. From the *Carelia cochlea* shells he has gathered, Mr. Gage intends to *kui* (string) a *lei pūpū*, fashioned in the style of the Cook artifact *lei* currently held by the Bern Museum.

6.3 *Wahi Pana*

According to a Lahainaluna Schools document published in 1885, an interviewee named Makea (a resident of Kōloa) was able to describe 14 *heiau* within Kōloa *ahupua‘a*. Of the 14 *heiau*, five were associated with human and animal blood sacrifice; five were associated with fishing; two were of medicinal use; one agricultural; and the last was of an unknown function (Lahainaluna Schools 1885:165–166).

In 1907, Thomas Thrum later surveyed the sites of Kaua‘i. He documented six *heiau* in the district of Kōloa; these *wahi pana* were scattered across a broad area extending from Hanapēpē to Māhā‘ulepu. During the late 1920s, Wendell Bennett examined and recorded 202 sites on the island of Kaua‘i. Bennett recorded the following sites within Kōloa Ahupua‘a: Niu Kapukapu Heiau (Site 72); stone work on a hill (Site 73); a fishing shelter on the shore near the mouth of Kukui‘ula Valley (Site 74); Kūhiō Park with *lo‘i kalo* (irrigated terrace), a *heiau*, an *imu* (oven), a

paved house platform, a *loko ‘ia* (fishpond), game grounds with seats, and a *ko‘a* (fishing shrine) (Site 75); salt pans (Site 76); walls, enclosures, and house sites (Site 85); and a house site (Site 86) (Bennett 1931).

Interviewees Billy Kaohelauli‘i and Rupert Puni Rowe discussed with CSH their work in preserving cultural sites in Kōloa Ahupua‘a. As respective *po‘o* (head, director) of Hui Mālama O Kāneiolouma, both Mr. Kaohelauli‘i and Mr. Rowe are intimately familiar with Kāneiolouma Heiau and environs. Mr. Kaohelauli‘i described observing numerous features in the surrounding area, including *pōhaku ho‘ohānau* (birthing stones) and bell stones (to announce the births or arrivals of *ali‘i*).

In addition to identifying *pōhaku*, Mr. Kaohelauli‘i observed numerous caves. He commented that some of these cave systems once contained traditional Hawaiian artifacts. During the 2006 interview with both men, they discussed the Kāneiolouma complex, and described how they had gathered a group and cleaned the *heiau.*

Interviewee Mr. Gage discussed the *heiau* known as Kihāhonua. This *heiau* is included on the Kōloa Heritage Trail. He described this *heiau* as next to the current Waiohai Hotel, adjacent to the sea. Vegetation around the *heiau* includes *hala lihilihi ‘ula* (*Pandanus tectorius*) and a hedge of *naupaka kahakai* (*Scaevola gaudichaudiana*) (Holoholo Kōloa 2016). He could not immediately recall the name of the *heiau*, but referred CSH to several sources, including Bennett’s *Archaeology of Kaua‘i* (1931) that would include detailed information regarding the *heiau* and its use.

Section 7 Summary and Recommendations

CSH undertook this CIA at the request of CH2M HILL. The research broadly covered the entire *ahupua‘a* of Kōloa, including the current project area.

7.1 Results of Background Research

Background research for this study yielded the following results:

1. An 1885 interview document states a native named Makea acquainted with Kōloa Ahupua‘a knew of 14 *heiau* in the area. Wendell Clark Bennett conducted fieldwork from 1928 to 1929 and reported four *heiau* within Kōloa: Kāneiolouma, Mauli‘ili‘i, Kihouna, and Kanehaule.
2. Previous archaeology and historical accounts indicate the *mauka* lands of Kōloa consisted of a well-maintained agricultural complex of taro, yams, sweet potato, and sugarcane irrigated by an extensive *‘auwai* siphoned off Waikomo and Pō‘ele‘ele streams.
3. Kōloa became the site of the first organized sugar plantation in the Hawaiian Islands. Ladd and Company leased 1,000 acres for the sole purpose of growing sugarcane (Palama and Stauder 1973). The commercialization of sugar in Kōloa had widespread social effects that changed the traditional view of the *‘āina* and responsibility of the *ali‘i.*
4. Kōloa Town and Kōloa Landing became commercial centers during the mid- to late 1800s with the exportation of sweet potatoes, sugar, and molasses. Whalers also stopped for provisions such as pumpkins, salt, salted beef, pigs, and cattle (Palama and Stauder 1973:20).
5. By 1912, Koloa Sugar Company built a new and larger mill, which included a railroad track and an asphalt road built to connect the mill to Kōloa Landing. World War I produced a huge demand for sugar. However, in 1925, Kōloa Landing was phased out when McBryde Sugar and Koloa Sugar began to ship their products out of Port Allen in Hanapēpē. The *makai* Kōloa lands were eventually phased out for cattle pastures by the Knudsen family. The *mauka* lands in Kōloa remained under sugar cultivation until the 1970s, when they were also converted to pasture.
6. During the late 1960s, Kōloa experienced a reverse migration back to the *makai* areas. Tourism drove development near the shoreline resulting in construction and service jobs moving away from the town center.

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 Kōloa Ahupua‘a:

1. Billy Kaohelauli‘i, family from Kaua‘i; *lawai‘a* or local fisherman, his grandfather was a former policeman in Poi‘pū
2. Rupert Puni Rowe, *kama‘āina*, from one of the oldest families in Kōloa
3. Reginald Gage, retired Chief Appraiser and Real Property Assessor for the County of Kaua‘i; self-interest in Kaua‘i history; trustee of Grove Farm Homestead Museum; Vice President of Waioli Corporation
4. Branch Harmony, *kupuna* and *kama‘āina* of Kōloa Ahupua‘a

5. Terrie Hayes, *kama‘āina* and member of Friends of Maha‘ulepu

7.3 Non-Cultural Community Concerns and Recommendations

Based on information gathered from community consultation, participants voiced the following non-culturally relevant concern.

1. A community concern expressed during consultation included the impacts of construction on traffic in both directions. The community offered no recommendations regarding traffic mitigation measures.

7.4 Impacts and Recommendations

Based on information gathered from the cultural and historical background, and the community consultation, CSH identifies potential impacts and makes the following preliminary recommendations.

1. Previous archaeology conducted within the project area indicated four historic-era properties, however, no *iwi kūpuna* (ancestral bones) were discovered. A community member also stated that he does not believe burials of *iwi kūpuna* are located within the project area. In the event that any potential historic properties are identified during construction activities, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the event that *iwi kūpuna* are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD and Police Department will be notified pursuant to HAR §13-300-40. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended.
2. Community members expressed concerns regarding the effects of construction on natural resources (plant and food) and individuals who gather or utilize natural resources in the vicinity of the project area; these individuals may include, but are not limited to, fisherman and hunters. Community members offered no recommendations for mitigating the effects of construction on fisherman and/or hunters.
3. Another community concern regards the effects of construction on waterways. Concerns were additionally expressed regarding the impacts of construction on water quality, streamflow, and potential impediments to stream access. The community also noted that bridge construction may potentially impact houses, homesteads, and individuals or groups who have rights to the stream. The community recommended that the route of the stream be “traced,” and an investigation undertaken to determine which individuals or organizations use the water.

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Appendix A Billy Kaohelauli‘i and Rupert Puni Rowe Transcription

Cultural Impact Assessment, Bridge 7E Project: Cultural Surveys Hawai‘i (CSH) interview with Billy Kaohelauli‘i (BK) and Rupert Puni Rowe (RPR), on 3 August 2006 in Billy's backyard.

CSH: Aulii Mitchell and S. Māhealani Liborio

CSH: Tell me more about the history of Kōloa.

RPR: Yeah, Kōloa is the history of Old Kōloa Town. So when you're looking at the cultural impact and change of the social fabric or a rural area into one place like Honolulu or even Maui, where massive development has occurred—it destroys the culture. But there is no real [inaudible] to the landowner. So when you are talking Po‘ipū and Kōloa it has more to give, but it was already taken. So how can you give on a culture impact when you know yourself that the impact has occurred? So when you send something in to them what do you mean by 'cultural impact'? Because when you protect a culture then you protect our race of the culture. So that race of that culture does not have a voice in the process. That is the most critical thing about a culture impact statement. You got to know what happened to the culture. There are impacts but how do county and state enforce such rules. All they're doing, really, in the eyes of the *kānaka maoli* (true or indigenous man) . . . not native Hawaiian. There is a difference between a Hawaiian and a *kānaka* (man). A *kānaka* is the real one. A Hawaiian is person that identifies himself on a liquid measurement of his blood. OK, if you're less than half then you have nothing to say in the culture because it deprives you of your blood quantum. But if you are the *kānaka*, your decision and your view of the culture is reality. But you cannot implement reality if you don't protect the culture.

CSH: This process is one way to have a voice. It is not the only way, but it's one way. That's why we want to make sure that we do our best to gather knowledge and gather information that can go into these reports that will hopefully mean that development is done in a way that is more *pono* (righteous).

RPR: Development is not *pono*. *Pono* means protecting the culture before development.

CSH: OK, that's a better way to put it.

RPR: This statement right now is a key part of a process of development [inaudible] in the Kingdom of, […] the State of Hawai‘i. So when we are talking grass roots, we are talking about the culture. But in the culture it is such a mysterious part of its culture. It has been overused by the state and the developers because it does not protect the culture—the host culture. So when you identify the host culture you identify a race. Not an invisible person [inaudible] description. It is our culture. So that in the process it divides our people so their thoughts of their culture is being violated by having such a blood quantum. Because if you are less than half you feel insecure or you get stupid and agree with everything because there is nothing for you. But if you are half and above use the *kanaka* so you decided for those that are less than you in the other person's eyes. OK, that's the developer and that's the state and that's the county. So there are legal obligations to a culture. There is nothing in the county charter which identifies the culture impact. When you

have cultural impact CSH comes in for the state point of view, not the county. Because your point of view based on the state because the Hawaiian people are [inaudible] citizens of the state. That is not the right way to look at our culture. You know what I mean? The state and everybody that occupies Hawai‘i right now became the culture. Not the culture itself of that race. You see. When we talk about the political end of the culture impact [inaudible] you have to look at the people of the culture. So what you see today living in Hawai‘i you [will] never see tomorrow. Who said you had the right to change the island for your pleasure? Not the culture.

CSH: Can you tell me are there any cultural practices going on in the area [fishing, gathering] that could potentially be affected?

RPR: Yeah, everything along the shoreline like fishing. You can ask Billy all those questions.

BK: The impact . . . ? Yeah, it is really going to ruin the fishing grounds.

CSH: Tell me, looking at the map, are there areas where you fish like around Kōloa Landing or [trails off . . .]

BK: Well yeah, I fish all this whole coast. You see, right by Waikomo Stream is where you are going to go and it’s going to go flowing into the stream if anything breaks it is going to go right into the ocean.

CSH: What do you fish for there?

BK: I fish [for] all kind different fish—all kind of different varieties, Hawaiian fish.

CSH: How about freshwater fish?

BK: Well the Waikomo most of the times we get mullet and *āholehole* and usually [inaudible] and they had prawns and *‘o‘opu*. But I don’t know about now because they ruined the stream. I don’t know if there is any fish in there now. They ruined the stream because most of the people take water out of that stream. They’re taking all of the water out. There’s hardly any water coming down Waikomo Stream any more.

CSH: Are they diverting the water?

BK: I think they are using it for their own purpose. A lot of people are using that water . . .

RPR: . . . for the golf course, the developers . . . Waikomo Stream is a run off of Waipaa/Waikaa [inaudible] Reservoir, Oma [inaudible] Valley and all of Kōloa.

CSH: Do you still fish down there?

BK: Yeah there is a lot of fish. You just have to know the right time to go get them.

RPR: OK that question could be very misleading because now with all this development all the fish on the shoreline are going to be there and right now Snorkel Bob is trying to stop shoreline fishing. Put a ban on gill nets. You see the cultural practices cannot be functioning of you put restrictions on the *kanaka* fisherman and the citizens of Hawai‘i. The *kanaka* is a whole new part of the culture that is coming forth right now in the twenty-first century. And all of these development plans, these are the plans of the 70s and 80s that they are trying to implement now. So you know you really cannot turn back what they have already committed themselves to. They have no respect for the culture at the county level.

CSH: How has this [development] impacted your life and the land?

RPR: It impacts your life because what you see every day you don’t get to see tomorrow. And what you see as our culture is what you see as you move around the island. That is the culture. So you’re changing the lifestyle in the culture to suit someone else’s goals, not your own. You will never get to see *kanaka* people living in this area because of all the houses that they cannot afford. Like I said earlier, it is a liquid measurement on how to live in Hawai‘i, very critical. [*Kanaka* can no longer afford to] buy the land. They’re losing all of their cultural sites. And then, they cannot go and buy them. Why are you going to buy something that somebody destroyed? Like I said the last time to Mitchell—how does the culture protect itself? If you can protect the culture then no more problems period. You make this kind of report, because the culture would prevail over the planning process from the county and state. The culture doesn’t have the power to protect its own self. All they are doing is creating a paper trail. That’s not right because the culture doesn’t function that way. If you are wards of the state your culture is being denied to you. How valuable is the culture in such a report? Because you have our personal feelings but how far can our personal feelings go in a cultural report. That is critical. So that why they give you this assignment for the sewer line but they never tell you that everything outside this line has been approved for development. What you see today, the culture you never get to see again. The map brings pain when you look at this as the culture. You have no voice in the process. In another 20 years […] how does it affect the culture in and its people? When you walk upon your land and you cannot enjoy your culture which is the scenery, and everything that leads to your identity. How are you going to tell yourself that you are of the culture—only one paper trail. What does the paper trail give back to the culture? They want to sell all of Koke‘e. They are selling Koke‘e. They want to run busses up there and everything. This is planned for less than 5 years. So again when you come back to a culture impact—what are really talking about? [More general discussion about *kanaka* versus Hawaiian]. What is the real meaning of Cultural Surveys Hawai‘i if it cannot protect the culture? People will think you are *pupule* . . .

CSH: I can see quite clearly that you are a plant person. Do you ever gather any plants?

BK: Yeah, I used to get . . . I don’t think the plants are there anymore. Like we used to go get Black-eyed Susie to make leis. It’s not there anymore.

CSH: Where would you get that?

BK: All in this development area [where] we used to go as kids. It had fruit trees . . . mango trees . . . tangerine trees . . . all inside here [points on map]. [Black-eyed Susies] it’s a red thing with black spots. The thing is gone already. They had all kind of sand dune trees, all kind trees.

CSH: Do you still do anymore gathering?

BK: Not now. I don’t think they have the trees anymore. No mango trees anymore. I’ve never seen one mango tree for almost 30 years up there. Before, in the old days, all the fruit trees were up there. This was the old Hapa Road. It’s right next to the development going on. It’s the only road we had in the 50s going to Kōloa town. From here you cross the road and there is this small little road and you go all the way up there and as far as you can see, all you can see is rocks, formation of rocks, walls . . . Right here from this Hapa Road, right next to the sewer plant.

CSH: Tell me about the rock formations.

BK: There are a lot of *heiau* and a lot of islands a lot of caves a lot of birth places a lot of housing where there used to be houses. They had birth rocks and bell stones. [BK later—off the tape—explained that the bell stones were used to call people. You hit stone to stone and the sound echoed throughout the valley.] They had all kinds of big stones in there.

CSH: Bell stones?

BK: It looks like a big rock like that [pointing to a rock in his yard]. You hit it from the back the thing goes ‘baaaannnng’. There are a lot of caves. There used to be a lot of artifacts but everybody already took [them].

CSH: How about *makai* of the project area, since we’ve been talking about *mauka* . . . ?

BK: I don’t know . . . too many people. Fishing over here is getting scarce because of too many fishermen. People are coming from all kinds of places to come fish over here. The Federal bring in the seals and the seals eat all the food. They say the seals came from some place, but—no way. All my life there were no seals and then 10 years ago there were loads of seals. I think that is one of the problems we have from the ocean and I think another problem we have is big development all the runoff, all the poison into the ocean. And it’s killing the ocean. Like all the houses over here with swimming pools and it’s going into the ocean and killing all the reef. We kept on telling the state for years that these swimming pool guys got to go. They don’t do nothing about it. I know because when I fish on the rocks I can see that the rocks are all dead. The water is still . . . it kills everything . . . all the *limu* on the rocks it just dies. It’s not only in the Po‘ipū area, it’s all over the island. Anybody who has got a swimming pool, it is going to go in the ocean. They don’t listen.

CSH: What is your family background here in Kōloa?

BK: Well my mom is from here and my dad is from *Ni‘ihau*. My mom’s grandfather used to own this land and then turned it over to my mom and dad. But anyway, they go way back in the history. My grandfather used to own a lot of land here. He was originally from Big Island. And he had family over there—big family. But he was a policeman here in Po‘ipū. He and his family owned a lot of land. But not anymore. I guess it was from the overthrow. When they overthrew . . . they took a lot of the land away. So now a lot of people, *kanaka*s are trying to fight for their land but it is hard.

CSH: When did you start to notice that the reefs were being affected and that the *limu* was dying?

BK: Maybe about 5 years. You can see everything is dying out.

RPR: The hurricane you could see the original shoreline. [inaudible]

Once recording had stopped, the transcription of the conversation was recorded by hand as follows:

RPR: There are burials in the area.

RPR explained that his family is from the area. He is from Kōloa and they are one of the oldest families in Kōloa. There was once a barter system between *mauka* and *makai* communities with taro and ti (from *mauka* people) being traded for *limu*, fish and salt with *makai* people. That system is now threatened.

CSH: Any stories about the area?

RPR: Some of the stories and some of the things that I hear are sacred to the culture and shouldn't be disclosed. And, when you say 'area' and you're looking at 10 years down the road you're looking at people who are living off the land, how will your existence be affected. You see the culture of Hawai‘i does not give that information. You need information about the changing lifestyle of the person . . . all what you enjoy today will not be here in 10 years from now through the development, the rain, the dumping of fertilizers. How will we know the ocean will be the same 10 years from now? The ocean may change because of all the runoff. How will it affect him and his children and grandchildren? Now if you could put that in a CSH report, then you would have an 'impact' of the culture not just the history of the culture. Is that good?

BK: [Refers to some development work] was making too much noise and too much dust and they were working weekends! I don't know how you can slow them down, but they're not supposed to be working weekends. That's where they are [not] catching what they are doing on the weekends because nobody is monitoring them. So they can do anything they want. I don't think they should let these guys working during the night and the weekends because people want their weekends peaceful and nice. With all this development going down soon, there's going to be a lot of noise, a lot of people . . . where will they all go on this island? The park is too crowded now.

RPR: I think we've covered it all.

CSH: Let's close this for now, and if you can think of anything more that you would like to add please do . . .

BK: I like to add something, like how we did our own stuff. We just went and did our own thing in there. We had a group . . . that's how we did our cultural thing. We went in to protect the culture. And that is when everybody came down on us. Rupe you got to explain that.

RPR: The culture is the future. We took and cleaned the *heiau* and we will bring it back to its original existence. That's how you protect the culture. Culture Surveys Hawai‘i only looks at the cultural site but it doesn't really have any bite in protecting the culture because the landowner can do what he wants when he settles with the state to destroying the culture. So we are right now beating the county because the county has no authority to own a *heiau*. Because even the state . . . who gives you that right to own a place of worship. You can't own the Catholic Church or a Buddhist church or a mosque. What makes you think you can own the culture. Again, everything relates back to the culture and people.

BK: So how we did it . . . we . . . on the property we take care of the land and then deal with the state and county and the archaeologists. We cleaned the *heiau*.

RPR: We became the stewards of the culture. That's the important part. When you become a steward you identify yourself of a race, not a liquid measurement that deprives you of your identity. Because if you recognize the culture, then you recognize the race. And if you recognize the race then you cannot continue on the road of reckless development because it will show the true owner, not the one you think owns it.

BK: Tell what we started off over here . . .

RPR: Cultural Surveys Hawai‘i becomes weak because the state has the upper hand on what culture is. Cultural Surveys Hawai‘i can identify but not protect.

After the interview Billy Kaohelauli‘i also explained: “[…] my dad used all of the Hawaiian herbs such as *pilo* for back problems, *‘uhaloa*, *pōpolo* […].” Following the interview, a tour of the backyard was given. The land his family once had, was much larger and included a substantial piece of the bog. He pointed out the *heiau* they were caring for across from bog; the *heiau* included numerous features such as rock walls, and an *ahu* (altar). He remarked that “artifact hunters” come and turn over the rocks, looking for idols, and whatever else they can find. He also noted that some people take the rocks to build walls in the wealthy upland communities.

Appendix B Billy Kaohelauli‘i, Rupert Puni Rowe, Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano (Branch Harmony), and Terrie Hayes Transcription

Cultural Impact Assessment, Bridge 7E Project: Cultural Surveys Hawai‘i (CSH) interview with Billy Kaohelauli‘i (BK), Rupert Puni Rowe (RPR), Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano (Branch Harmony) (BH), and Terrie Hayes (TH) Kōloa residents, *kama‘āina*, and *kūpuna* on 20 April 2016. The interview was conducted in person, in Po‘ipū, Kaua‘i.

CSH: Aulii Mitchell

CSH: Okay so the recording is on just to let you, know, so I, Aulii Mitchell and I am sitting here with *ko‘u mau kūpuna ‘O* Harmony, Rupert and Billy in the lands of Kōloa, *‘ae*?

BH: The *ahupua‘a ‘O* Weliweli.

CSH: *‘O* Weliweli, *mahalo*. So I will pass the maps out to you, the original plan and the changed plans [maps being passed out]. Take a look at it. Okay, so this is the project area.

RPR: So one is the new one and this one is the old one.

BH: [Coughing]...

AM: Now if we can go around and get your names and where you are from.

BH: *‘O Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano ko‘u inoa maoli, mai Kōloa i ku‘u piko i Maulili, noho nei waiuka o Lawa‘i i, Waipouli.*

RPR: Rupert Rowe, Kōloa.

BK: Billy Kaohelauli‘i, Po‘ipū.

CSH: Okay, *meika‘i* so this is the FH Association reaching out through a cultural impact assessment. [Auli‘i Mitchell of CSH reads the letter to the group discussing the changes to the project area, including the description of the new project area]. Okay…

BK: Do you guys know if there are any graves around there?

CSH: That is why I am coming to you folks to get your knowledge of burials.

BH: Is there an AIS?

CSH: There is one being done. We are focused on the CIA and to record traditional cultural practices that may be impacted by the proposed project.

BK: So like…the um…all the edges of this ditch…or river…does that go into Waikomo?

BH: Yeah…where does the water go?

BK: It goes straight down there. I think it goes back down on this side and I think so somewhere.

CSH: [(Pointing on map at Waikomo Ditch)] This is Kōloa Town and Waikomo Stream which has *mo‘olelo*.

BK: Waikomo is the stream…

CSH: It comes from this area by the bridge.

BK: It goes to Waikomo…somehow it ends up…oh no no…

TH: This is the reservoir on the highway [Kaumuali‘i]? Is that the tree tunnel?

BK: No the tree tunnel is over here [pointing to the maps].

CSH: This is the trees here [pointing on map]…let us find *makai* on here.

BK: *Makai* is this side.

TH: Knudsen gap…so here is the Knudsen gap…so this has line has got to be the tree tunnel…so this is beyond the tree tunnel…what do they call it over there, *Ewa* side.

BK: No right here is the tree tunnel [pointing on map].

BH: Kōloa Town is down here…it is going the other way.

TH: Okay, then I have it turned around.

RPR: Let me see our picture Aulii.

BK: All they going do is enlarge the bridge and change the bridge…because the buggah is up to date…so they want to fix the bridge.

CSH: Right.

BK: So they want to change the bridge that is all.

BH: What feeds this is the *mauka* reservoir…will feed this drainage into…where they are proposed to put the new bridge in.

TH: I have a question.

BH: Then it drains down into here [pointing towards map and Kōloa Town].

BK: They just replacing the bridge.

CSH: Yes, they are just replacing the bridge.

BH: Yeah…I'm just tracing where the water comes from and where the water is going…and what temporary impact that made be made by the work.

CSH: Impacts of traditional cultural practices in this area.

BH: That is why I am trying to trace it down there…to see what housing or homesteads or land use. I would suggest as due diligence you guys would normally trace the route where the water goes to…and…who uses it? I don't know…does it go to Wellington Ranch? Does it go on the other side?

BK: No it comes from Waipā!

BH: Yes, but Wellington Ranch is below.

CSH: So the need to *malama ke kahawai*…Where the tributaries go to…who is using them…

RPR: The red line is…

BH: The red line is the highway [Pointing to map]…the cluster of habitation down at the…

CSH: Is Kōloa Town.

BH: On the top of your map the way you are holding is a cluster of little dots…that is Kōloa Town…so what you are looking at is from up the *mauka* reservoir it kind of drains down through the plume that is under the bridge. [Pointing to the map]…The black line is the tree tunnel going down. It is only 800 ft. up.

BK: You have to watch cause last time they did something they killed my plants and everything.

RPR: I support the project what is going on. I don't think they get any graves over there.

CSH: Nothing there?

RPR: Yeah.

BK: Me too.

RPR: Unless they had murders. So everyone agree. What about you?

BH: Yeah.

BK: The only they going do is fix that bridge…The reason is because they fixing all the bridges, too much weight. The Hanapēpē Bridge they going fix that one.

BH: My only concern is the temporal or temporary one and it comes from the tradition that the estuary...you know is affected by what comes down from the stream. Case in point you know my family had land there where Waikomo Stream Village is we had first water rights. Which meant that the plantation had to guarantee us enough before they could take theirs off, because we had to *mālama* that estuary there, but you know under the *‘aha moku* as far as the fishing grounds grow…you know…just like out here they have that pipe out about a quarter mile out and it all comes back.

CSH: Any other traditional cultural practitioners?

RPR: Hunters still use the area. There will also be the impact of traffic. The project will impact the flow of traffic both way. Anything else on this project?

BK: No…

BH: Nothing.

CSH: Okay *mahalo* to all of you. That is all.

Appendix C Reginald Gage Transcription

Cultural Impact Assessment, Bridge 7E Project: Cultural Surveys Hawai‘i (CSH) interview with Reginald Gage (RG), Kōloa resident, on 28 August 2015. The interview was conducted over the phone.

CSH: S. Māhealani Liborio

CSH: I wanted to go over a general background with you, your own personal background, your occupation and interests in research.

RG: Yes, well I'm retired. I was formally the chief appraiser and real property assessor for the county of Kaua‘i and I retired from that job. I'm also a retired Navy Commander. And my lifelong interest has been in the history of Hawai‘i, including natural and physical history of Hawai‘i.

CSH: And what was the trigger for you and your interest in Hawaii, did you grow up in the area? What's your family background?

RG: I grew up in Mānoa Valley in the mid to late 40s. When I was a kid I found a broken poi pounder, with no handle on it, and that set me off. I've been interested ever since then.

CSH: Did you find that in Mānoa Valley?

RG: Yes, in Mānoa Valley. Historically there used to be a lot of nurseries and orchid growers and things like that in Mānoa Valley, and I found it in one of those kinds of environments.

CSH: Wow that is a great find. When did your family, or you, move to Kaua‘i Island?

RG: I was transferred from Maui, where I was also an appraiser, to Kaua‘i in 1958. Somewhere back [then].

CSH: And in 1958, how was that transition for you? To be on the outer island like that?

RG: It was supposed to be a promotion, and it was a promotion. But I got involved in a political, sensitive job. And so, it was a good job, I learned a lot from it. But there were always political concerns with it. I was the assessor, and I was blamed for raising people's taxes, but my job actually was to keep taxes uniformed, not to raise taxes. The county counsel raised taxes, not the assessor. The assessor's job is to measure.

CSH: What kind of changes did you notice once you were on Kaua‘i Island over time? Changes in the area, or even your neighborhood.

RG: When I came to Kaua‘i, Kaua‘i was predominantly rural. It has become much more urbanized since then.

CSH: Right, the early 60s I'm sure you've seen a lot of development? What area did you move to when you moved to Kaua‘i?

RG: I've always had a home in Kalaheo, since the first time I was here. Actually my first trip to Kaua‘i was when I was still in high school, 1957-56. I went with Hawaiian Kea Mountain club to Kalalau Valley and we camped out in Kalalau Valley for a little while.

CSH: Did you see any change on the north shore?

RG: On the north shore, Kalalau Valley was used as a cattle ranch by the Robinsons. Eventually the State of Hawai‘i acquired the property, and took the cattle away. But when I was there it was still a cattle ranch. There were animals in the valley but no cowboys or anything like that, just animals.

CSH: How did they remove the cattle?

RG: I don’t know actually. I know in Ni‘ihau they remove sheep and cattle on landing crafts, and in those days they didn’t have a landing craft so I don’t know how they did it. But probably they had a sampan or something like that. You know lassoing the cattle and taking them to the ship and bringing them in from there. You’ve seen pictures of cattle, probably on other islands being moved from one place to another by boats.

CSH: Yeah, I’m from Big Island, in Waimea they are taking out a lot of cattle right now. Parker Ranch is selling their real estate and turning it into housing subdivisions.

RG: Unfortunately land has become a commodity. And it’s better to be a cultural resource than a commodity, but that’s the way it is. You know that, you’re a Big Island girl, you know that.

CSH: Yeah, it’s a sad change to see.

RG: You came from Kamuela?

CSH: Yeah, my family is from Waimea, my grandma is a Spencer.

RG: I know Kamuela fairly well. I worked, you know the White family in Kamuela?

CSH: Yeah, White Road.

RG: I worked for Allen White in the Department of Taxation, he was the chief administrator or something like that.

CSH: Yeah, that’s good hunting back there, at the back of White Road. It goes back overlooking Waipi‘o Valley.

RG: Yes, you go up White road and at the very end. Is that the Hamakua Ditch? Yes, you go along the ditch goes by there and you eventually get to Waipio Valley. I know it fairly well.

CSH: Yeah, best place in the world I think. So on Kaua‘i Island, since you’ve spent so much time there what can you say you’ve noticed as far as natural resources, food, plants, animals? I see you’re really into shells.

RG: Well, primarily, when I came to Kaua‘i, there were active plantations. One [plantation each] for both sugar and pineapples on Kaua‘i. Generally speaking, they are all gone; there are no pineapple plantations remaining, and there’s really no sugar left. And what has changed is that sugar land has become seed corn in some cases, but that doesn’t replace the cultural that has been taken away with the loss of sugar and pineapple.

CSH: Is that mostly on the west side of the island, or are you seeing that change all over?

RG: Actually, the seed corn is on the west, yes. But on the east side there was pineapple and on the west there was also pineapple. In my neighborhood in Kalaheo, there was a pineapple cannery, and another cannery in Kapa‘a. I don’t recall either cannery being operational when I first came.

They both closed down fairly early. But I was here to see the demise of sugar. Pretty much all the sugar plantations have closed since I've been here.

CSH: How do you think that affected the work force, what ended up happening to the work force what ended up happening?

RG: Well, the workers stopped being agricultural workers and ended up being visitor industry workers. So they became your yard man, and room cleaning staff and things like that. Some of them went into private business, but it was primarily hourly [wage] work that they were doing.

CSH: Yeah, just making do with the changing times. So besides pineapple and the sugar cane, did you notice any lo‘i that were being used when you first moved move there that are no longer being used?

RG: Actually taro has had a good existence, there is still taro cultivation in Hanapepe Valley, in Waimea Valley, and in Olokele Valley and of course in Hanalei. So taro is still hanging on. It's still a viable crop on Kaua‘i. I know several taro growers. Actually I'm a trustee of Grove Farm Homestead Museum, which has a nonprofit body that governs it, and I'm a vice president of that body. That [governing] body is called the Waioli Corporation. Waioli owns land in Hanalei. We own, probably, estimating, 50% of the taro acreage in Hanalei. You know that's a fairly sizable piece of property. Waioli runs a museum as well, and I'm a trustee for the museum as well. [Waioli] is another museum in Līhu‘e, so it has two little museums there.

CSH: So as trustee for the Grove Farm Homestead Museum you are probably doing a lot of fundraising and community outreach. What kind of programs are you guys running?

RG: We have the meal [service], and the *hula* show, and the music and things like that. We also have one of Hawaii's surviving railroads. We have a few miles of railroad tracks, so we run a trail up and down the track, and that brings in a little bit of money I'm not directly involved with that. That's run by another group that are more locomotive oriented than I am.

CSH: Is that at the Gaylord property?

RG: No, the Gaylord property, that's a commercial railroad, that's a diesel locomotive I think that came from Florida. We run steam locomotives, we have two steam locomotives. We actually have the oldest locomotive in Hawaii still operational.

CSH: Do you know how old it is, or when it was in use?

RG: I'm guessing, around 1880s, maybe a little earlier than that. It's a fairly old locomotive. It is German built. And we have another locomotive that is also operational but is seldom used. That one is a saddle tanker, and a saddle tanker has a water boiler over there . . . and it was made by an American locomotive company called Baldwin. So [the train is a] Baldwin Locomotive. A lot of Hawaiian locomotive[s] were Baldwin [made] locomotive[s]. They were good, reliable machines. And we have a third locomotive that's in storage. We have a small railroad in other words.

CSH: And they are all steam powered?

RG: Yes, steam [powered]. There's an [inaudible] in the boiler so it produces steam, and runs on steam.

CSH: Are you familiar with any *mo‘olelo* or any traditional legends from the area.

RG: I am vaguely familiar. I have Thrum’s and Rice. But I’m not an expert on [legends] by any stretch of the imagination. You know I have this collection of books that I’ve accumulated here and there. I’m a natural collector, there’s a number of things that I collect.

CSH: Books are a good thing to keep around, it’s an excellent thing to keep at your fingertips and thumb through.

RG: I have a library of probably a couple thousand books, I’ve never counted them but I have a large library that is probably pretty good. It’s difficult too, because much of the Hawaiian collections are out of print already. I have a full set of Hawaiian antiquities. I have the stone implements, I have the tapa cloth, I have mat and basket weaving [items], and then I have the Thrum collections that go with it [all] . . . and that includes legends. Bishop Museum memoirs are good. Then there is a lot of special publications by Bishop Museum on various subjects, and they are also very good.

CSH: It sounds like you do have quite an extensive library.

RG: Yes.

CSH: So I’m under the impression there are actually a few heiau in the area. Do you have any information on these heiau?

RG: In Kōloa, there are heiau in Kōloa but they’re not well known. There’s a heiau, the one that I can think of immediately is next to the Waiohai Hotel. There’s a little heiau on the peninsula.

CSH: Do you remember the name of the heiau?

RG: No I don’t. With things like this, I have a good memory for references, and I remember references. So if I wanted to learn heiau I would go to Archaeology of Kaua‘i and look in there. Because I’m a former assessor, I have a collection of Kaua‘i Tax Maps, and my next avenue [to follow in order to learn more about heiau] […] I look at tax maps, and from there I have a pretty good idea of where I’m going with things. There are a few heiau in Kōloa, so I would direct you to go to Bennett, Archaeology of Kaua‘i. Do you have that?

CSH: I can get that.

RG: Yes, the library would have it. Archaeology of Kaua‘i by Wendell Bennett, I’m not sure of the first name.

CSH: So I’d like to know a little bit of the historical period, I know that Captain Cook visited Kaua‘i. Do you have any information from that time period?

RG: Captain Cook never visited Kōloa, he visited Waimea. He did not go anywhere other than going into the interior of Waimea. There’s a heiau in the middle of Waimea Valley, actually it’s no longer there. The rocks were taken away and used for other purposes. The heiau was called Keali‘i. And Cook went to Keali‘i heiau with his artist John Webber, the person that had the land snail lei that I sent you information on the other day. And Webber made a print of Keali‘i heiau, I have that print. I have an original Webber print in my book collection. And if you read Buck [Te Rangi Hiroa], Arts and Crafts of Hawai‘i. Buck will say Webber’s print of Keali‘i is the best rendition of an operational Hawaiian heiau anywhere in Hawai‘i, actually there’s several prints. I think there’s two or three prints. I just have one print of the set. It shows the images, and with Keali‘i heiau there were burials around it, it shows the burial mounds and the offerings. And one

feature with Keali‘i heiau, they weren't just rubble foundations with a wall around it, which most people think of a heiau. They actually had a perimeter wall around the heiau ground. But there were also an oracle tower in Keali‘i heiau that shot up right, maybe 100 feet above ground level. That was a place I think maybe the kahuna's would address the [maka‘āinana]. They would, I don't know what they did there, there's no good description. So what I'm saying is, I'm guessing at things. There was this oracle tower and that was a special feature for Kaua‘i Island. Cook mentions it as he goes down the shoreline from Nawiliwili towards Waimea. He saw several oracle towers as he went along the shore line, and that's what prompted him to go down into Waimea Valley, because that was a big heiau. That was a tall [Mr. Gage placed emphasis on the height] tower there, and Webber made a print of it.

CSH: So the project area is a little obscure, it's a little mauka, and out of the way of everything. Are there any other specific natural resources in the area? I read in your article on the shell lei that the [land snails] are endemic but extinct.

RG: Yes, they are endemic, but extinct. The family they belong to is Amastridae. And that whole family is native to Hawai‘i. And the genus that they belong to, is endemic to Kaua‘i and Ni‘ihau.

CSH: I also saw in your paper that they were specific to Kalihiwai and Kalihikai Beach. Are those the only areas that you can find these shells, or do you think there is any potential that they were up in the Kōloa area as well? What do you think the likelihood is of finding any of these land snails up in the Kōloa area?

RG: I could take you there, but you could look for the next six months and you wouldn't find a thing. There is one little pocket of snails that is sometimes findable, but it's way off the beaten path. If I tell you how to get there you probably still couldn't get there. It's very remote. Do you know where the sink hole is in Kōloa?

CSH: I'm not very familiar with the Kōloa area.

RG: Yeah, there's a sink hole there that David Burney […] David Burney is a paleontologist. He's been excavating this sink hole since forever, and there's a Carelia site just, maybe an eighth of a mile past the sink hole. But even David Burney doesn't know where these shells are, I do, but he doesn't.

CSH: And it sounds like you can only find them when there's a heavy rain and the land gets turned up a little bit?

RG: Actually there's a lithified sand dune, do you know what lithified means? Turns to stone. There's a lithified sand dune and the shells are in the lithified material of the sand dune, and they're virtually hanging on the sea cliff. And in some cases if you go two feet in the makai direction you'll be in the water. That's why most people can't find it because they don't know where to look, it's a difficult area. It's a very difficult area.

CSH: And it sounds like it's coastal. So they weren't living up mauka, up in the trees?

RG: No, these were ground snails. They are not tree snails. The Amastridae are all ground snails, no tree snails. And generally speaking, the Amastridae in Hawai‘i, with one or two exceptions, are extinct. There are some species on O‘ahu that are still around, but generally they are all extinct.

CSH: How did you come to find the artifact in the Berne [Historical] Museum [John Webber Collection]?

RG: Adele, she worked for Bishop Museum as an ethnologist. She had an early interest, which continues on [today]. She likes to write about Captain Cook and Captain Cook artifacts. She discovered the museum in Bern, Switzerland and wrote a paper about it. Unfortunately for Adele, she used the provenance that was supplied by the museum, and the museum provenance was totally incorrect because they said that it came from Tonga, and if you read my article, I state rather conclusively, that it has to be Kaua‘i. It cannot be from anywhere else. Because I have an interest in ethnology, I purchased the book and almost immediately on reading it, I spotted a picture of this lei. I knew immediately what it was, and from then on it was a quest.

I have a close friend, who is deceased now, you may have heard of, his name was Pila Kikuchi.

CSH: Oh yes, I think you mention him in your article.

RG: Pila was Kaua‘i’s archaeologist. He taught at Kaua‘i Community College. He had a PhD from the University of New Mexico. And even now he [remains] an authority on Hawaiian fishpond[s]. So if you wanted to know anything about fishponds, Pila Kikuchi was the expert guy to go to. He was a […] Pila was always a nurturing kind of fellow, he encouraged me to write an article that originally appeared in the Archaeology of Kaua‘i. That [article] just kind of fell flat, nothing ever happened with it, so I kind of feel an obligation to resurrect something that Pila started, so that’s why I wrote the paper.

CSH: I’m sure he appreciated that information being shared.

RG: And SHA had a special issue one year on Pila Kikuchi. He was still alive I think, but they had a special issue on Pila while he was still living.

CSH: SHA did?

RG: His Christian name was William, William Kikuchi, but all his friends just called him Pila. He liked the Hawaiian name more than the Christian name. What does Pila mean do you know?

CSH: I don’t know but I can find out right now.

RG: I should look that up sometime.

CSH: I’ll just look it up, they translate it as any string instrument, formally the fiddle.

RG: That kind of fits because he had a song to sing, he was the voice of Archaeology.

CSH: Yeah, kind of like a kanikapila (impromptu music-making session)!

RG: He was a resource for archaeology.

CSH: I like that, the voice for archaeology. In our previous conversation you also mentioned a village that was restored and that was a [Hammatt] project?

RG: Yes, Hal Hammatt. There’s a restaurant call Joe’s on the Green. Joe’s on the Green is not on a major road. It is back on the Po‘ipū shopping area, the old Po‘ipū shopping center, not the new one. There’s two shopping centers in Po‘ipū. Behind the restaurant, about a block back from the main access road, there’s a little restaurant called Joe’s on the Green. It services a condominium or two in the area, golf patrons, and things like that. And when you get into the parking lot of the

restaurant look to the left hand side and you'll see this cleared area, it's completely denuded of vegetation. He has an interpretive site there that's quite well done, very well done. You know Hal better than I do.

CSH: Yeah, he does great work and he loves Kaua‘i Island. And the interpretive site, how is it being used?

RG: Well it has a sign, you know it's like a self-guided tour. It is used, but not to a great deal. There are not a great deal of people who have a dedication to archaeology, I happen to be one of them. I just think it's a nice site, it's a nice area.

CSH: Well I appreciate all of the information you have gathered. Let's see, you also mentioned that there was an old plantation artifact from the 20s maybe? Could you speak on that?

RG: What did I say about a plantation artifact?

CSH: That there was a hydroelectric plant and a Pelton Wheel?

RG: Yes, that's by your bridge, your bridge area. When you get there, look up towards the mountain range, the Ha‘upu mountain range. Ha‘upu [is] a tall [peak] in the center of the mountain range, and there's another prominent peak at a lower elevation, and that's called Kalepa. And there's a hydroelectric plant in the mountain range below Kalepa, and it's difficult to get to because you have to go through a locked gate. I've been there but it's probably inaccessible to the average tourist. I know how to arrange a viewing perhaps, but it would take a little while. But if you're interested I could do that some time.

CSH: Yeah I might take you up on that.

RG: Kalepa is a high point, and there are radio transmitters on Kalepa. I once did an appraisal for the radio tower, and so he kind of owes me a favor. So I could probably get in. I also know the individual who runs the cattle ranch in the area too. So there are two ways to get in there.

CSH: Does the Cattle Ranch still have cattle on it?

RG: Still does. Yes.

CSH: What is the name of that ranch?

RG: Well the owner is Duke Wellington. As in Duke Ellington, but with a W rather than an E. Duke Wellington has a ranch with his initials, I forget what the initials are. But if you go down to Kōloa, as you drive down the road about two miles before Kōloa, you'll see there's a road that runs off into the mountains. There's a big cattle brand ornament on the gate, and that's his ranch there. He is the lease tenant on the land, he isn't the owner. I know the owner also. I did work for the owner.

Assessors know where the skeletons area buried. We were responsible for the whole island, so I'm pretty knowledgeable.

CSH: I really appreciate your time and all of your mana‘o that you have shared with me, especially if I can take you up on your offer to visit the Pelton Wheel. Do you know if it has a state historic preservation number?

RG: I would guess probably not. Probably because the land owner is a member of the Knudsen family, and they don't want to publicize the fact that they have a Pelton Wheel. There are several

members of that family, most have moved away though. But I think there is one guy who lives on Kaua‘i, or did live on Kaua‘i for a while.

CSH: Well it sounds like it’s an historic artifact.

RG: Yes. It should have a historic preservation number on it, things like that should be protected.

CSH: Preserved, protected, and taken care of.

RG: But it’s so remote that it’s probably [trails off]. Its condition now is very similar to when the hydroelectric plant was shut down. Virtually everything that was in the building, is still in the building. You know the instrument panels, the Pelton Wheel, the generators, all that stuff, it is still there, and it’s just slowly rusting away. It’s a time capsule in other words.

CSH: It sounds like a little bit of history has been preserved up there. Is that even more mauka than the bridge? Is that correct?

RG: It’s on the tree tunnel road, you know the tree tunnel road? It’s off of that. So it’s below your bridge, and on that tree tunnel road, I think.

CSH: Well, maybe something that can be done in the future, is to look into getting a state historic preservation number for this site. It sounds like it’s an amazing property, and it sounds like it’s still intact.

RG: Well, it would take someone to write up a description for it. I may have some information on it, but I’d have to go back and look. I had a friend who worked for the office of economic development, the county office. One time he got a bug in his mind that he was going to do something with hydroelectric plants, and he and I went around the island looking at hydroelectric plants. I know three plants. I know one still-operational plant and a closed plant in Niumalu valley on Lihu‘e side, and then there is this Pelton Wheel in the Kōloa district.

CSH: Do you still have that information from when you went and gathered?

RG: I’d have to look. The trouble with being a compulsive collector is eventually you run out of space, and you start to throw things away. So it may have been thrown away. I don’t know.

CSH: If we get an opportunity to go over to Kaua‘i Island for interviews, I would like to meet with you.

RG: I can meet with you and we can go exploring. I like to go exploring.

CSH: That sounds great, I do too.

RG: I could probably take you to the Pelton Wheel place. It’s not as easy to get to nowadays, it used to be easier to get to before. It used to be that you could drive straight in. But I think there is a locked gate on it, but if you give me enough time I can get a hold of the owner and see if I can arrange for them to open the gate, or meet us at the gate. And I could also show you that restoration place at Joe’s on the Green.

CSH: And maybe this sink hole and sand dune.

RG: Yes, I know David Burney personally, I was David’s first volunteer in the sink hole. He liked to say that, he loved to tell stories but he didn’t let the facts of the stories interfere. And that kind of turned me off a little bit, he’s an interesting person but he doesn’t keep good history in my mind

anyway, so I kind of moved away from him. But David Burney and I are still on first name basis, and his wife and I are on first name basis, and I know many of his volunteers personally. I had coffee with a volunteer this morning. And the day before yesterday, I had coffee with another volunteer. I think I even have a key that may still work. So I can get you in the sink hole for certain. And then we can go look for Carelia if you want to, the Carelia area about a half a mile or so.

CSH: Wow, I’m a shell collector as well, so even just the act of looking is pretty exciting for me.

RG: If you’re a shell collector you should go down to Anini Beach and look on the beach now, today, for Carelia shells. Because with this last rain we had there is a good chance some of the shells washed down and they’ll be in the beach drift. Actually the beach shells are nicer because they get polished a little bit, and cleansed as they roll around in the ocean. And they are much prettier. If you dig up a shell [from the earth], they are kind of dingy looking. I know where there are excavation sites where we could possibly find Carelia [deposits], but the beach shells are much prettier, generally speaking.

Actually I have a little bag of Carelia coclia, after I saw the lei, I got the notion in my head that since I didn’t have the lei, that I would make a replica, so I started collecting shells for a replica. I think there are 40 some odd shells in the lei, the paper mentions the number of shells to make a lei, and I have almost enough to make a replica, but the shells in the lei are much better quality than those that I have from excavations.

Hal Hammett thought those shells were extinct by the Hawaiians [mass species die-off caused by pre-contact Hawaiian populations], but I disagree with that. I think it’s a Late Pleistocene extinction caused by loss of habitat. The vegetation they were growing on was exterminated by [pre-Contact] Hawaiians, but basically it’s a natural extinction.

CSH: Interesting, Late Pleistocene . . . I found it here, it’s about 28 shells on the necklace. Wow, I fully support the reproduction of an artifact like that.

RG: Yes, I sent that article off to the individual that you gave me the email address to. I did that this morning, I don’t know if he has got it yet or not. So SHA has a copy of that now.

CSH: Wow, well it sounds like you are very much steeped in the Hawaiian archaeology that has been going on in Kaua‘i, I’m glad I got the opportunity to speak with you.

RG: Well since SHA is going to be on Kaua‘i this year, maybe they should schedule a couple field trips. One to the Village site in Kōloa, and a second one to the sink hole at Mahalepu. Maybe you could suggest that to whoever sets up the field trips. I’d be happy to lead the group, someone would have to explain better than I can, but I’d be happy to lead the group, if there is any interest in that. So you could maybe do that.

CSH: I’ll look into setting that up because I know they do maybe three or four huaka‘i. But I also know you are taking a trip in October to Washington.

RG: Yeah, we have a conflict. I’m going to the Captain Cook Society meeting in Tacoma. I’m a Cookie. One of the rare books I have. I have a complete set, three volumes of Captain Cook’s journals. There are generally two or three books in each volume. I have I think in total of about nine books on Captain Cook that are all 1700s editions, first editions. And they are worth a little bit of money. They are not a picture book or anything, they are reading stuff. And comprehension

is a little difficult because the English have a different way of spelling things. They use an F for an S, so you have to keep your wits about you when you're reading the book.

CSH: I'd like to get this out before the SHA conference in early October. I'll definitely be touching bases with you if I think that I could get over to you before your family trip in October.

RG: Good I look forward to us meeting.

CSH: I do as well. Thank you again for all your mana‘o that you have shared. It is invaluable. This kind of information is sometimes under-appreciated, and unless people go out and go looking for it, it gets lost, and like you said, sometimes thrown out. I'll also send you a copy of this transcription and summary for your approval.

RG: Yes, good. I'll look at that as soon as it comes in. But I assume it's going to be a couple of weeks.

CSH: Yes, it's about eight hours for every one hour of verbal conversation, it takes about a day or so. So it will be a couple weeks.

RG: And when is the conference?

CSH: I believe it's the 9th -11th.

RG: Oh I may make it. There's a possibility I might make it.

Another thing I do is collect books. There are a couple of book stores in Denver [where] I collect books.

CSH: I'm sure there are fantastic book stores in Colorado. I collect books when I travel as well, books and rocks. I carry around the heaviest things I can.

RG: What kind of rocks? Geological rocks or artifacts?

CSH: Sometimes artifacts, mostly just geological. If I'm on an island, I'll collect stone that came from that island. Pink quartz if it's from the area. Just tiny little stones that represent the area.

RG: Geodes have a tiny little cavity, and I find those in Colorado.

CSH: Well I want to thank you again.

RG: Thank you.

CSH: I'll be in touch with you as soon as I get this transcription and summary completed. I hope you enjoy the rest of your day and I'll talk to you again soon. Thank you so much. Bye.

RG: Bye bye.

Appendix D Authorization and Release Forms

D.1 Billy Kaohelauli‘i/Llawelyn Kaohelauli‘i

April 20, 2016

Cultural Surveys Hawai‘i, Inc.
Archaeological and Cultural Impact Studies
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AUTHORIZATION AND RELEASE FORM

Cultural Surveys Hawai‘i (CSH) appreciates the generosity of the *kūpuna* and *kama‘āina* who are sharing their knowledge of cultural and historic properties, and experiences of past and present cultural practices for the proposed Bridge 7E, Kōloa Ahupua‘a, Kōloa (Kona) Moku, Kaua‘i Island, TMKs: [4] 2-7-001:004 por., and 2-7-002:001 por.

We understand our responsibility in respecting the wishes and concerns of the interviewees participating in our study. Here are the procedures we promise to follow:

1. The interview will not be tape-recorded without your knowledge and explicit permission.
2. If recorded, you will have the opportunity to review the written transcript of our interview with you. At that time you may make any additions, deletions or corrections you wish.
3. If recorded, you will be given a copy of the interview notes for your records.
4. You will be given a copy of this release form for your records.
5. You will be given any photographs taken of you during the interview.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.
3. If a photograph is taken during the interview, you consent to the photograph being included in any report/s or publication/s generated by this cultural study.

I, Llawelyn Kaohelauli‘i, agree to the procedures outlined above and, by my
(Please print your name here)
signature, give my consent and release for this interview to be used as specified.

Llawelyn Kaohelauli‘i
(Signature)

_____
(Date)

D.2 Rupert Puni Rowe

December 18, 2016

Cultural Surveys Hawai‘i, Inc.
Archaeological and Cultural Impact Studies
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4. You will be given a copy of this release form for your records.
5. You will be given any photographs taken of you during the interview.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.
3. If a photograph is taken during the interview, you consent to the photograph being included in any report/s or publication/s generated by this cultural study.

I, RUPERT H ROWE, agree to the procedures outlined above and, by my
(Please print your name here)
signature, give my consent and release for this interview to be used as specified.

Rupert H Rowe
(Signature)

12/18/15
(Date)

April 20, 2016

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Cultural Surveys Hawai'i (CSH) appreciates the generosity of the *kūpuna* and *kama'āina* who are sharing their knowledge of cultural and historic places, experiences of past and present cultural practices. 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 (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Bridge7E, Kōloa Ahupua'a, Kōloa (Kona) Moku, Kaua'i Island.

We understand our responsibility in respecting the wishes and concerns of the interviewees participating in our study. Here are the procedures we promise to follow:

1. The interview will not be tape-recorded without your knowledge and explicit permission.
2. You will have the opportunity to review the written transcript or notes of our interview with you. At that time you may make any additions, deletions or corrections you wish.
3. You will be given a copy of the interview transcript or notes for your records.
4. You will be given a copy of this release form for your records.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.

I, Rupert H Rowe, agree to the procedures outlined above and, by my signature, give my consent and release for this interview and/or photograph to be used as specified.
(Please print your name here)

Rupert H Rowe
(Signature)

4/20/16
(Date)

Kalanikumai Ka Maka‘uli‘uli Puamo‘i ‘O Nā Ali‘i Hanohano

April 20, 2016

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2. If recorded, you will have the opportunity to review the written transcript of our interview with you. At that time you may make any additions, deletions or corrections you wish.
3. If recorded, you will be given a copy of the interview notes for your records.
4. You will be given a copy of this release form for your records.
5. You will be given any photographs taken of you during the interview.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.
3. If a photograph is taken during the interview, you consent to the photograph being included in any report/s or publication/s generated by this cultural study.

I, Kalani Kumai 'O Nā Ali'i Hanohano, agree to the procedures outlined above and, by my
(Please print your name here)
signature, give my consent and release for this interview to be used as specified.

Kalani Kumai 'O Nā Ali'i Hanohano
(Signature)

4/20/2016
(Date)

D.3 Reginald Gage

March 1, 2016

Cultural Surveys Hawai‘i, Inc.
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4. You will be given a copy of this release form for your records.
5. You will be given any photographs taken of you during the interview.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.
3. If a photograph is taken during the interview, you consent to the photograph being included in any report/s or publication/s generated by this cultural study.

I, REGINALD P. GAGE, II, agree to the procedures outlined above and, by my signature, give my consent and release for this interview to be used as specified.
(Please print your name here)

(Signature)

MARCH 1, 2016
(Date)

Appendix E Reginald Gage Article

A Tongan Artifact in the John Webber Collection
of the Bern Historical Museum,
its Hawaiian Provenance

General Considerations

The goal of this paper is to document the precise place of collection and illuminate the origin of the artifact in question. The article will document the quest for an artifact's provenance through a taxonomic analysis of the land snails shells used in the artifact. It was necessary to discuss these shells and their distribution on the Island of Kaua'i; and it was further necessary to describe the materials of the artifact, to provide a comparison of Tongan and Hawaiian land shell necklaces. The article includes an enhanced photograph of the artifact in question and concludes with the provenance of the artifact.

John Webber Collection

The Cook Voyage artifacts of the John Webber Collection at the Berne Historical Museum [BHM] are discussed and illustrated by Adrienne Kaeppler in reference 8. In reading this account I saw that the attribution of a Tongan ornament was erroneous.

I am a conchologist and a historian with an understanding of Hawaiian ethnology gained in the study of its artifacts and have lived in Hawai'i for many years.

The interest in ethnology was stimulated in reading about the BHM artifact collection. But, the knowledge of conchology told me that the artifact represented as Tongan was not Tongan. The conchological instincts told me that this artifact was a necklace of Kaua'i land snail shells, a *lei pupu.*

Realizing that I could identify the shells of the necklace and discuss their origin, I became motivated to provide a Kaua'i provenance for this Kauai artifact.

The quest for it's provenance began with an inventory of the Hawaiian artifacts in the Webber Collection. This collection contains many important Hawaiian artifacts. Within are six pieces of decorated bark cloth (*kapa)*; a bracelet *(kupe'e 'ea)* with 215 thin plates of turtle shell and 5 thicker plates of finely polished dog teeth on a cord tie; 2 boar tusk bracelets; 2 marine shell leg ornaments (*pupu mamaki*); 2 whale tooth hook-shaped ornaments suspended on coils of braided human hair (*lei niho palaoa*); a feather cloak (*'ahu 'ula)* made from the feathers of *'i'iwi* and *'o'o birds*; a crested helmet (*mahiole)* also made of *'i'iwi* and *'o'o* bird feathers; a feather necklace (*lei hulu*); a bowling stone (*'ulu maika*); a large stone adz (*ko'i*) with an attached wood handle; several shark tooth carving tools and weapons; a wooden truncheon dagger; a plaited *makaloa* mat; and a wood shark hook (*makau mano*) with a bone point and a snood loop.

This inventory shows that John Webber was a discriminate collector with an eye for the rare and unusual. The collection suggests that high status Hawaiians may have been the intended recipients for many of the collection's artifacts. As an appraiser I have seen that collectors often assemble their collections in terms of classification. I see that John Webber did this also. In trading for these artifacts, Webber saved them for posterity and allowed me to question a provenance that I saw to be incorrect.

Overall, the provenance of the Webber Collection is impeccable. John Webber was the official artist on Cook's third voyage of discovery. He was aboard the *Resolution* or *Discovery* in October 1777

as these ships sailed through the Tongan archipelago and also when the ships anchored at Waimea, Kaua'i, Hawai'i on January 19, 1778.

The Land Snail Shell Necklace

The Webber Collection holds the land snail necklace shown on page 5. In 1957 Karl Henking, the then curator of the Bern Historical Museum recorded the provenance of this necklace as Tongan ornaments. This provenance was subsequently adopted by Adrienne Kaeppler who then was employed by the Bishop Museum in Honolulu. The error of a Tongan provenance is continued in reference 9; I think that the Tongan provenance was simply a bad guess.

I saw the provenance of the necklace differently than Karl Henking. I saw it as an artifact of antiquity; that its shells were native to Kaua'i; that it contains the first Hawaiian land snail shells to be taken to Europe; that a Tongan necklace holding Hawaiian land snail shells is a contradiction; and that its land snail shells are the means of showing that the provenance of the necklace originated on the island of Kaua'i.

Seeking ways to show that the BHM necklace originated on Kaua'i, I recalled that its shells of the necklace are endemic to the narrow shoreline between Kalihikai Beach and Kalihiwai Valley on the northeast shore of Kaua'i. I theorized that the necklace was made in or near to the Kalihi land section of northeast Kaua'i and was taken to Waimea in southwest Kaua'i where the ornament was traded to a crew member of Captain Cook's ships and obtained by John Webber.

I saw that I could identify the land snail shells of the necklace and discuss their origin, that I had resources illustrating Tongan shell necklaces, and I could compare these shell necklaces with Hawaiian shell necklaces, and objectively re-attribute the necklace to Kaua'i. When I did so the necklace would regain its status as a Kaua'i artifact.

Carelia cochlea, a Taxonomic Analysis

The provenance began with a taxonomic analysis of land snail shells in the BHM necklace. These taxonomic references are 3, 7, and 14. They provide that the land snail shells of the BHM necklace belong to the family *Amastridae,* that their genus is *Carelia,* and that their species is *Carelia cochlea (Reeve, 1849).*

The references further state that the family *Amastridae* is restricted to the Hawaiian Islands, that the genus *Carelia* is endemic to the islands of Kaua'i and Ni'ihau, and that the species *cochlea* is localized to the narrow strip of land between Kalihiwai Valley and Kalihikai Beach. These locations are on the northeast shore of the island of Kaua'i.

Using the photograph of the BHM necklace as a reference, the photograph is shown on page 5, an examination of the necklace shows that it holds 28 shells, that these shells are strung in pairs, and that in the middle pair of shells there is a whitish shell that is partly obscured by other shells of the necklace. This whitish shell is *Carelia dolei* Ancey, 1893; a species is found about 10 miles north of the locality of *C. cochlea* in a land section known as Ha'ena. All the remaining shells in the necklace are *C. cochlea.*

Carelia cochlea is distinguished from the other species of *Carelia* by its slender turreted form, a relatively small aperture, the occasional presence of distinct continuous ridges on the body whorl, a burnt chestnut color, and in most shells, the presence of a narrow white band at the suture of the shell body whorl. The shells in the BHM ornament, with exception of *C. doeli,* have these features.

Carelia cochlea is a Holocene extinction. With favorable conditions the shells of *C. cochlea can* be abundant; these shells occasionally erode from inland fossil deposits and are seen as beach shells on the shoreline. The interior whorl of fossil *Carelia* shells are seen as being brittle, the spire of the shells may be removed (as evident in the BHM necklace) by holding the shell body whorl tightly and twisting the spire firmly counter clockwise. This removal permits threading the shell through its shell body whorl. This is the method of threading in the BHM necklace. The cord of the BHM necklace appears to be the twisted bark of *hau* (*Hibiscus tiliaceus*). The threading of the necklace is done in a leaf design with shells alternating from side to side. The style of threading is known as *kui lau*.

In Hawai'i all shell necklaces are known as *lei pupu. Carelia lei pupu* are rare artifacts. Other than the BHM ornament there are two *lei pupu* in the Grove Farm Homestead Museum in Lihu'e, Kaua'i; a *lei pupu* necklace in the Waioli Mission House Museum in Hanalei, Kaua'i, a *Carelia lei pupu* in the Bishop Museum in Honolulu; and in the writer's collection there is a pair of pierced *Carelia sinclari* Ancey, 1892 that were removed from a Ni'ihau *lei pupu* by the naturalist W. A. Bryan about a hundred years ago. It is noted that all these *Carelia* shells are all pierced and that none are threaded through the shell body whorl as evident with the BHM necklace.

Comparison of Tongan and Hawaiian Shell Necklaces

Hawaiian land snail shell necklaces and Tongan land snail shell necklaces greatly differ. Tongan shell necklaces are strung with the small reddish-brown land shells of the genus *Partula.* These shells are generally about three-quarters of an inch in length. The genus Partula is widely distributed in the Pacific, but the range of the genus does not extend to the Hawaiian Islands. Shells of the genus *Carelia* are twice as long as the genus *Partula.* The genus *Carelia* is endemic to Kaua'i and Ni'ihau.

Reference 8, pages 26 through 31, contains illustrations of Tongan land snail necklaces in the Cook/Forester Collection of the Georg August University of Gottingen. Three Tongan shell necklaces are also shown in figure 68 of reference 9. All of these necklaces are made from the land snail shells of the genus *Partula.* Tongan necklaces are called *tuginga kahoa.* The genus *Partula* greatly differs from the genus *Carelia. Carelia* shells are typically twice as long or greater than *Partula.*

The stringing of shells in Hawaiian shell necklaces is typically done as a continuous band of shells. Tongan necklaces are strung as separated individual shells, or separated in groups of shells.

Conclusion

It is concluded that the BHM necklace embodies the attributes of Hawaiian shell necklaces. This necklace is entirely composed of land snails shells endemic to the island of Kaua'i, These species are found only in the localities Kalihikai and Kalihiwai of northern Kaua'i. The fact that all the shells of the necklace are endemic to this specific region of Kauai strongly implies that the ornament came from, and was made in that region.

The BHM land snail necklace is firmly attributed to the third voyage of Captain James Cook and to the John Webber Collection of the Bern Historical Museum.

I conclude that that the Bern Historical Museum's land snail shell necklace is a Hawaiian *lei pupu,* that its shells are endemic to the area between Kalihikai and Kalihiwai in the Hanalei District of north Kaua'i, and that it is a Kauai artifact. It is not probable that there was commerce between Kaua'i and Tonga in 1778 or any known period before then. It is probable that this artifact was traded by a native Hawaiian at Waimea, Kaua'i to a crew member of one of Captain Cook's ships. It is not possible to know who this crew member was. It may have been John Webber or any other crew member of Captain Cook's Ships. Likewise it can not be determined who or what was traded for the necklace.

What is important is that the *lei pupu was acquired by* John Webber, that it was acquired at

Waimea, Kauai during the interval of January 20-26, 1778, and that the land shells of the *lei pupu* are endemic to the Kalihi District of the Island of Kauai.

Whether an artifact is large or small, it may lose its provenance in the passage of time. But on occasion the lost legitimacy of an artifact can be reinterpreted through research. The goal of this paper was to document the precise place of collection and illuminate the origin of the artifact in question.

There were many who aided in the preparation of this article. The single most influential person is indisputably the late Dr. William Pila Kikuchi. As Pila's colleague, I am better informed than I would have been otherwise. Pila guided this article through early drafts and obtained material not readily available. I am also indebted to Mike Severns for the color photograph of the BHM necklace, to Kay Koike, Bob McGinty, and Bob Nyvall for their expertise in editing, and to Loren Kohnfelder and Gaetano Vasta for their computer assistance.

Reg Gage

A *lei pupu*, a Hawaiian land snail shell necklace. In the John Webber Collection of the Berne Historical Museum. (BHM collection number: 1791.516.0025). Attributed to the 1776-1780 voyage of Captain James Cook, in the HMS *Resolution* and *Discovery.* Acquired by John Webber at Waimea, Kauai, Hawaii during the interval of January 20-26, 1778. Photo courtesy of Ursula Mollet, Curator of Ethnology, Bern Historical Museum, Switzerland and Mike Severns Photography, Keehi, Maui, Hawaii.

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Appendix F
Pre-Assessment Comments and Responses

PRE-ASSESSMENT COMMENTS

- Template Letter with Project Sheet
- Comments Received
  - State of Hawaii Department of Health, Clean Water Branch
  - State of Hawaii Department of Health, Environmental Planning Office
  - State of Hawaii Department of Land and Natural Resources, Commission on Water Resource Management
  - Office of Planning, Department of Business Economic Development and Tourism
  - Kauai Department of Public Works

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
720-963-3647
michael.will@dot.gov

March 24, 2015

In Reply Refer To:
HFPM-16

Dear :

Subject: Hawaii Bridge Program for Island of Kauai
Federal Highway Administration, Central Federal Lands Highway Division
Pre-Assessment Consultation
Chapter 343, Hawaii Revised Statutes and National Environmental Policy Act

The Federal Highway Administration, Central Federal Lands Highway Division (CFLHD), in partnership with the Hawaii Department of Transportation (HDOT), is conducting environmental studies to examine the impacts of three projects to improve three bridges on the island of Kauai. We are assisted in this effort by our consultant, CH2M HILL.

- Hanapepe River Bridge on Kaumualii Highway
  Koloa and Waimea Districts, TMK: [4] 1-9-007: 001
- Bridge 7E on Kaumualii Highway
  Koloa District, TMK: [4] 2-7-001
- Intersection Improvements at Kuhio Highway and Mailihuna Road and
  Kapaa Stream Bridge on Kuhio Highway
  Kawaihau District, TMK: [4] 4-6-014 and 4-7-003

Attached to this letter are fact sheets for each of the projects, including photos and maps. We are requesting comments and input regarding environmental concerns in all resource areas, and information that might help us to evaluate the projects.

The environmental review for this project is being conducted in accordance with the National Environmental Policy Act (NEPA) and Hawaii Revised Statutes (HRS), Chapter 343.

Please send any concerns or comments to Kathleen Chu, CH2M Hill program manager (CH2M Hill, Inc, 1132 Bishop Street, Suite 1100, Honolulu, HI 96813) or myself, within 30 days receipt of this letter. If you have questions, please contact Ms. Chu at Ph. 440-0283 or kathleen.chu@ch2m.com or myself at Ph. 720-963-3647 or Michael.will@dot.gov. Thank you.

Sincerely,

J. Michael Will, P.E.
Program Engineering Manager

Enclosure:

Fact Sheets for Hanapepe Bridge, Kapaa Stream Bridge and Intersection Improvements, and Bridge No. 7E

cc: Nicole Winterton/FHWA-CFLHD
Kathleen Chu/CH2M HILL
Paul Luersen/CH2M HILL
Elizabeth Cutler/CH2M HILL

Bridge 7E

Koloa, Koloa District, Kauai
TMK: [4] 2-7-001

Photo 1: View of Bridge 7E looking west

Location

The project area for the improvements includes Bridge 7E and its immediate environs. The bridge is located at milepost 7.0 on Kaumualii Highway (State Route 50) and approximately 800 feet west of Maluhia Road, also known as Tree Tunnel Road (see Project Location Map). The bridge crosses an unnamed intermittent water way.

Existing Conditions

Bridge 7E was built in 1933 and constructed as a two-cell concrete box culvert. The existing bridge has a length of 23 feet and deck width of 28 feet. There are two 10-foot wide travel lanes and 2-foot wide paved shoulders on each side. The current structure utilizes metal guardrails on both sides of the roadway and the bridge itself is not easily visible from the roadway. HDOT's 2013 Historic Bridge Inventory identified that Bridge 7E is a common post-war bridge constructed after 1945.

Kaumualii Highway is a two-lane undivided highway in the project area with a posted speed limit of 50 mph. It is classified as a Rural Minor Arterial. Average daily traffic (ADT) is currently 15,000. For long-range planning purposes, ADT in 2035 is estimated at 22,400. There is no plan to add travel lanes to increase the capacity of the bridge.

Purpose and Need

The purpose of this project is to improve Bridge 7E and its approaches, by rehabilitation or replacement, to create a crossing that remains a safe component of the regional transportation system and provides smoother traffic flow for highway users. Based on bridge inspections and studies, a number of conditions were identified that need to be remedied, including: overall structural and design deficiencies relative to current roadway width and bridge standards.

Project Description

Bridge design alternatives are being developed in conjunction with ongoing environmental studies. However, design options will include the following components:

- Design for structural integrity of the crossing via bridge rehabilitation or replacement
- Meet live load and seismic requirements
- Provide for adequate hydrological flow under flood conditions
- Mitigate erosion and sediment deposits
- Widen bridge to include adequate shoulders and travel lane widths
- Replace guardrails/bridge rails in compliance with crash test requirements
- Replace/relocate existing utilities
- Develop a traffic management plan with appropriate construction-period detours

This project is included in the Statewide Transportation Improvement Program (STIP) and will be funded, in part, with federal monies.

Project Location Map

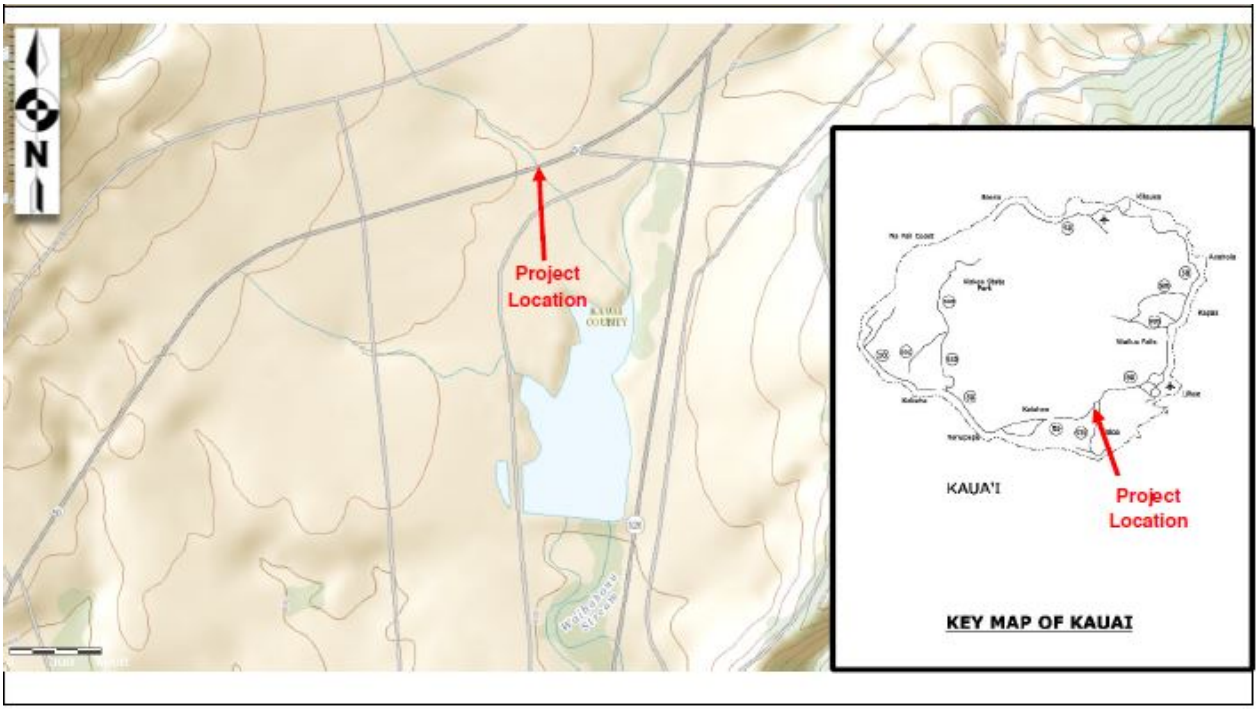
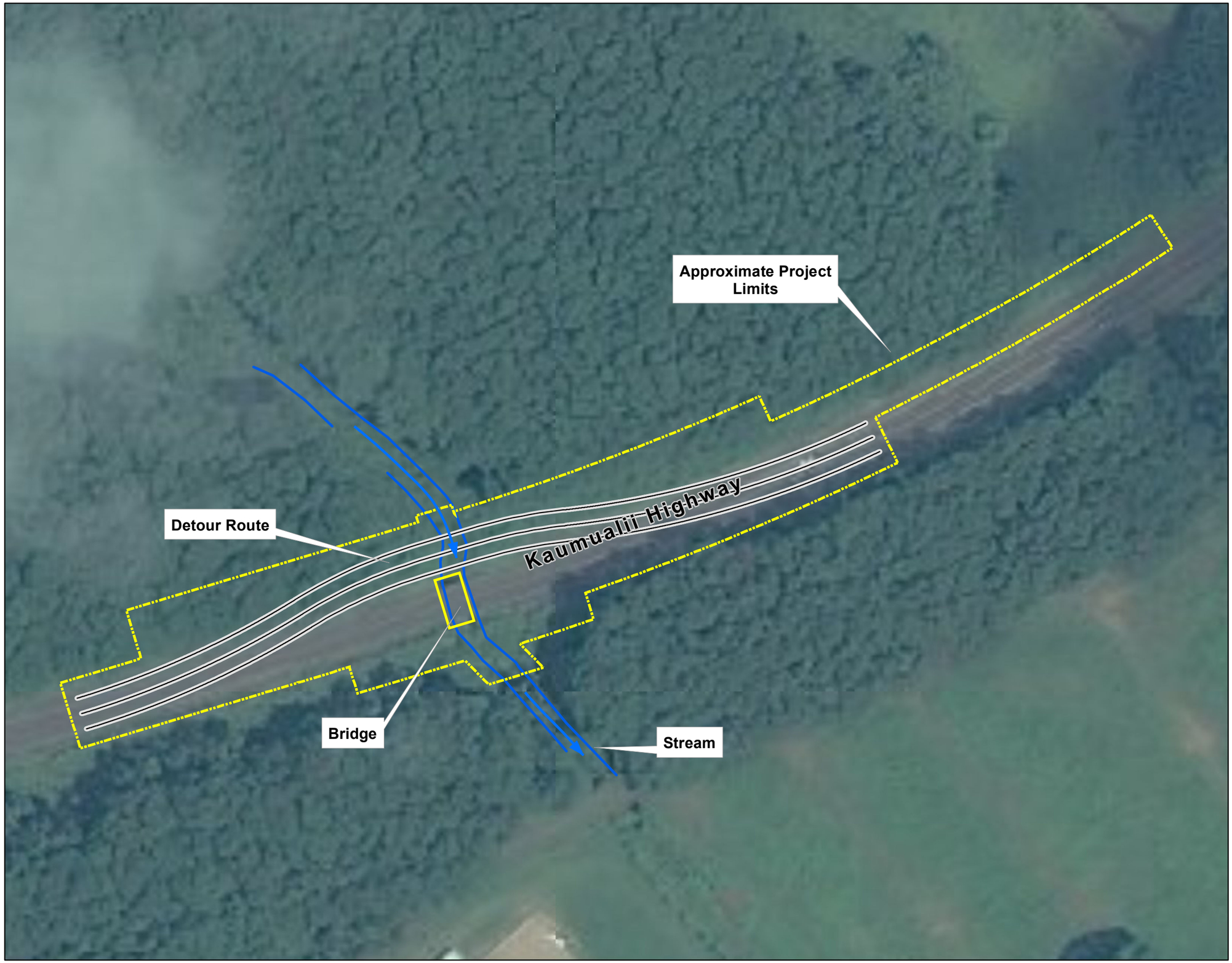
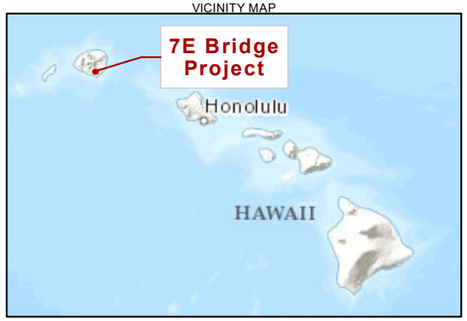


Photo 2: View of Bridge 7E on the mauka (north) side

Photo 3: View under Bridge 7E



VICINITY MAP



LEGEND

- Approximate Project Limits
- Stream
- Detour Route

Notes:
1. Imagery Source: ESRI World Imagery

N

0 100 200
Feet

7E Bridge Project
General Project Limits
Central Federal Lands - Koloa, Kauai

CH2MHILL

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

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

DAVID Y. IGE
GOVERNOR

LEO R. ASUNCION
ACTING DIRECTOR
OFFICE OF PLANNING

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
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Lakewood, CO 80228
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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

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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