
Final
Archaeological Literature Review and Field Inspection
Report for the Po‘ipū Road Multi-Modal
Improvements Project
Kōloa and Weliweli Ahupua‘a, Kōloa District, Kaua‘i
TMKs: multiple

Prepared for
PBR Hawaii

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Management Summary

Reference	Archaeological Literature Review and Field Inspection Report for the Po‘ipū Road Multi-Modal Improvements Project, Kōloa and Weliweli Ahupua‘a, Kōloa District, Kaua‘i, TMKs: multiple (Kamai et al. 2020)
Date	April 2021
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KOLOA 84
Investigation Permit Number	CSH completed the fieldwork component of this study under archaeological fieldwork permit number 17-08, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	Federal Highway Administration (FHWA), State of Hawai‘i Department of Transportation (HDOT), County of Kaua‘i Department of Public Works (Kaua‘i County), Hawai‘i State Historic Preservation Division (SHPD)
Land Jurisdiction	County of Kaua‘i
Project Proponent	PBR Hawaii
Project Funding	FHWA and County of Kaua‘i
Project Location	The proposed project area is located in the <i>ahupua‘a</i> (traditional land division) of Kōloa and Weliweli. It extends from the northern end at Kōloa Road, south on Po‘ipū Road to the existing roundabout at the junction of Po‘ipū Road and Lāwa‘i Road, then east on Po‘ipū Road to the eastern end of the project area at intersection of Po‘ipū Road and Ainako Street. The proposed roundabouts located within the project area are at the intersections of Kōloa Road and Po‘ipū Road, Po‘ipū Road and Kiahuna Plantation Drive; and Po‘ipū Road and Ala Kinoiki Road.
Project Description	The county is planning to retrofit Po‘ipū Road from Kōloa Town to the end of the project area on Po‘ipū Road 275 feet east of Keleka Road, with bike lanes and sidewalks where possible within the existing right-of-way. They are also seeking to design three roundabouts: one at Kōloa Road and Po‘ipū Road, at Ala Kinoiki bypass road and at Kiahuna Plantation Road.
Project Acreage and Area of Potential Effect (APE) and Inspection Area Acreage	The proposed project is in the Kōloa district, Kaua‘i Island, Hawai‘i. The project’s Area of Potential Effect (APE) is approximately 45.64 acres, is primarily within the existing operational Po‘ipū Road right-of-way, between Kōloa Road and approximately 275 feet east of Keleka Road and is approximately 5.8 km (3.6 miles) long. However, there are some areas where work will occur on parcels adjacent to right-of-way, including minor grading work and intersection improvements at select locations. Please refer to the enclosed map of the APE. The inspected areas of the proposed roundabouts within the project area are approximately 1.0 acre (0.40 hectare) per roundabout.

Document Purpose	This investigation was designed—through detailed historical, cultural, and archaeological background research and a field inspection of the project area—to assist the proposed project proponents and the SHPD in the identification of cultural resources/historic properties that may be affected by the project. This document is intended to facilitate the project's planning and support the project's historic preservation and environmental review compliance. This investigation does not fulfill the requirements of an archaeological inventory survey investigation, per HAR §13-276, nor does it substitute for the consultative process required by Section 106 of the National Historic Preservation Act (36 CFR Part 800).
Fieldwork Effort	Fieldwork was accomplished on 29 December 2017 by William Folk, B.A., and Missy Kama'i, B.A., under the general supervision of Principal Investigator Hallett H. Hammatt, Ph.D. This work required approximately 2 person-days to complete.
Results Summary	<p>CSH has prepared this LRFI for the Po'ipū Road Multi-Modal Improvements project including construction of three roundabouts in Kōloa and Weliweli Ahupua'a, Kōloa District, Kaua'i, Multiple TMKs as a part of the various proposed improvements to the Po'ipū road corridor.</p> <p>The field inspection of the road right-of-way showed that there are various historic properties outside of but adjacent to the road right-of-way especially in Kōloa town, and also outside the boundaries of the Po'ipū Road and Kiahuna Plantation Drive intersection where a remnant of the sugar plantation railroad berm (SIHP # -00947), that extended between the former Kōloa Mill and Kōloa Landing, is present.</p> <p>A possible remnant of the cattle exclusion walls associated with the Hapa road corridor is present on the north or <i>mauka</i> side of existing Po'ipū road within the road right-of-way. No other historic properties were identified within the project area during the field inspection. Nevertheless, documented knowledge of the extensive and intensive use of the road right-of-way and surrounding lands for transportation, agriculture, and habitation through considerable pre- and post-Contact time supports the likelihood that remnants of historic properties may be encountered during project construction.</p>

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Section 1 Introduction

1.1 Project Background

At the request of Ms. Catie Cullison of PBR Hawaii, Cultural Surveys Hawai‘i, Inc. (CSH) has prepared this literature review and field inspection report (LRFI) for the Po‘ipū Road Multi-Modal Improvements Project, Kōloa and Weliweli Ahupua‘a, Kōloa District, Kaua‘i, TMKs: Multiple. The proposed project area is located in the *ahupua‘a* (traditional land division) of Kōloa and Weliweli from the northern end at Kōloa Road, south on Po‘ipū Road to the existing roundabout at the junction of Po‘ipū Road and Lāwa‘i Road to the eastern end of the project area on Po‘ipū Road 275 feet east of Keleka Road. The proposed roundabouts located within the project area are at the intersections of Po‘ipū Road and Kiahuna Plantation Drive; and Po‘ipū Road and Ala Kinoiki Road. The project area is depicted on a portion of the 1996 Koloa U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), a tax map plat (Figure 2 through Figure 4), and a 2011 and two 2013 aerial photographs (Figure 5 through Figure 7).

The County of Kauai (County) is planning to retrofit Po‘ipū Road from Kōloa Town to 275 feet east of Keleka Road with bike lanes and sidewalks where possible within the existing right-of-way. They are also seeking to design two roundabouts, approximately 1 acre per roundabout: one at the Ala Kinoki bypass road and the other at Kiahuna Plantation Drive (see Figure 5).

1.2 Document Purpose

This investigation was designed—through detailed historical, cultural, and archaeological background research and a field inspection of the project area—to determine the likelihood that cultural resources/historic properties may be affected by the project. This document is intended to facilitate the project’s planning and support the project’s historic preservation and environmental review compliance. This investigation does not fulfill the requirements of an archaeological inventory survey investigation, per Hawai‘i Administrative Rules (HAR) §13-13-276, nor does it fulfil the requirements of Section 106 of the National Historic Preservation Act. Environmental Setting

1.2.1 Natural Environment

Kaua‘i is the oldest of the major Hawaiian Islands. In geological time it is estimated to be 5.1 million years old (Cook 2000). The current project area lies along the south side of Kaua‘i in the *ahupua‘a* of Kōloa and Weliweli.

The project area ranges from 5–40 m AMSL (above mean sea level). Temperatures in the south of Kaua‘i average between approximately 58 and 89 degrees, with prevailing northeast trade winds (Armstrong 1983:64–65). This area receives approximately 762 to 1,016 mm (30 to 40 inches) of rainfall annually along the coast, increasing to approximately 1,270 to 3,556 mm (50 to 140 inches) in the inland (*mauka*) mountainous areas (Giambelluca et al. 2013). Natural vegetation varies widely within the project area, as the project area ranges from the coastal plains to the mountains.

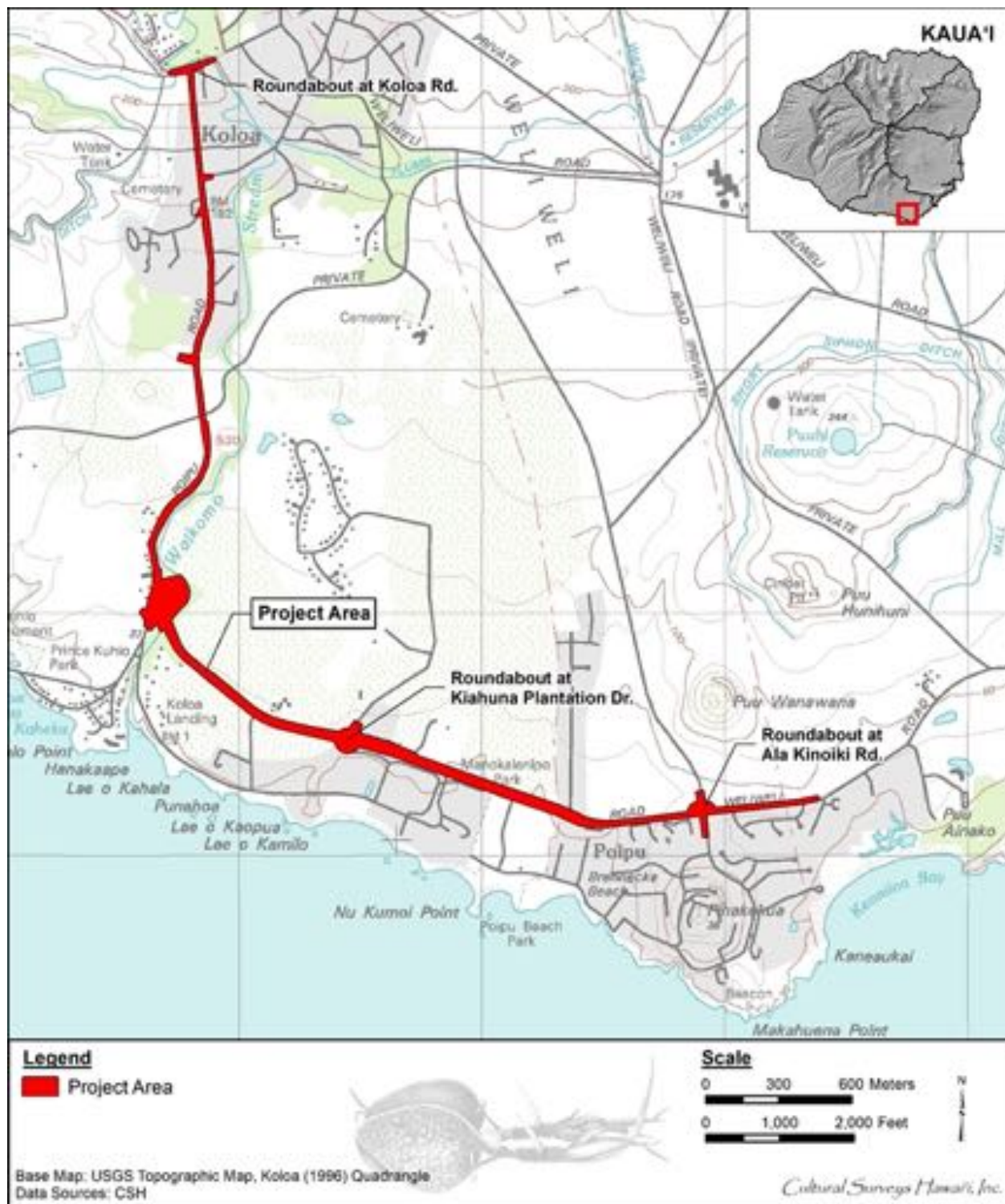


Figure 1. Portion of the 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of the project area

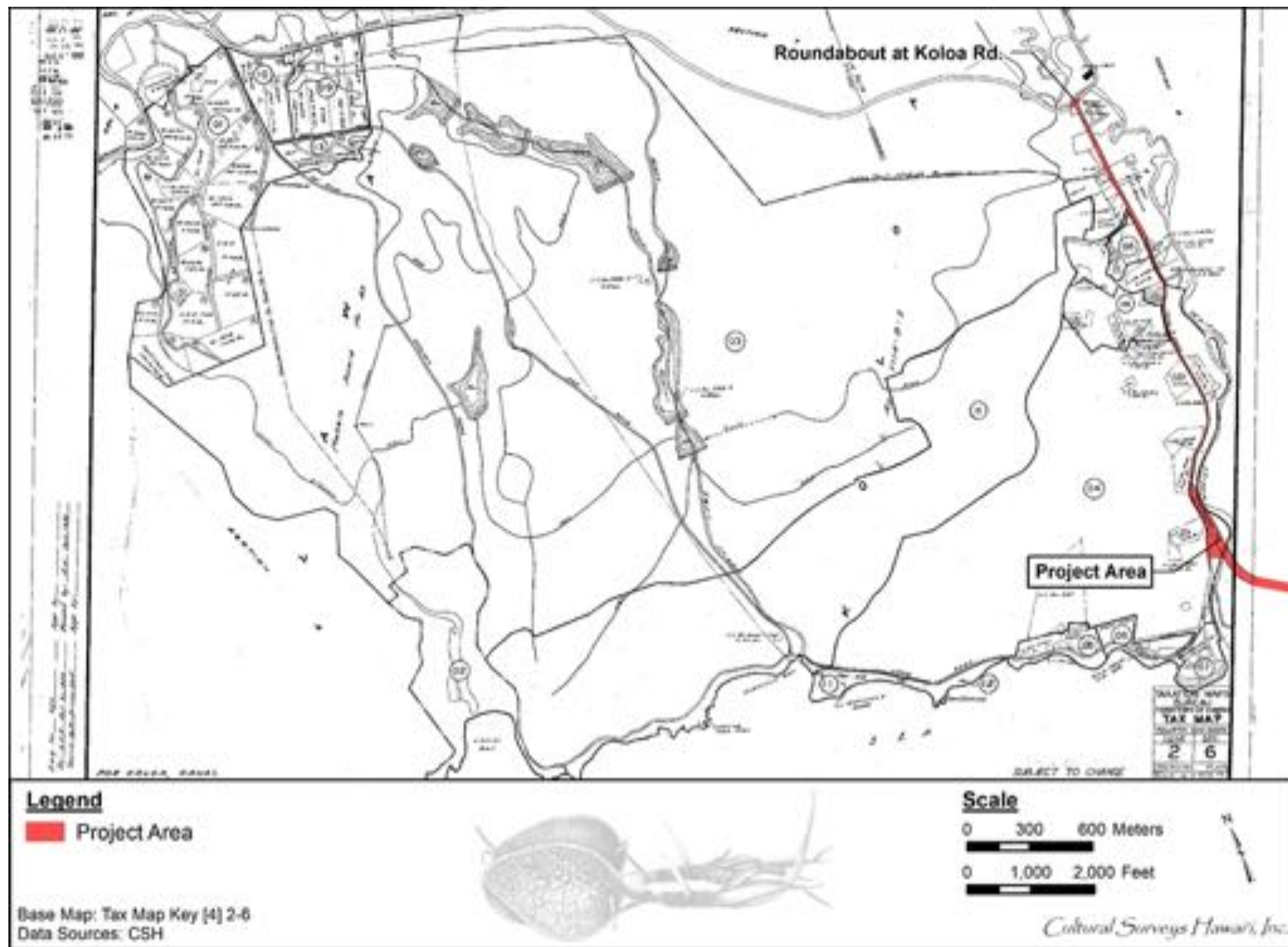


Figure 2. Tax Map Key (TMK) [4] 2-6 showing the project area (Hawai‘i TMK Service 2014)

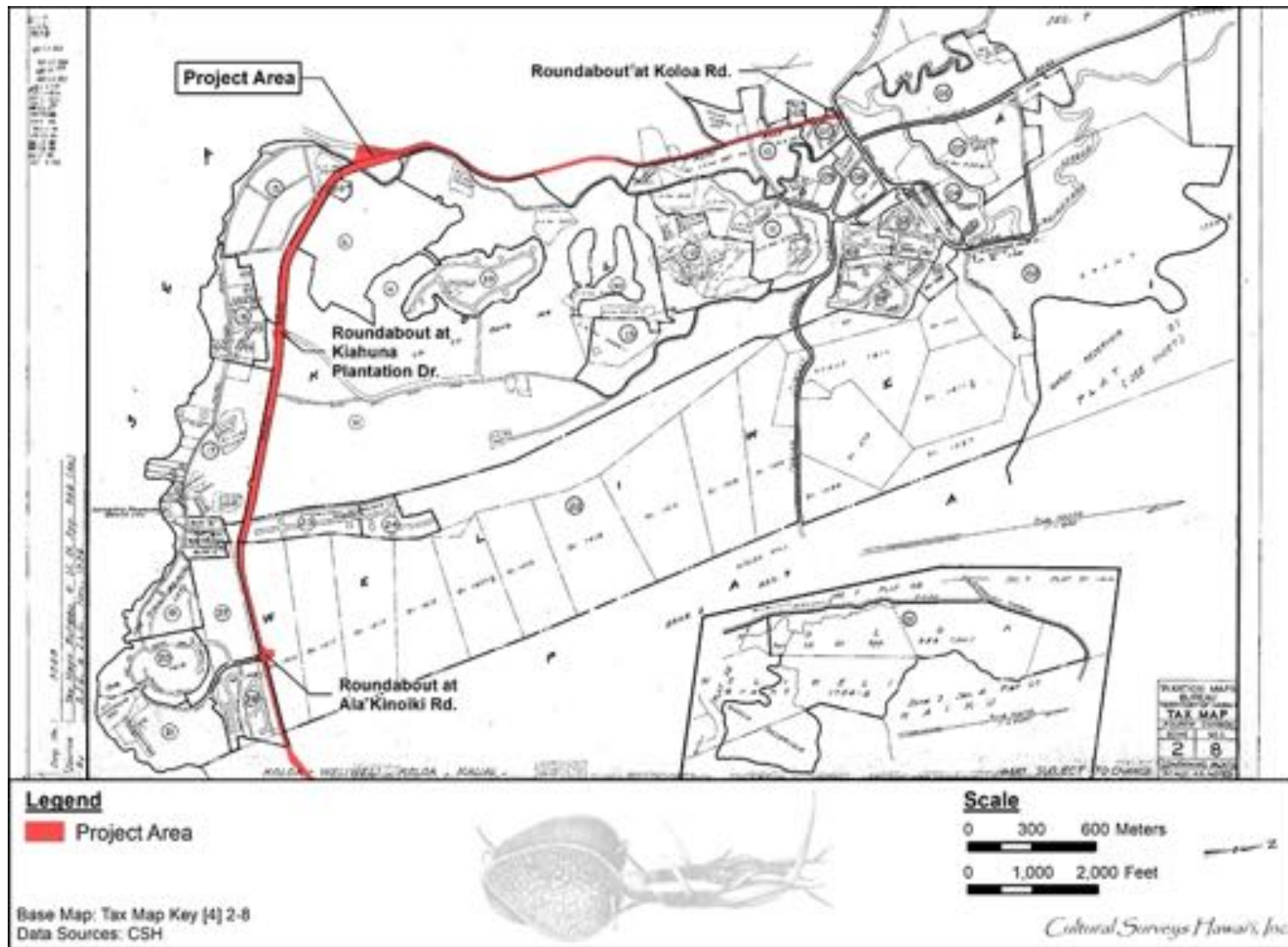


Figure 3. TMK: [4] 2-8 showing the project area and location of proposed roundabout at Kiahuna Plantation Drive (Hawaiʻi TMK Service 2014)

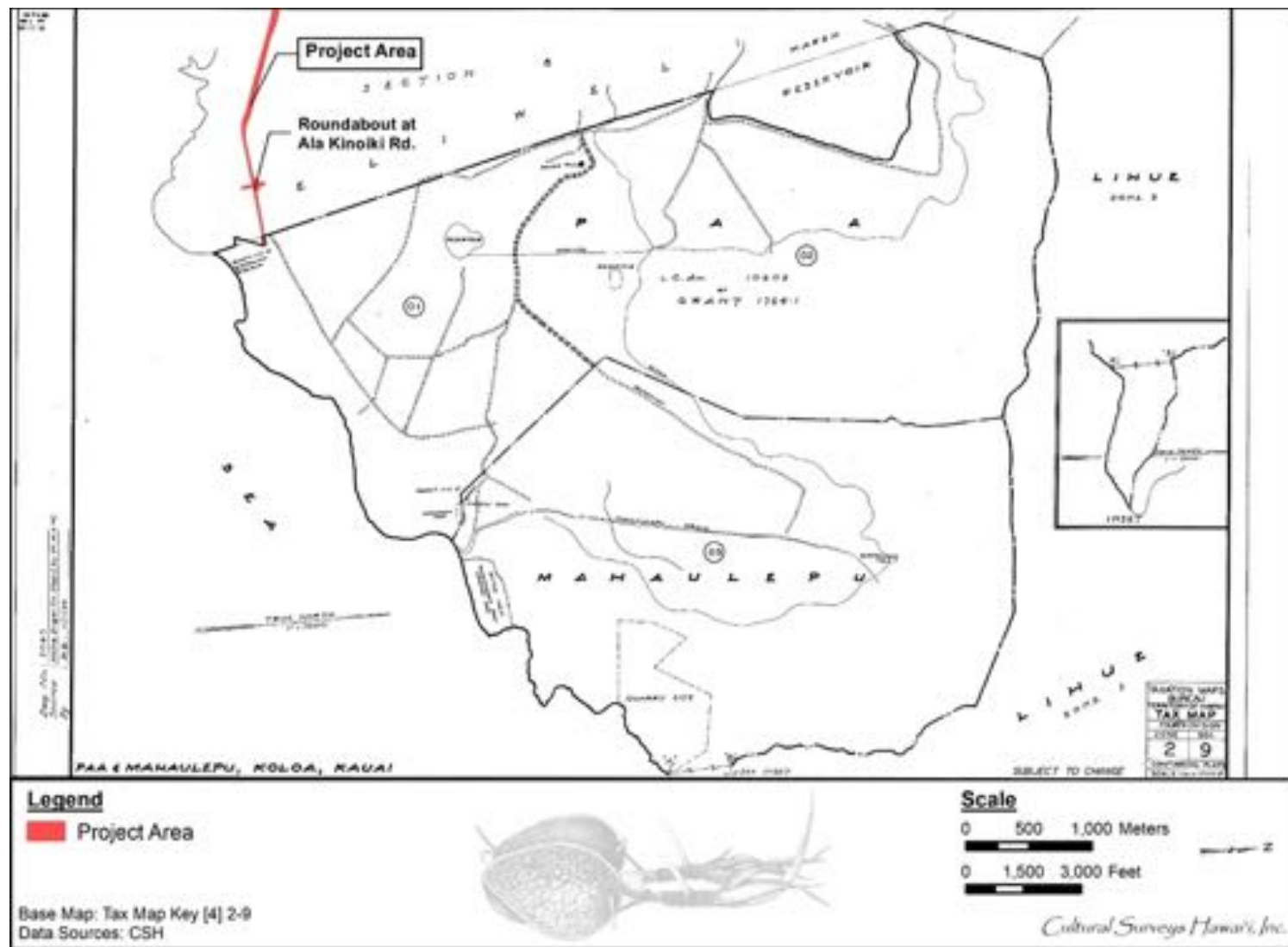


Figure 4. TMK: [4] 2-9 showing the project area and location of proposed roundabout at Ala Kinoiki road (Hawai'i TMK Service 2014)

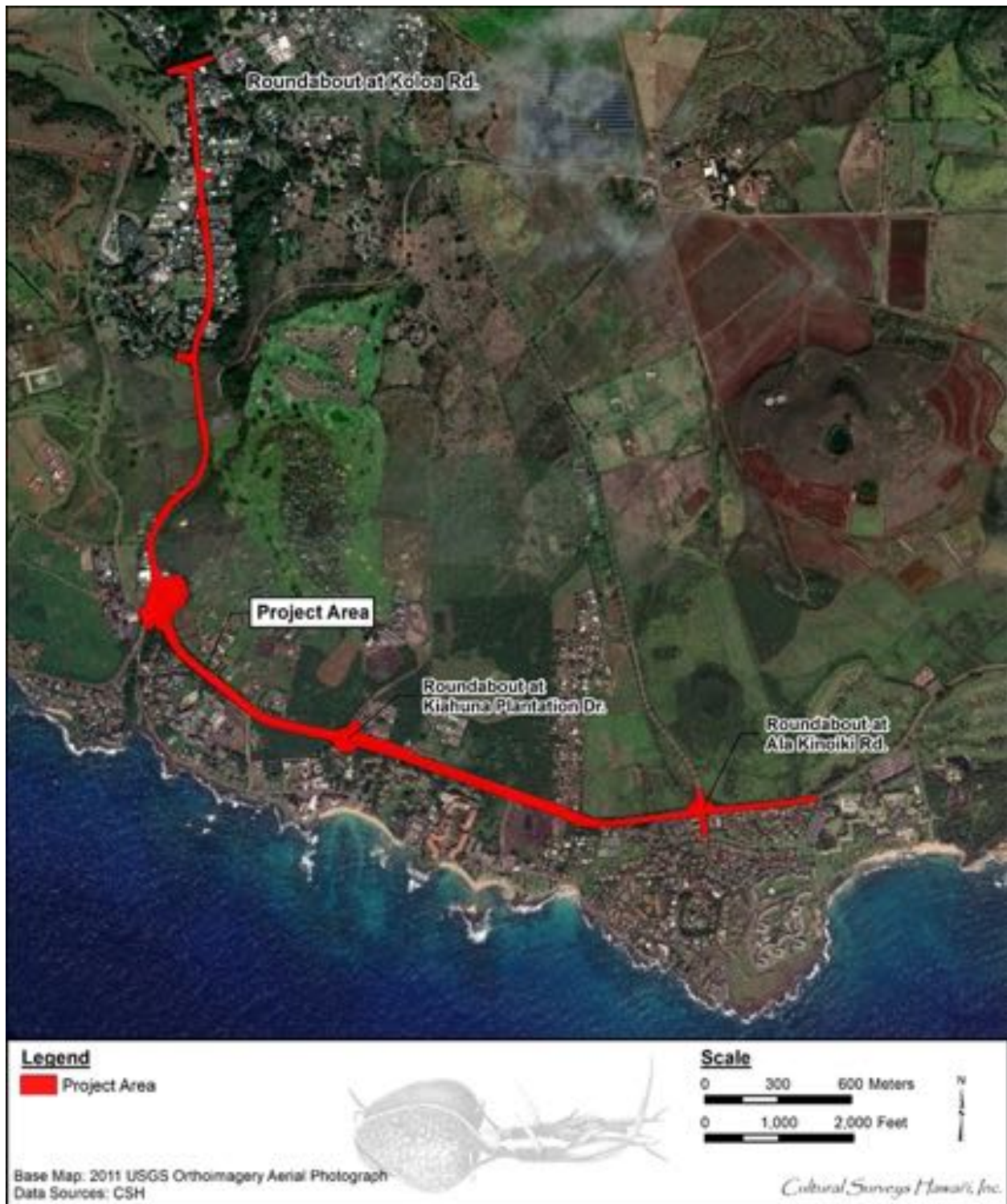


Figure 5. Aerial photograph of the overall project area (2011 USGS Orthoimagery)

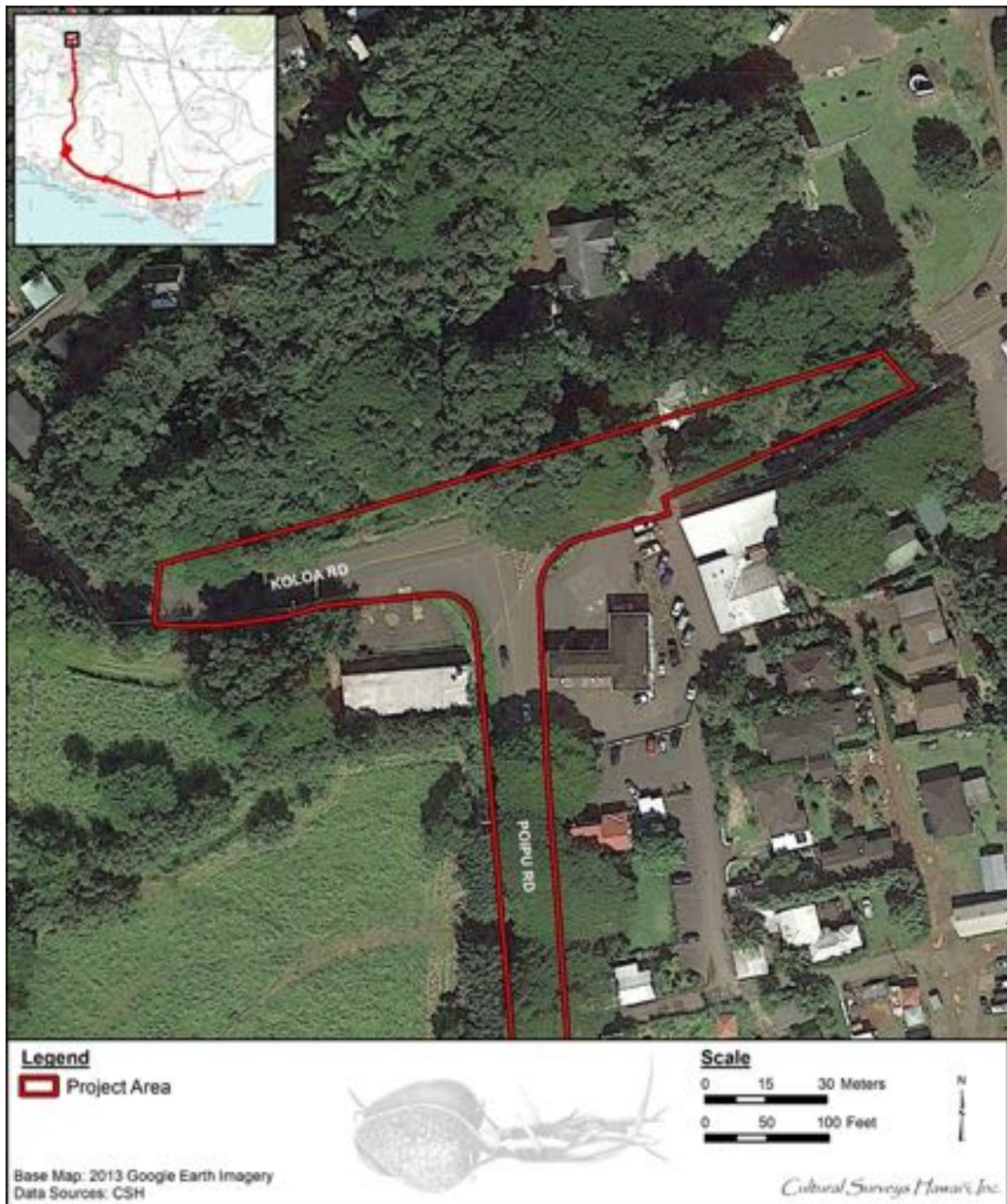


Figure 6. Aerial photograph of the location for proposed roundabout at the intersection of Kōloa Road and Po'ipū Road (2013 Google Earth)



Figure 7. Aerial photograph of the location for proposed roundabout at the intersection of Kiahuna Plantation Drive and Po'ipu Road (2013 Google Earth)

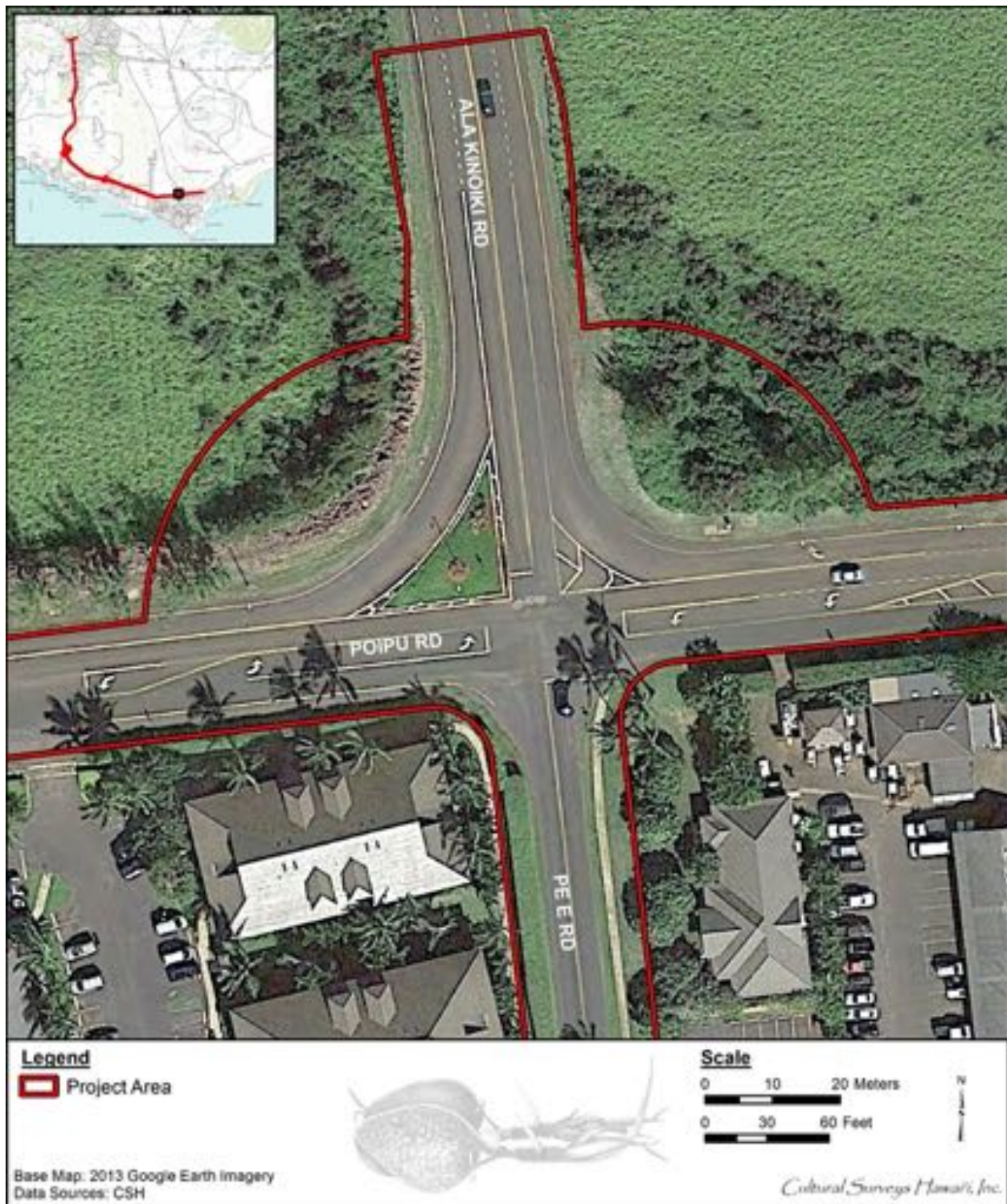


Figure 8. Aerial photograph of the location for proposed roundabout at the intersection of Ala Kinoiki Road, Pe'e Road, and Po'ipū Road (2013 Google Earth)

Characteristic plants include guava, Boston fern, Hilo grass, basket grass, false staghorn fern, *kukui*, *hala*, *koa haole*, *lantana*, Spanish clover, Bermuda grass, *klu*, *panini*, *'ilima*, and Natal redbud grass (Armstrong 1983:70).

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), the project area's soils consist of Lihue silty clay, 8 to 15% slopes (LhC) and Pohakupu silty clay loam, 0 to 8% slopes (PkB) at the northern end of the project intersecting with Waikomo stony silty clay (Ws) and Waikomo very rocky silty clay (Wt) (Figure 8 and Figure 9). Lihue soils are described as follows:

[...] well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amounts to 40 to 60 inches. The mean annual soil temperature is 73° F. [Foote et al. 1972:132]

Pohakupu soils are described as follows:

[...] well-drained soils on terraces and alluvial fans on the islands of Oahu and Kauai. These soils formed in old alluvium derived from basic igneous material. They are nearly level to moderately sloping. Elevations range from 50 to 250 feet. The annual rainfall amounts to 40 to 60 inches. The mean annual soil temperature is 73° F. [Foote et al. 1972:113]

Waikomo soils are described as follows:

[...] well-drained, stony and rocky soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock, probably with a mixture of ash and alluvium in places. These soils are gently sloping. Elevations range from nearly Sea level to 360 feet. The annual rainfall amounts to 35 to 60 inches. The mean annual soil temperature is 74° F. [Foote et al. 1972:82]

1.2.2 Built Environment

The project area begins at the intersection of Kōloa Road with Po'ipū Road continuing south or *makai* to the intersection with Lāwa'i Road and continuing east on Po'ipū Road to approximately 275 feet east of Keleka Road. The project includes the creation of three roundabouts, one at the intersection of Kōloa Road with Po'ipū Road, another at Po'ipū Road and Kiahuna Plantation Drive and the third at Po'ipū Road with Pe'e Road to the south and Ala Kinoiki to the north.

The segment from Kōloa town south or *makai* to the intersection with Po'ipū Road has modern and historic buildings, discontinuous curbing and sidewalks, mature trees and stone walls (of varying age) and fences marking property boundaries. Along the more *makai* portion of this section the corridor runs along the west bank of Waikomo Stream. The route has been a primary transportation route between Kōloa Landing at the mouth of Waikomo Stream and Kōloa town for all of the post-Contact recorded historic period. The irrigated horticulture/agriculture complex of the Kōloa Field System extended over at least one thousand acres to both sides of Waikomo Stream and the existing road corridor passes through this complex.

The Po'ipū Road road corridor that proceeds east from Waikomo Stream was built in the late 1960's or early 1970's and passes through the Kōloa Field System, separating the lower section at

the shoreline from the more *mauka* areas. Resort hotels, shopping centers, private home subdivisions as well as the Kiahuna golf course development bound each side of the road corridor here (Figure 10 through Figure 13). A few currently undeveloped areas contain thick vegetation of *ekoa*, high grasses and abundant cactus covering former rock walls and remnants of the former field system and at the east end of the project corridor is Pu'uwanawana Volcanic cone and former sugar cane land (Figure 14 through Figure 17).

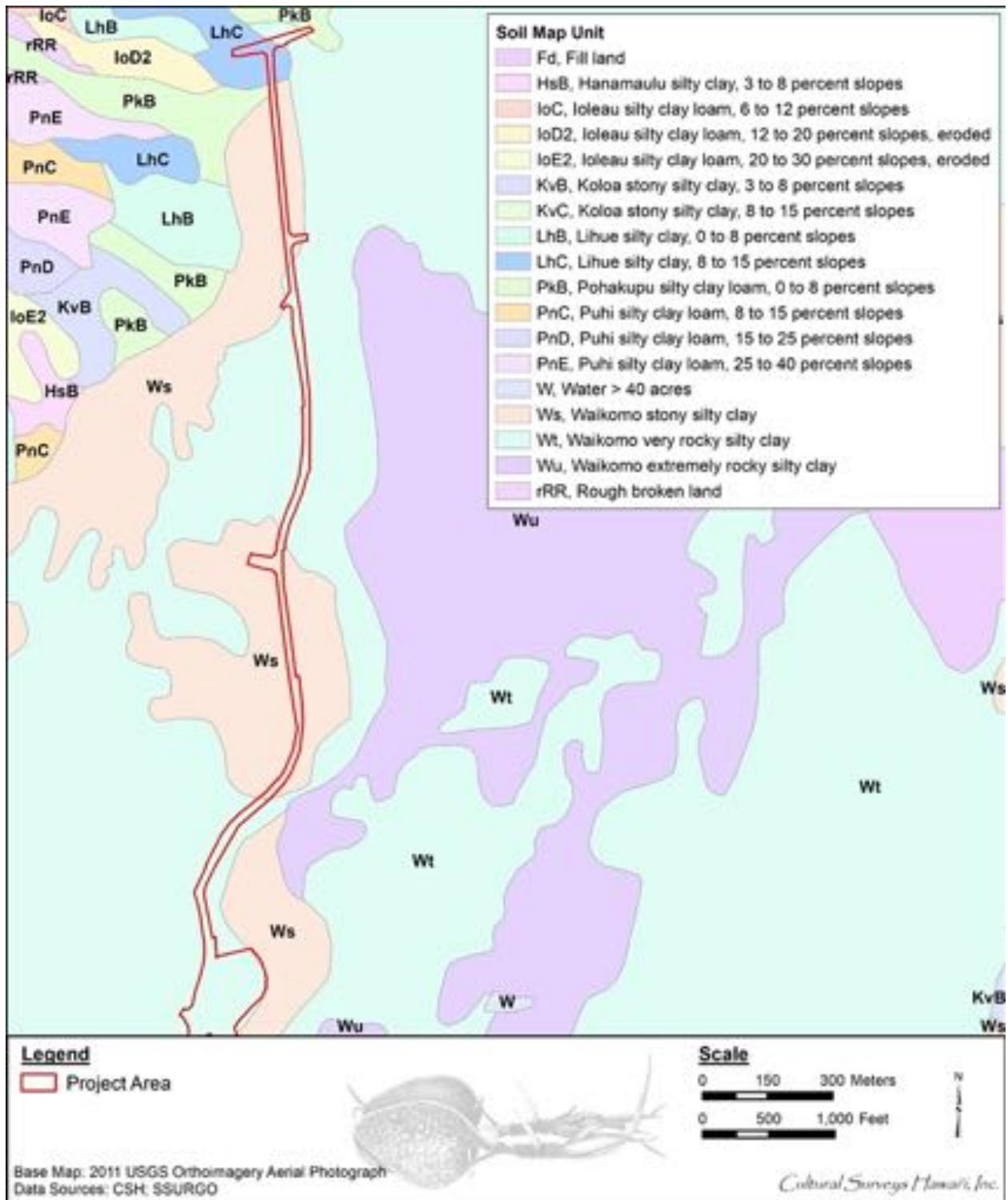


Figure 9. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area from Kōloa Road to the existing roundabout (USDA SSURGO 2001)

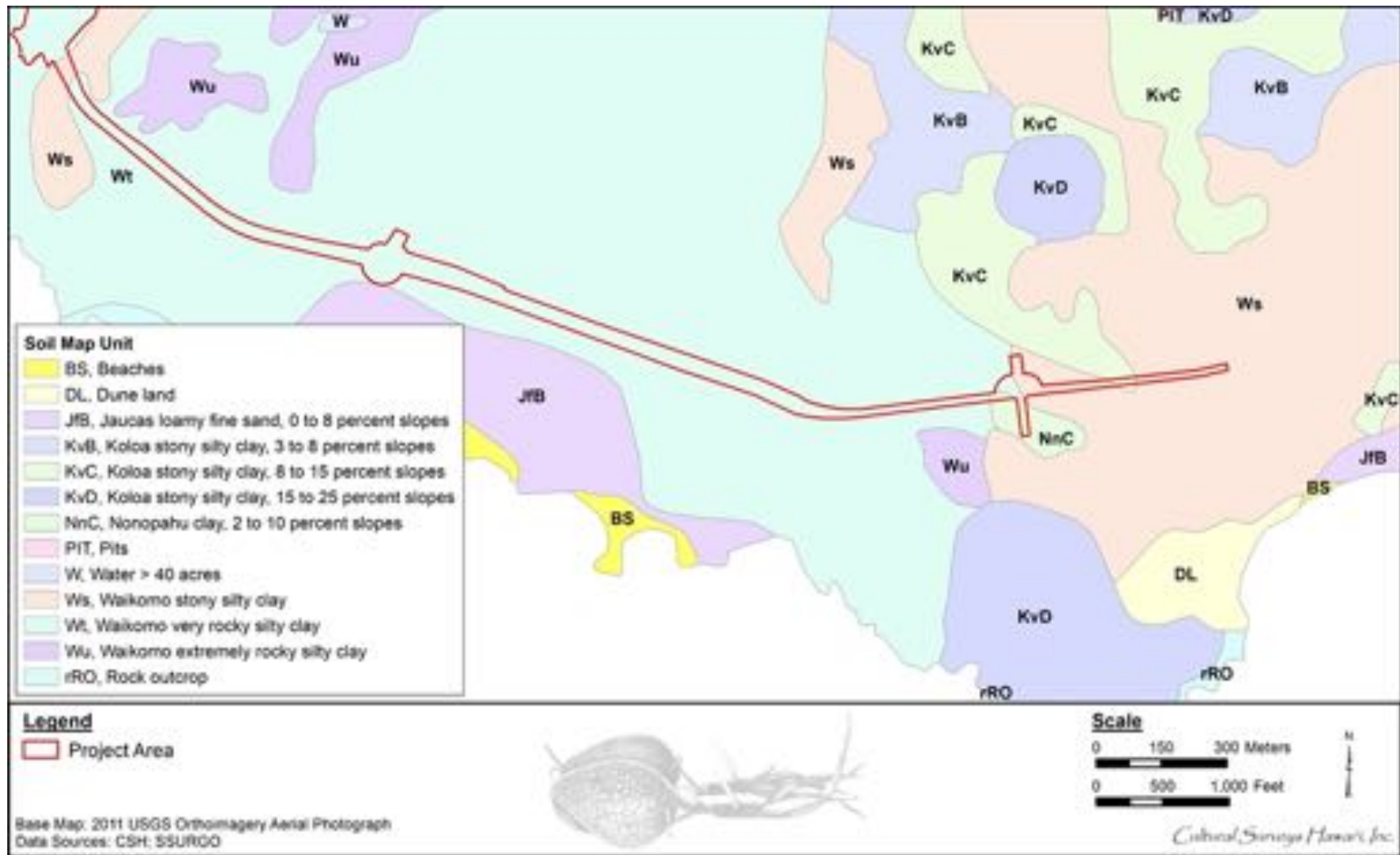


Figure 10. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area from the existing roundabout to the eastern end of the project area at Ainako Street (USDA SSURGO 2001)



Figure 11. Photo of west proposed project, present intersection of Po'ipū Road and Kiahuna Plantation Drive (Kiahuna Plantation in the background), view to southwest



Figure 12. Photo of west proposed project, present intersection of Po'ipū Road and Kiahuna Plantation Drive (Kiahuna Plantation Resort in the background), view to southeast



Figure 13. Photo of west proposed project, present intersection of Po'ipū Road and Kiahuna Plantation Drive (Poipu Shopping Village in the background), view to northeast



Figure 14. Photo of west proposed project, present intersection of Po'ipū Road and Kiahuna Plantation Drive (banyan tree with thick vegetation in the background), view to northwest



Figure 15. Photo of east proposed project, present intersection of Po'ipū Road and Pe'e Road (to the left), Ala Kinoiki (to the right, Regency Resorts Condominiums in the background), view to southwest



Figure 16. Photo of east proposed project, present intersection of Pe'e Road (in the background with Poipu Kai Resort to the southeast), Ala Kinoiki (photo taken from road) and Po'ipū Road (to the left and right), view to southeast



Figure 17. Photo of east proposed project, present intersection of Po'ipū Road, Pe'e Road, and Ala Kinoiki (vegetated area and Pu'uwanawana in the background), view to northeast



Figure 18. Photo of east proposed project, present intersection of Po'ipū Road, Pe'e Road, and Ala Kinoiki (in the background to the right), former cane land (in the background to the left), view to northeast

Section 2 Methods

2.1 Field Methods

CSH completed the fieldwork component of this study under archaeological fieldwork permit number 17-08, issued by the SHPD pursuant to HAR §13-282. Fieldwork was conducted on 29 December 2017 by CSH archaeologists William Folk, B.A., and Missy Kamai, B.A., under the general supervision of Principal Investigator Hallett H. Hammatt, Ph.D. This work required approximately 2 person-days to complete. In general, fieldwork included 100% pedestrian inspection of the project area.

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.

2.2 Archival Research

Background research included a review of previous archaeological studies on file at the SHPD library; review of historical documents at Hamilton Library’s Special Collection at the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, Kaua‘i Historical Society, and the Bernice Pauahi Bishop Museum (BPBM) Archives; study of historic photographs at the Kaua‘i Historical Society, Kaua‘i Museum, Hawai‘i State Archives, and the BPBM Archives; study of historic maps at the Hawai‘i State Land Survey Division; and study of historic maps and photographs at the CSH library. Information on Land Commission Awards (LCAs) was accessed through Waihona ‘Aina Corporation’s Māhele Database (Waihona ‘Aina 2020), as well as a selection of CSH library references. This research provided the environmental, cultural, historic, and archaeological background for the project area and was used to formulate a predictive model regarding the expected types and locations of cultural resources in the project area.

Section 3 Background Research

Traditionally, the island of Kaua‘i was divided into five *moku* (districts): Halele‘a, Kona, Ko‘olau, Nāpali, and Puna. However, after the battle of Wahiawa in 1824, the land of Kaua‘i was redistributed and district boundaries changed. The new district names became Hanalei, Kawaihau, Līhu‘e, Kōloa, and Waimea. The Kōloa District consisted of seven of the 14 *ahupua‘a* formerly within Kona Moku. ‘Ele‘ele was also added to the Kōloa District. Traditionally, ‘Ele‘ele was an *‘ili* (smaller land division) of Hanapēpē Ahupua‘a in Kona Moku, but it was separated during the redistribution. ‘Ele‘ele subsequently became an *ahupua‘a* of the Kōloa District, and Hanapēpē became an *ahupua‘a* of the Waimea District. Thus, currently the eight Kōloa *ahupua‘a* are ‘Ele‘ele, Wahiawa, Kalāheo, Lāwa‘i, Kōloa, Weliweli, Pā‘ā, and Māhā‘ulepū, from west to east.

The proposed project area is located in the *ahupua‘a* of Kōloa and Weliweli, and directly west of the Pā‘ā Ahupua‘a and east of Lāwa‘i Ahupua‘a in the Kōloa District of Kaua‘i. Few records exist that document traditional Hawaiian life in the Kōloa District. While settlement by westerners with religious and commercial interests make the area a focus of documentation after the first quarter of the nineteenth century, the accounts generated generally focus on the lives and concerns of the westerners themselves, with only anecdotal references to the Hawaiian population.

3.1 Place Names

Place name translations presented in this subsection are from *Place Names of Hawaii* (Pukui et al. 1974), unless indicated otherwise. Lloyd Soehren (2013) has lately compiled all of the place names from mid-nineteenth century land documents into an online database. He presents spelling and meanings of names from Pukui et al.’s book (1974). When no meaning from this book is given, Soehren often suggests meanings for simple names based on meanings from Pukui and Elberts’ (1986) *Hawaiian Dictionary*.

Each *ahupua‘a* on Kaua‘i had an associated wind. In the Legend of Kūapāka‘a, the hero who controls the wind gourd of La‘amaomao chants the winds of Kaua‘i. For the project area, the winds are:

The naulu is of Wahiawa.	<i>He naulu ko Wahiawa,</i>
The kuuanu is of Kalaleo [Kalāheo],	<i>He kuuanu ko Kalāheo,</i>
The ae is of Lawa‘i,	<i>He ae ko Lawa‘i,</i>
The malanai is of Koloa,	<i>He malanai ko Koloa,</i>
The kuiamanini is of Weliweli,	<i>He kuiamanini o Weliweli,</i>
The makahuena is of Kapea,	<i>He makahuena o Kapea,</i>
The one-hali is of Manenene,	<i>He one-hali ko Manenene,</i>
The koomakani is of Mahaulepu	<i>He koomakani ko Mahaulepu,</i>
[Fornander 1918:5:96–97]	

When the Hawaiian goddess, Pele, traveled to Kaua‘i, she recited the winds of Kaua‘i to her lover Lohi‘au and his people.

Wahiawa has an Unulau wind...	<i>He Unulau ko Wahiawa...</i>
Kalāheo has a Kiuanu wind	<i>He Kiuanu ko Kalāheo</i>
Lāwa‘i has an ‘Aoa wind...	<i>He ‘Aoa ko Lāwa‘i...</i>

Kōloa has a Holomālani wind...	<i>He Holomālani ko Kōloa...</i>
Hanaka‘ape has an Ulumano wind	<i>He Ulumano ko Hanaka‘ape</i>
The wind of Makahū‘ena [on Ni‘ihau] flies, the ocean is white with froth.	<i>Lele ka makani o Makahū‘ena, kuakea ka moana.</i>
Weliweli has a Kuimanihi wind...	<i>He Kuimanihi ko Weliweli...</i>
The battling wind is a Kiu, surging along the steeps	<i>He Kiu ka makani paio, lele i ka lapa</i>
The paddle of the fisherman flashes, it is stormy	<i>‘Ōlapa ka hoe a ka Lawa‘i‘a, he ‘ino</i>
Pā‘ā has a Makahū‘ena wind	<i>He Makahū‘ena ko Pā‘ā</i>
Māhā‘ulepū has a Pū‘ōkū wind	<i>He Pū‘ōkū ko Māhā‘ulepū</i>
[Ho‘oulumāhie 2008a16–17; Ho‘oulumāhie 2008b16–17]	

The ‘*Ae* is the northeast tradewind, the *Kiu* is a strong wind breaking across the mountains, *Ku‘anu* (“releasing coldness”) is a strong wind, the *Malanai* is the gently blowing northeast tradewind, *Nāulu* is a sea breeze with heavy mist, *Onehali* was a “sand carrying” sea breeze, and *Ulumano* is a strong wind that blows from the south (Kent 1986:437–443; Pukui and Elbert 1986:289; Wichman 1998:33).

3.1.1 Kōloa Ahupua‘a

The name Kōloa has several derivations. Kōloa is the name for the large, soft Hawaiian sugarcane (*Saccharum officinarum*) once grown by the Hawaiians. Kōloa is also the name of a steep rock, called Paliokōloa, on the banks of Waikomo Stream, from where 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 Kōloa *ahupua‘a* is “well watered by constantly flowing streams. Two of these, the ‘Ōma‘o, “green,” and Pō‘ele‘ele, “dark night,” feed the Pīwai (a variety of wild duck) in the area. Where they join, the stream becomes Wai-komo, “entering water,” which flows down the center of the land, bringing life to the drier regions toward the seashore. It is so named because from time to time the stream disappears for a bit before reappearing farther down the slope” (Wichman 1998:40). The *ahupua‘a* is watered by several other streams: the Aepo, Waihohonu (“deep water;” named for a hole formed when Palila felled a forest of trees with one stroke [Pukui et al. 1974:222]), Weliweli, and the Weoweopilau.

Kōloa is bordered by Lāwa‘i Ahupua‘a to the west and Weliweli Ahupua‘a to the east. The boundary with Lāwa‘i ends on the eastern shore of Kukui‘ula Bay near the mouth of Aepo Stream and extends inland to the peaks Pu‘u Kolo and Kāhili, where it extends along the boundary of Hā‘iku Ahupua‘a on the *mauka* side. The northeast corner of the *ahupua‘a* is at Lā‘aukahi (“lone tree”). At the shore, it is separated from Weliweli at a place called Poapoko.

Sixty-six ‘*ili* are listed in mid-nineteenth century land documents, emphasizing the importance of this well-watered *ahupua‘a* and the dense population that it could support. The ‘*ili* are Aea, ‘Awikiwiki, Hālālī‘i, Halehinahina, Kaakaupuawa, Ka‘auwailalo (“the lower ditch”; Soehren 2013), Kaauwailuna (“the upper ditch”; Soehren 2013), Kahoai, Kahoana (“the whetstone”), Kahoiwai, Ka‘ili‘ili (“the pebble”), Kalehuaoka‘ele, Kalua‘alamihī, Kamaemae, Kamaloula (“the red loincloth”; Soehren 2013), Kamanomano, Ka‘ōhi‘a (“the ‘ōhi‘a tree”; Soehren 2013), Kāpala‘alaea (“daub of ocher”; Soehren 2013), Kapalakea (a variety of taro; Soehren 2013),

Kapalau, Kapo‘o, Kapuna (“the spring”), Kaukahōkū (“the star appears”), Kaulia (“hung, suspended”; Soehren 2013), Kauluolona, Kaunuolono (“the altar of Lono”; Soehren 2013), Kawailehua, Keaku, Keanakaha‘ia, Kekui, Kihinui, Kikīaola (“container acquired by Ola”), Kioea (“bristle-thighed curlew”; Soehren 2013), Kiona (“Zion, or dung heap, privy”; Soehren 2013), Kōloa Hikina (“east Kōloa”; Soehren 2013), Kōloa Komohana (“west Kōloa”; Soehren 2013), Kualu, Kuunameheala, Lapapōhaku (“stone ridge”; Soehren 2013), Lauuluhaa, Lepoakua, Makapala (“sore beginning to heal”), Mākea (“fallow land, or a variety of *kalo* or *awa*”; Soehren 2013), Malaula, Maneneha‘aha‘a (“low plantain”), Manini, Ma‘uliuli, Mauna Pōhaku, Milohai, ‘Ōma‘o (“green”), Opuohaku, Palaulalo, Paoa, Pipipi‘eu‘eu (“lively mollusk, *Theodoxus neglectus*”; Soehren 2013), Poahonu, Pō‘ele‘ele (“black night”), Pōhakuomakali‘i (“stone of Makali‘i”; Soehren 2013), Puahehu, Puhaku, Punahelu, Puokahaku, Pu‘u Holo, Pu‘u o Haku (“Haku hill”; Soehren 2013), Waikomo (“entering water”; Soehren 2013), Wailā‘au (sap of plants, or a liquid medicine; Soehren 2013), and Waiohai.

Five *heiau* (pre-Christian place of worship) are listed in Kōloa: Hō‘ai (probably “to feed”; Soehren 2013) (Site 75; Bennett 1931:117) at Kūhiō Park on the west bank of Waikomo Stream, Kanehaule (Site 92; Bennett 1931:122) on the east branch of ‘Ōma‘o Stream, destroyed before Bennett’s 1930s publication, Kaneiolouma (Site 81; Bennett 1931:118) on the shore near Kihouna Heiau (site 80; Bennett 1931:118–119), and Kūhāhāpō (“Kū feeling at night”) at Lae o Kahala.

Evidence of a rich history within Kōloa is offered in a Lahainaluna document. This document appears to be based on an oral historical project. On 7 September 1885 a student from Lahainaluna Schools (HMS 43 #17) interviewed Makea—“a native who is well acquainted with Kōloa”—and recorded “what she said about the well-known places in the olden times.” More than 64 years after the abolition of the *kapu* system and almost as many years of contact with westerners, Makea was able to describe in detail 14 *heiau* within the Kōloa area, for example:

Maulili was the first *heiau* of south Kōloa. Kapulauki was the first chief of Kōloa, Kiha came next. That is the chief I know of. He was a ruling chief of Kaua‘i 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 name for him was Kakae and another was Ka-pueo-maka-walu (Right-eyed-owl).

This *heiau* was also famous for this reason—it was the first *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. [Lahainaluna Schools 1885:165]

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.

3.1.1 Weliweli Ahupua‘a

Frederick Wichman says that when the island was being explored by the *Menehune* (legendary race of small people who worked at night, building fishponds, roads, temples), who had been

brought to Kaua‘i by Kū‘alunui-paukū-mokumoku, one adventuresome group was led by Weliweli (“fearful”), a gruff-voiced man. He was very strict and everyone jumped to fulfill his orders. The area was named after him (Wichman 1998:43–44).

The northeast corner of the *ahupua‘a* is at Lā‘aukahi (“lone tree”) at the boundary with Kōloa to the west, and the coastal point with Kōloa is at the western side of Makahuena Point (“eyes overflowing with heat”; Wichman 1998:44), which was the site of a lighthouse. The northeast corner, bordered by Pā‘ā Ahupua‘a, was at Kokii peak. At the coast, the boundary with Pā‘ā is on the eastern side of Makahuena Point. Weliweli’s east boundary is at the headland Maka-hūena. Sometimes the headland shimmers in the summer sun, and whenever that happened it was believed that a procession of departed chiefs and their followers were on the move. It was safest to stay away until the shimmering stopped (Wichman 1998:44).

Only one *‘ili* is mentioned in Māhele documents, probably reflecting the fact that only one *kuleana* (commoner) LCA was claimed for this small *ahupua‘a*. The *‘ili* was Kahoanalua (“the double whetstone”; Soehren 2013). The focus of habitation in the modern *ahupua‘a* is within Po‘ipū Village (“completely overcast or crashing, as waves”).

One *heiau* mentioned is Weliweli Heiau (Site 83; Bennett 1931:12) located on the shore, but it was not further described by Bennett, suggesting it had been destroyed before the 1930s.

3.2 Legendary and Traditional Accounts

3.2.1 Kōloa Ahupua‘a

One *‘ōlelo no ‘eau* (proverb) is associated with Kōloa and aspects of its lifeways.

Aia i Kōloa Is at Kōloa

A play on *kō* (drawn) and *loa* (long)—drawn a long way under. Drunk.
[Pukui 1983:8]

Several places in Kōloa have legendary associations. The first is Maulili Pool, meaning “constant jealousy,” in Waikomo Stream, a sacred place once located in the present Kōloa Town, in the middle of the *ahupua‘a*.

One tale is of the gods Kāne and Kanaloa who slept on the eastern bank of Maulili Pool and left the impressions of their forms on the *‘āpapa* (coral flat). “The *apapa* in this vicinity is called an ‘Unu.’ and a ‘Heiau,’ but was never walled in, it is said. [This *heiau* may be the Maulili Heiau]. On the nights of Kāne the drums are heard to beat there, also at the sacred rocks, or *unu*’s, of Opuokahaku and Kānemilohae, near the beach of Po‘ipū [...]” (Farley 1906:93). Just below the resting places of Kāne and Kanaloa is the “Pali o Kōloa” or “Cliff of Kōloa,” which the district was possibly named after.

Wai-hānau, meaning “birth pool,” is a rock on the eastern bank of the pool. There is a *mele* (chant) about Wai-hānau:

*‘Aloha wale ka Pali o Kōloa,
Ke Ala huli i Wai-hānau e, hānau.’* [Farley 1906:93]

Below Wai-hānau was a rock shaped like a human tongue called “Ka-‘ōlelo-o-Hawai‘i, “language of Hawai‘i.” It is said that Kaweloleimakua, who lived at the end of the 1600s, brought

this rock to Kaua'i from the island of Hawai'i. According to Wichman (1998:40), "Kiha-wahine, the fearsome *mo'o* goddess, lived in this pool. When she was in residence, the water turned red and no one dared to swim there." And "[a]t the southern end of the Maulili pool started two large 'auwais [ditch, canal] that watered the land east and west of Kōloa" (Farley 1906:93).

Maulili is also the name of Kōloa's most important *heiau*. It was first built by Ka-pueo-makawalu, the son of Kapu-lau-kī. He had his house on the eastern side of this *heiau*. It was a place of human sacrifice, but once Kapueomakawalu died, it was no longer used and its location was lost (Wichman 1998:41). Many years later, when 'Aikanaka had defeated his cousin Kawelo in the battle of stones on the plains of Wahiawa, 'Aikanaka wanted a place to sacrifice the body. No one was sure of it, but a deaf mute led 'Aikanaka to the place. The place was rebuilt and in the morning 'Aikanaka went to sacrifice the body. He found that Kawelo was healed from his wounds and it was 'Aikanaka instead who was sacrificed (Wichman 1998:41).

Kapueomakawalu also built the *heiau* of Louma, which stood on the mountain side of Ho'oleina-ka-pua'a, "place to throw in the pig." This was beside a small pond *mauka* of Maulili. Louma was a small *heiau* in which hogs, red fishes, and other sacrifices were offered. It was dedicated to Lono-i-ka-ou-ali'i, the god who had come to Kaua'i with La'a-mai-kahiki in the twelfth century. The stones for this *heiau* were brought from O'ahu. It is said that the *Menehune* did the actual building (Wichman 1998:41).

According to Wichman (1998), Palila, the legendary figure who wielded a huge war club to save his father, was born during the period of war between the kingdoms of Puna and Kona about AD 1200 at Kamo'oloa. He was raised by his grandmother in the *heiau* of 'Ālana-pō, "night offering," sacred to the gods from the time of darkness (Wichman 1998:39–40).

The following is a *mo'olelo* about the small stream called Weoweo-pilau, "rotten bigeye fish," which is on the plains of Kamo'oloa:

It seems an upland farmer heard that the bigeye fish were running at the beach, so he went down and caught a great number of them. On his way home, an old woman asked him for a few fish but he refused to give her any, saying she could go to the shore and get as many as she wanted. As he continued home, his load of fish became heavier and heavier, the path dustier and dustier, and the sun blazed with heat. When he reached the stream, he put down his fish and plunged in to cool off. When he came out, he smelled that his fish were completely rotten. He then realized that the old lady had been Pele, the volcano goddess, testing his generosity and hospitality. He had been found wanting and was punished. [Wichman 1998:40]

There are also many *mo'olelo* in the *makai* (seaward) area of Kōloa. According to Wichman (1998), Hālau-a-ka-lena, "shed for the 'olena (*Curcuma domestica*), turmeric plant," was dedicated to the *mo'o* goddess Kihawahine. If she was offended she would take the form of a sea dragon and patrol the seashore, killing all who dared fish from canoes and along the reef and rocks (Wichman 1998:420). The story of "Ke Kōloa o Kaikapū" is similar (Wichman 1991:88–91) in which a *mo'o* named Kaikapū guarded the Kōloa shoreline, keeping everyone away from the swimming places and from the food on the reefs and in the sea. She would eat fishermen and swimmers near the shore. Soon no one living in Kōloa would come to the ocean to fish, gather the golden brown *līpoa* seaweed used to flavor their food, or work at the natural rock pans where salt was made. Liko and his grandmother lived on the hill above Kukui'ula bay. Liko's grandmother

once expressed that she longed for the taste of *i‘a ho‘omelu*, the relish made of raw *hīnālea* (brightly colored wrasses, family *Labridae*) fish mixed with red salt, roasted *kukui* (*Aleurites moluccana*) nuts, and brown *līpoa* seaweed. Liko decided his grandmother must have the fish and brought his *kauila* (*Alphitonia ponderosa*) wood spear and his *hīnālea* trap woven from *‘inalua* (*Cardiospermum halicacabum*) vine. Liko dove into the water and battled Kaikapū. He defeated her by swimming into the lava tube opening that led to a rocky platform above and trapping her in the narrowing tube. From then on, the seashore was free for everyone to use. Even today when the column of water shoots high into the sky, an angry roar echoes from the tube, *ke kōloa o Kaikapū* (Wichman 1991:88–91).

The early life of the hero Kawelo is also associated with Kōloa. Kawelo grew up in Wailua with two friends, Kauahoa of Hanalei and Aikanaka, the son of the king of Kaua‘i. The three were fiercely competitive, and when his grandparents gave Kawelo a canoe, Kauahoa was jealous, so he made himself a kite. As soon as he saw the kite, Kawelo wanted one for himself and he asked his grandparents to make him one. He flew the kite next to Kauahoa and the two entangled, which caused Kauahoa’s to break away and fall to the earth in Kōloa, at a place named Kaho‘oleināpe‘a (“the flying of the kites”) after this event (Fornander 1918:5:3–4).

3.2.2 Weliweli Ahupua‘a

Frederick Wichman says that when the island was being explored by the *Menehune* who had been brought to Kaua‘i by Kū‘alunui-paukū-mokumoku, one adventuresome group was led by Weliweli (“fearful”), a gruff-voiced man. He was very strict and everyone jumped to fulfill his orders. The area was named after him (Wichman 1998:43–44).

There are three *mo‘olelo* of how the swamp in Weliweli Ahupua‘a was formed:

At the upper end of this *ahupua‘a* was a swamp that now has been dammed to create a reservoir for the sugar plantation. At one time this area was covered by forest. Palila, son of Ka-lua-o-pā-lena, left the *heiau* where he had been raised and trained, curious about the noise of battle he heard. He climbed to the peak Kū-manumanu, ‘scarred Kū,’ and looked down on the battlefield. He saw his father’s army on one side and the Kona enemy led by Nā-maka-o-ka-lani on the other, seemingly ready for the usual face-to-face battle. However, Palila noted that, unknown to his father, the enemy chief had concealed many of his warriors in the woods. Palila took his war club and with one sweep felled a tree at the edge of this forest. It fell against its neighbor with such force that the neighbor fell too, and one by one, all the trees in the forest toppled, crushing the enemy beneath them.

Then Palila rested his war club on the ground. It was so heavy that it sank deep into the ground. When Palila pulled out, a gush of water welled out. This spring, Wai-hohonu, ‘deep water,’ covered the once mighty forest, creating the swamp of Pālena, named after Palila’s father.

Wai-hohonu is sometimes given as Wai-o-honu, ‘stream of the turtle,’ and the giant stone turtle on the ridge above is pointed out as being the turtle in question. A female turtle dug out a hole for a nest, but a never-ending gush of water greeted her. On her way to search for another nesting site, she was turned to stone.

Another explanation for the swamp tells of a maiden who lived at Palena, her house surrounded by a fence of ‘ōlena plants. Her lover used to come from his home down the coast by canoe and walk up to visit. He became irritated that she was never ready to receive him, there was no food prepared, the house was not neat, and so on. She retorted that since the forest obstructed her view and he never sent a messenger to announce his coming, there was no way she could anticipate his coming. The young man seized an ax and cut down all the trees, giving the young woman a clear view over the plains to the sea and plenty of time to have thing ready for his arrival. [Wichman 1998:44–45]

3.3 Pre-Contact and Early Historic Period

Chronological analysis from Kōloa and Weliweli suggests an early initial occupation within the Kōloa District of ca. AD 535 (Walker and Rosendahl 1990:131). Initial occupation probably was characterized by temporary and/or recurrent occupation. From AD 600–1400, settlements in the Kōloa area were still limited to the coast. By AD 1040, lava tubes were used for burial and temporary habitation in the inland areas of Kōloa (Hammatt et al. 1999:7).

One Hawaiian tradition says that the islands of Hawai‘i were first settled by the chief Punanuikaianaina, who came to the Puna District of Kaua‘i from the Marquesas around AD 1000 to 1100 (Fornander 1996:45–46). The early settlers of the Hawaiian archipelago would have been especially attracted to the windward side of Kaua‘i, which boasted large river valleys supporting a vast inland region of irrigated pond fields for *kalo* (taro) cultivation that became the agricultural core of Kaua‘i. The greatest of these river valleys were around Wailua and Hanamā‘ulu streams. Excavation data near the mouth of Hanamā‘ulu Stream indicates early occupation of the area between AD 1170 and 1400 (SIHP # 50-30-11-01839, Walker et al. 1991). This area was richly endowed with agricultural wealth and was a major residential and religious center for the nobility (Kirch 2010:171). A number of prominent *heiau* and a sacred birthing site were located in the central Wailua area (Bennett 1931:125–128). In approximately AD 1450 (a time estimate based on an average length of generational intervals in chiefly genealogies), the Kaua‘i *ali‘i* (chief) Manokalanipō is credited “for the energy and wisdom with which he encouraged agriculture and industry, executed long and difficult works of irrigation, and thus brought fields of wilderness under cultivation” (Fornander 1996:93).

On the island of O‘ahu in approximately AD 1490, the ‘*aha ali‘i*’ (council of chiefs) chose Mā‘ilikūkahī, an *ali‘i kapu* (sacred chief) who was born at the sacred site of Kūkaniloko in the uplands of Waialua, to be the new *ali‘i nui* (paramount chief) of O‘ahu. After being installed at the *heiau* of Kapukapuākea in central Waialua, Mā‘ilikūkahī instituted an explicit land division and administration structure (Kirch 2010:84–90). Although Kaua‘i remained politically independent during this time period, a hierarchical land system was also imposed on that island.

The first written accounts of Kaua‘i are from travelers, missionaries, and surveying expeditions. Missionary accounts of the first half of the nineteenth century provide the majority of the early written records for this particular part of Kaua‘i. Damon (1931:401) wrote about Bingham’s 1824 observations from his memoir, *A Residence of Twenty-One Years in the Sandwich Islands*, published in 1847. Damon recounts Rev. Hiram Bingham’s stories after travelling east from Hanapēpē, taking in a fertile land he described as “mostly open, unoccupied and covered with grass, sprinkled with trees, and watered with lively streams that descend from the forest-

covered mountains and wind their way along ravines to the sea, —a much finer country than the western part of the island.”

The earliest documentation of the population of the district of Kōloa appears in the 1850s when missionary censuses recorded a total population of 1,296 (Schmitt 1977:12). A population distribution map by Coulter (1971) (Figure 18) indicates the population of Kaua'i ca. 1853 “was concentrated chiefly on the lower flood plains and delta plains of rivers where wet land taro was raised on the rich alluvial soil” (Coulter 1971:14).

The area about Koloa in the southeast was also well populated. Koloa was a port of call for whaling vessels ‘to recruit for the Polar Seas.’ There ‘calabashes of poi, raw fish, bunches of bananas, and bundles of sugar cane [...] [were] offered for sale to the foreigner.’ There was a sugar cane plantation of 2,000 acres in this district, the proprietor of which ‘was realizing at least one ton per acre of capital sugar.’ Tidal flats in this vicinity were used for, evaporating sea water to obtain salt. [Coulter 1971:15–16]

By 1872, the population of Kōloa bottomed out at 833, and then began steadily increasing to 1,500 in 1884, 1,835 in 1896 and 4,564 by 1900 (Schmitt 1977:13).

Handy and Handy (1972:152) note that in the early post-Contact period (post-1778), the leeward coast from Waimea to Wailua (including Kōloa) was noted for the inland plantations of breadfruit, bananas grown along the gulches, sweet potatoes and yams grown in the uplands and valleys, and extensive taro terraces throughout the *ahupua'a*. On Kaua'i, the favored places for coconuts were Kōloa and Lāwa'i (Handy 1940:193).

Writing about this general area, E.S. Craighill Handy states,

Upland kula lands that were famous for their sweet potatoes were Kukuilono above Lawai (the present park covering the McBride [*sic*] estate) and the elevated kula lands east of Wahiawa Stream. I was unable to obtain any information as to the uplands of Kalihi and Kilauea, but this and much of the kula land from here to Kealia is the same type of terrain and presumably was once used to some extent for growing sweet potatoes by taro planters in these districts. A kamaaina of Wahiawa says that inland of the cliff named Kawaikapuluna, the people used to have taro patches in the gulch, while their houses and potato patches were on the kula land above, bordering the gulch on either side. I was told this arrangement was typical also of Nawiliwili, and presumably also of Hanamaulu, Hanapēpē, Makaweli, and Waimea in the lower sections of their canyons. [Handy 1940:154]

3.3.1 Kōloa Ahupua'a

In the pre-Contact and early post-Contact periods, Kōloa had an elaborate field system that covered much of the coastal plain, fed by its many streams and a complex of terraces and ditches (Handy 1940:65).

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 describes himself as born in Kōloa but presently living in

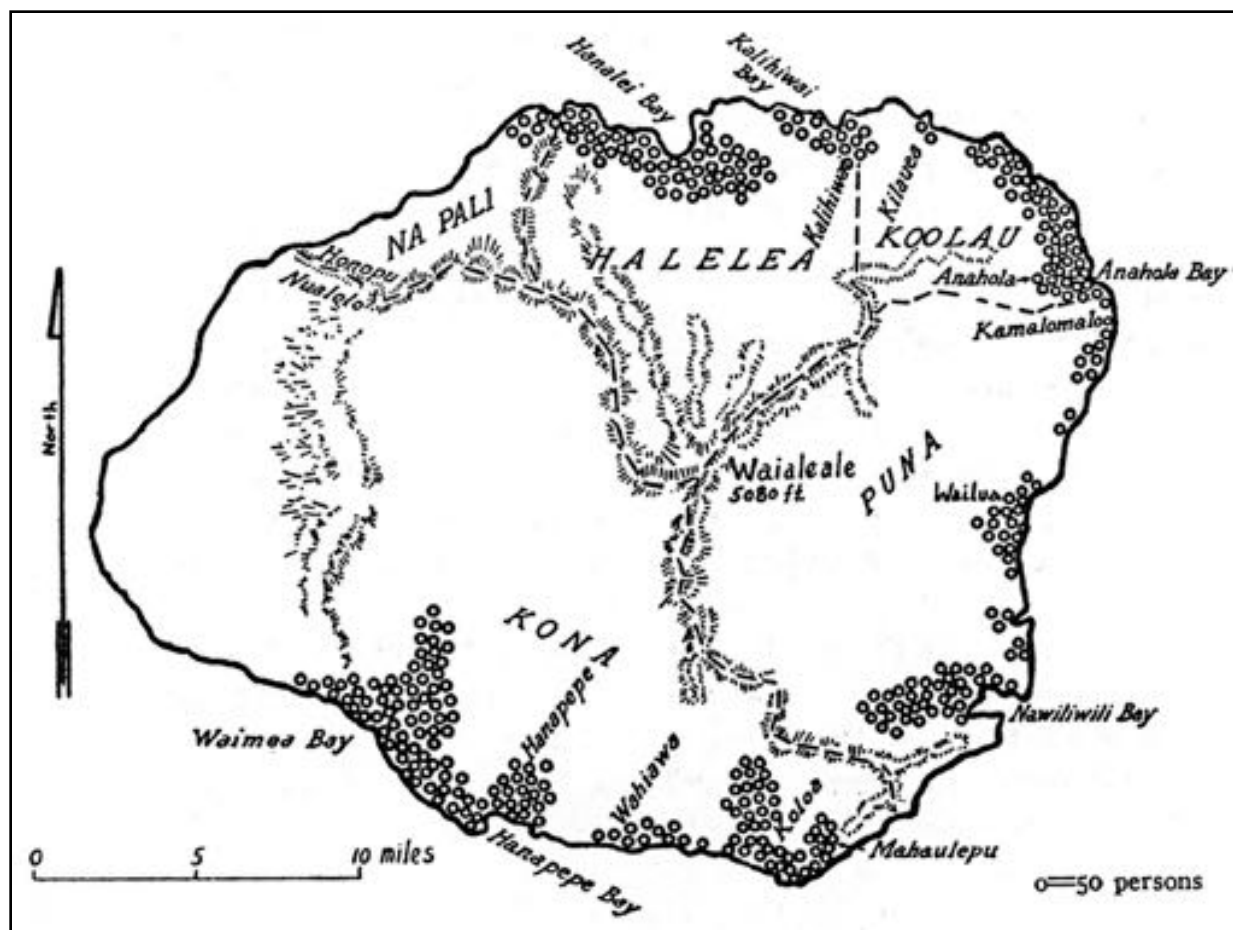


Figure 19. Map showing population estimate for Kaua'i in 1853 (in Coulter 1971:16)

Ha'ikū), in order to show that Hoaea (the area in dispute) was indeed at the northern boundary of Kōloa, testifies, “At Hoaea tea [*sic*] leaves were hung up to show that there were battles going on” (Boundary Commission, Kaua'i, Vol. 1, 1874:124). That there was a traditional “warning system”—well-known to all natives—suggests that Kōloa, throughout its history, may well have been the scene of some serious conflicts, serious enough and perhaps often enough to warrant devising such a system.

Bernice Judd, writing in 1935, summarized most of what was known of the traditional Hawaiian life of Kōloa before the advent of large-scale sugar cultivation:

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 *kuāunas* [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]

By the early 1800s, Kōloa Landing had become the principal port of Kaua‘i. Shipments of North American furs and pelts to Asia 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 Asia took place at Kōloa Landing, until the supply of the fragrant wood was exhausted around 1830 (Donohugh 2001:63–64).

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

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

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 esteem in which the local populations held the *ali‘i* and the scale at which the *ali‘i* carried out their functions. An even grander view of that esteem 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]

In 1835, Thomas Nuttall and John K. Townsend, two American naturalists, visited the Kōloa area. They noted “fields of taro, yam, and maize (possibly sugar cane), irrigation networks and sweet potato patches in the dryer areas” (Townsend 1839:206).

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]

Other sources, however, give different population figures for Kōloa during the first half of the nineteenth century. In 1834, according to a report by missionaries on Kaua'i, the inhabitants of the *ahupua'a* numbered 2,166. An article in the *Pacific Commercial Advertiser* of 21 December 1867 estimated the population in 1838 was about 3,000 (though, by 1867, it had been reduced to a third of that number). James Jackson Jarves, who visited Kōloa and Kaua'i for nine months during the early 1840s, recorded the following:

Kōloa is now a flourishing village. A number of neat cottages, prettily situated amid shrubbery have sprung up, within two years past. The population of the place, also, has been constantly increasing, by emigration from other parts of the island. Its numbers, now, about two thousand people, including many foreigners, among whom are stationed a missionary preacher, and physician, with their families. [Jarves 1844:100]

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).

Another major area of commercial enterprise was associated with the whaling industry at Kōloa Landing. Accounts of visitors suggest the inhabitants of Kōloa took advantage of their nearness to the landing to participate in the booming trade of the port. An article in the *Pacific Commercial Advertiser* of 19 February 1857 described the salient characteristics of the port at mid-century and mentions,

From the landing there is a good carriage road to the town, distant about two miles. Large quantities of firewood, bullocks and sweet potatoes are furnished to whalers in this port, and these chattels can nowhere be procured cheaper or better. It is estimated that 10,000 barrels of sweet potatoes are cultivated annually here, which are thought to be the best on the islands. Nearly all the potatoes furnished for the California market are produced here [...] Sweet potatoes, sugar and molasses constitute the chief trade of the port. [*Pacific Commercial Advertiser*, 19 February 1857]

Kōloa became the official port of entry for Kaua'i in the 1850s and participated in the profitable trade with the whaling industry whose peak years ran from the 1830s to the 1860s. It seems likely the demand for firewood, bullocks, sweet potatoes, sugar, and molasses at Kōloa Landing was met to at least a small degree by activities in the *mauka* regions of Kōloa.

3.3.2 Weliweli Ahupua'a

Weliweli was a generally arid *ahupua'a*, and probably supported taro *lo'i* (irrigated terrace) only in the upper ends of gulches, according to Handy (1940:66), in the pre-Contact and early post-Contact periods. This is probably why only one LCA to a commoner was granted in this *ahupua'a*.

3.4 The Māhele and the Kuleana Act

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established “for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property” (Chinen 1958:8). This led to the Māhele, the division of lands among the king of Hawai'i, the *ali'i*, and the common people, and which introduced the concept of private property into Hawaiian society. In 1848, Kamehameha III divided the land into four divisions: Crown Lands to be reserved for himself and the royal house; Government Lands set aside to generate revenue for the government; Konohiki Lands claimed by *ali'i* and their *konohiki* (supervisors); and *kuleana*, habitation and agricultural plots claimed by the common people (Chinen 1958:8–15).

Upon confirmation of a land claim, the *ali'i* were required to pay a commutation to the government. This commutation (meaning a substitution of one form of payment or charge for another) could be satisfied with a cash payment or the return of land of equal value. This payment was usually one-third of the value of the unimproved land at the date of the award (Chinen 1958:9–12). The *ali'i* usually retained some of the land they were awarded and then returned some of the land to pay the commutation fee. The returned land usually became Government Land.

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 boundaries of the land, knew that the claimant had lived on the land since 1939, and knew that no one had challenged the claim. Then, the *maka'āinana* (commoners) could present their claims to the Land Commission to receive their LCA (Kame'eiehiwa 1992).

Not everyone who was eligible to apply for *kuleana* lands did so and not all of the 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 have not 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'eiehiwa 1992:296–297).

A total of 14,195 claims were filed and 8,421 awards were approved to about 29 percent of the 29,220 adult Native Hawaiian males living at the time of the Māhele, averaging 3 acres each (Kame'eiehiwa 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 one percent of the total acreage of Hawai'i (Kame'eiehiwa 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 provide insight into patterns of residence and agriculture. Many of these patterns probably had existed for centuries. By examining the patterns of *kuleana* LCA parcels, insight can be gained into the likely intensity and nature of Hawaiian activity in the area at the time.

3.4.1 Kōloa Ahupua'a

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. Kōloa Ahupua'a, totaling 8,620 acres, was awarded to Moses Kekūāiwa (LCA 7714-B), the brother of Alexander Liholiho (Kamehameha IV), Lot Kapuāiwa (Kamehameha V), and Victoria Kamāmalu. The awarding of the *ahupua'a* to Kekūāiwa was an outcome of an event 25 years in the past: the crushing—by forces loyal to Kamehameha II—of the 1824 revolt on Kaua'i, when Kaua'i lands were divided up among the chiefs of the other islands. The next largest award in the *ahupua'a* went to the Protestant Mission (ABCFM) (LCA 387) and consisted of approximately 825 acres. The majority of the mission lands were located in the vicinity of Kōloa Town, where the parsonage was located. Large parcels just *mauka* of Kōloa Town were utilized for sugarcane cultivation and cattle pasture.

Eighty-nine *kuleana* awards were given to individuals within Kōloa Ahupua'a. The majority of these LCAs were located in and around Kōloa Town itself (Figure 19). This concentration of awards around the town area may reflect both the traditional land settlement pattern, a focus on the resources of Maulili Pool and Waikomo Stream (a permanent stream), and a more recent movement of the populace to the plantation and missionary centers.

Testimonies provided to the Land Commission by applicants of LCAs 3584, 6309, and 6667 were generally limited to stating the boundaries of their claimed lands as well as land use. All three LCAs are indicated as being enclosed by stone walls and note the presence of additional house lots and *lo'i* of other claimants in the vicinity. Of particular interest are the stated boundaries of

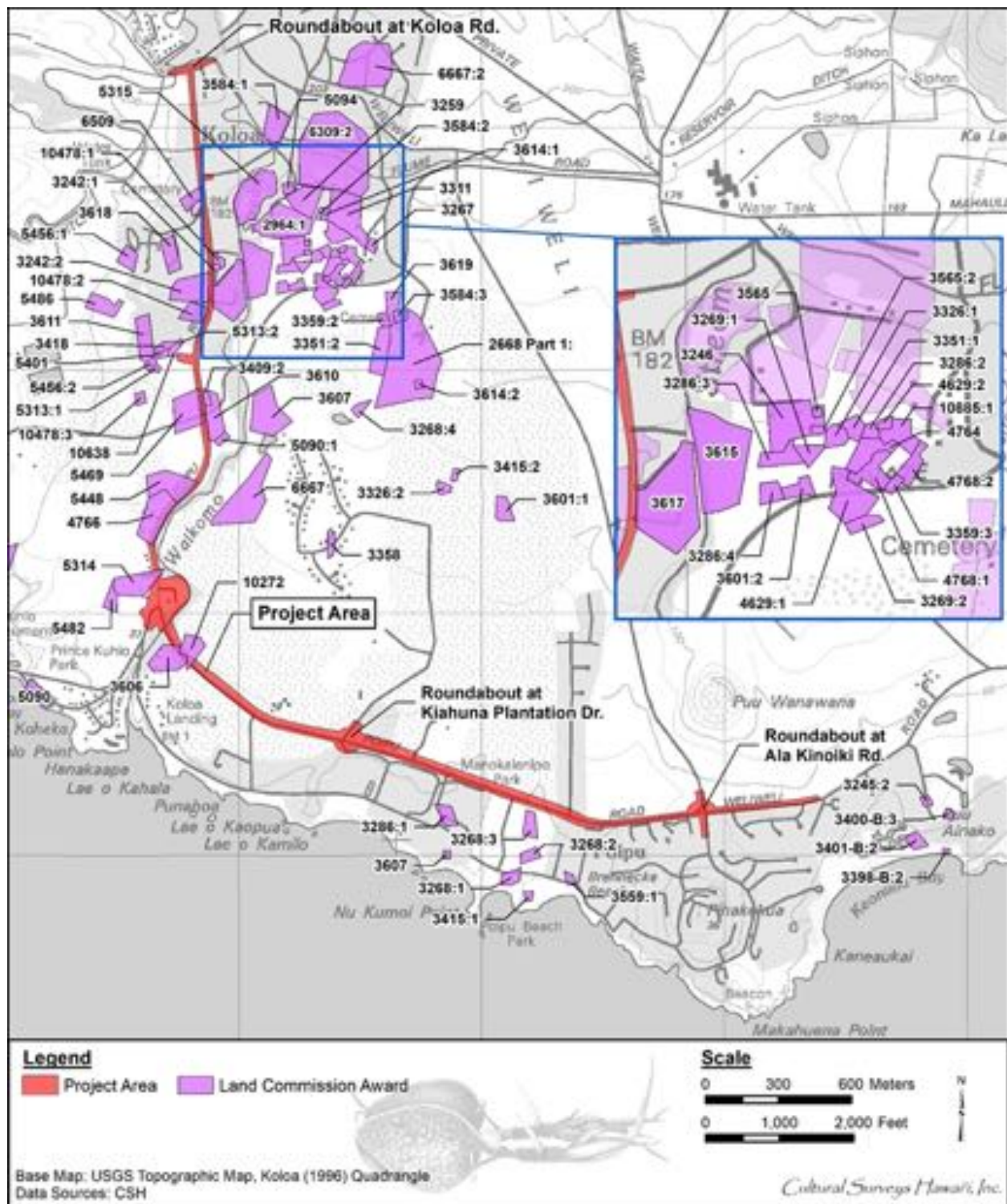


Figure 20. Aerial photograph (2011 USGS Orthoimagery) showing LCAs within the vicinity of the project area

LCA 6309, which indicated the presence of pasture lands immediately *puna* (east) of the LCA. This may explain the presence of numerous stone walls described in the land claims. These walls are likely cattle barriers used to keep cattle out of house lots and agricultural plots.

A review of LCA records indicates land usage and activity by the mid-nineteenth century included habitation, cattle ranching, and agriculture, including the cultivation of taro, sugar, potatoes, and yams. This may reflect the continuation into that century of traditional Hawaiian land use.

3.4.2 Weliweli Ahupua'a

Weliweli Ahupua'a was awarded to Kekuaiwa as a *konohiki* award, but he returned it and it became Crown Land. There was only one LCA awarded within the *ahupua'a* of Weliweli: LCA 5219 to Punipuu in the *'ili* of Kahoanalu. This land included a small plot consisting of a road, several dry *lo'i*, a *kula* (plain, field), and a house lot. Punipu received permission to use the land from Kaikioewa, Governor of Kaua'i, after the Insurrection of 1824 (Foreign and Native Testimonies 13:66). This plot was near the shore along the coastal road from Kōloa to Māhā'ulepū (Ching et al. 1974:21). The majority of the *ahupua'a* of Weliweli was reserved as government land. Punipu testified to the following:

The Land Commissioners, greetings: I, Punipu, a man living at Weliweli on the island of Kauai, hereby state my claim for land from ancient times, received from Keaweamahi. My place is the enclosure for animals and a *kula*. The length of the pasture is 11 chains and 5 fathoms and the same on the other side, and the width is 7 chains and 3 fathoms and the same on the other side. A claim for a cultivated place is 14 chains long by 9 chains wide. A respectful farewell to the Land Commissioners,

PUNIPU X [Foreign and Native Testimonies 9:135]

As seen in Figure 19, no LCAs are located within or in the vicinity of the two proposed roundabout locations.

3.5 Nineteenth and Twentieth Century Agricultural and Urban

Kōloa later became the scene of the confrontation of traditional social structure with commercially impelled forces of change. The cane growing activity of Ladd & Company would inevitably affect the lives of the inhabitants of the rest of the *ahupua'a*. Traditional settlement patterns (e.g., permanent and temporary habitation interspersed throughout the irrigated agricultural fields near the coastal zone and traditional farming along streams) would have been distorted by a shift to settlement in Kōloa Town where sugarcane milling activities were located, and a shift to cash crops rather than taro. Silkworm farming, oil extraction from *kukui* (candlenut, *Aleurites moluccana*) nuts, cigar manufacturing, sago raising, and tapioca manufacturing were all attempted with varied success during the middle third of the nineteenth century.

Another major area of commercial enterprise was associated with the whaling industry at Kōloa Landing. Accounts of visitors suggest the inhabitants of Kōloa took advantage of their nearness to the landing to participate in the booming trade of the port. An article in the *Pacific Commercial Advertiser* described the salient characteristics of the port at mid-century:

From the landing there is a good carriage road to the town, distant about two miles. Large quantities of firewood, bullocks and sweet potatoes are furnished to whalers in this port, and these chattels can nowhere be procured cheaper or better. It is estimated that 10,000 barrels of sweet potatoes are cultivated annually here, which are thought to be the best on the islands. Nearly all the potatoes furnished for the California market are produced here. [...] Sweet potatoes, sugar and molasses constitute the chief trade of the port. [*Pacific Commercial Advertiser* 19 February 1857]

Kōloa became the official port of entry for Kaua'i in the 1850s and participated in the profitable trade with the whaling industry whose peak years ran from the 1830s to the 1860s. It seems likely the demand for firewood, bullocks, sweet potatoes, sugar, and molasses at Kōloa Landing was met to at least some small degree by activities in the *mauka* regions of Kōloa.

The story of nineteenth century development in the proposed project area is the story of the Kōloa Sugar Company, the first plantation sugar company on Kaua'i, which eventually owned lands in eastern Kōloa, Weliweli, Pā'a, and Māhā'ulepū Ahupua'a.

3.5.1 Kōloa Sugar Company

Kōloa Sugar Company was the first plantation-organized industry in Hawai'i (Damon 1931:176, 198). It began in 1835 as three young men arrived in Honolulu via England, William Hooper, Peter Allen Brinsmade, and William Ladd. The three men established a mercantile business called Ladd & Company (Dorrance and Morgan 2000:26). About one thousand acres of land for silk and sugar culture were leased from the king and local chiefs, mainly in Weliweli Ahupua'a, for 50 years at \$300 a year. The lease "allowed the use of the waterfall and an adjoining mill site at Maulili pool, not far from the thousand acres, together with the right to build roads, the privilege of unrestricted buying and selling, and freedom from local harbor dues." They intended to create a sugar plantation and employ Native Hawaiians. However, the group's lack of experience in farming produced a turbulent start up. In subsequent years, they would buy or rent land in upland Pā'a (1841), in Māhā'ulepū (1878), and in Kōloa Ahupua'a, the section east of Kōloa Stream (1881) (Alexander 1937:frontpiece; Figure 20).

Judd (1935:57) noted the following:

The company was permitted to hire natives to work on the plantation provided they paid Kauikeaouli, the king, and Kaikio'ewa, the governor of Kaua'i, a tax for each man employed and paid the men satisfactory wages. The workers were to be exempt from all taxation except the tax paid by their employers. [Judd 1935:57]

Judd further described the revolutionary implication of this arrangement: "The significance of Ladd and Company's lease lay in the fact that it was the first public admission by the Hawaiian chiefs that their subjects had rights of personal property backed with a guaranty of protection to that property" (Judd 1935:58). Local chiefs, fearful of a usurpation of their power, resisted the company's first efforts to recruit workers, forcing the king's intervention.

The commercial activity initiated by the Ladd & Company plantation had widespread ramifications. Kōloa Town and the landing at the mouth of Waikomo Stream became major commercial centers. The landing—or "roadstead" as it was called—was a busy port during the mid-1800s. "An estimate in 1857 stated that 10,000 barrels of sweet potatoes were grown each

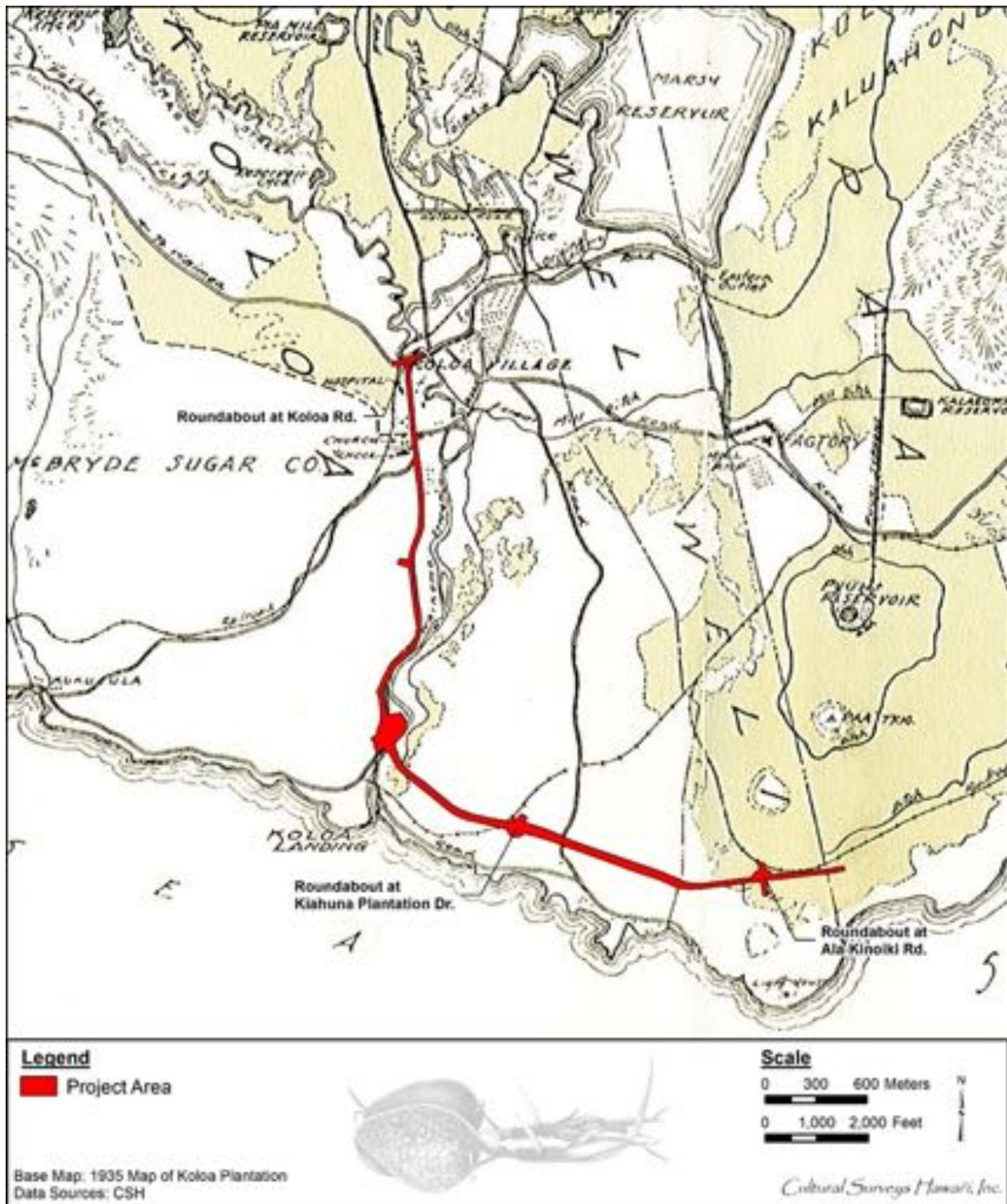


Figure 21. 1935 Kōloa Sugar Company Plantation lands in Kōloa, Weliweli, Pā'ā, and Māhā'ulepū (endpiece map from Alexander 1937)

year at Kōloa, and that the crop furnished nearly all the potatoes sent to California from Hawai'i. Sugar and molasses were also chief articles of export" (Judd 1935:326). Whalers also used the Kōloa roadstead during this period (1830–1870) and took on provisions of squashes, salt, salt beef, pigs, and cattle. Hawaiians grew the squashes (pumpkins) on the rocky lands north of the landing, and numerous salt pans were located along the shore near the landing.

Ladd & Company ceased operating in 1845. Then, following a succession of individual and partnered ownerships, a new enterprise, Kōloa Sugar Company, was established in 1880. In 1882, the Kōloa Sugar Company announced it had ordered all the components for a plantation railroad. According to the *Planter's Monthly*, Volume 1 of 1882, "It (the railroad) will consist of four miles of 30 inch gauge track, forty cars 5 x 10 feet, and one locomotive [...]" (Condé 1993:28). According to Arthur C. Alexander (1937), "Cut cane was hauled to the mill by oxcart until 1882. In that year, 3½ miles of 30-inch gauge, 18 pound railroad track and 50 cars were purchased" (Condé 1993:28). The eastern portion of the proposed project area is situated on part of the old railroad system (see Figure 20).

By 1885, the railway extended to Kōloa Landing where steamers transported the bags of sugar to the mainland. A motorized derrick winched the bagged sugar from the railroad cars to the warehouse on the west side of the landing. From there, bagged sugar was loaded onto small lighters, which would row the sugar out to waiting ships in the harbor. By 1895, the railroad had extended a spur line through the coastal lands of Kōloa into Weliweli to aid in the harvest around Pā'ā. Remnants of this spur line are seen today throughout lower Po'ipū (Donohugh 2001:106).

The Kōloa Sugar Company had previously purchased the *ahupua'a* of Pā'ā southeast of Kōloa town, and a large parcel, a swamp that the company drained and tried to use for sugar, 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 Kōloa Sugar Company was producing 9,000 tons of sugar each year and adding additional acreage (Donohugh 2001:105).

Kōloa Landing was phased out around 1925 when McBryde Sugar Company and the Kōloa Sugar Company began shipping their product out of Port Allen Harbor at Hanapēpē in Waimea District. 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 Kōloa 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 (Donohugh 2001:101).

According to the account by Wilcox (1996:77–78), the Kōloa Sugar Company, following the merger of the plantation lands of the Kōloa Sugar Company and the Grove Farm Company in 1948, required new sources of irrigation water for the combined lands under cultivation. 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.

3.5.2 Contemporary Land Use

A 1910 U.S. Geological Survey map (Figure 21) indicates the low density of urbanization in the Kōloa District. The district had few improved roads, and areas worthy of labels included only the mills for the McBryde Plantation in Wahiawa and associated upland camps, Kōloa Landing, and inland Kōloa Town. As shown on a 1963 USGS map (Figure 22) and a 1978 aerial photograph (Figure 23), in the mid- to late twentieth century, there are numerous highways, reservoirs, and town centers in Numila (former McBryde mill area) in Wahiawa, an expanding Kōloa Town, a cluster of industrial and residential structures around Kōloa Mill in Pā'ā, and numerous small beach villages. It was during this period shortly after 1963 that a new east-west oriented section of Po'ipū Road was built further inland (State of Hawaii Department of Accounting and General Services Survey Division Register Map 4116. The completed new road visible on the 1978 USGS Orthophoto quad aerial photograph (see Figure 23) and the old north-south section from Kōloa town comprise the project area.

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 tourist-driven development at the shoreline had been drawing construction and service jobs away from the town center. In 1962, the Waiohai Resort opened, with the Sheraton Kauai Resort following in 1965. The Kiahuna Plantation Resort opened in 1967, followed by the construction of various condominiums throughout the 1970s and '80s. Finally, the Hyatt Regency Resort, with its expansive golf course, opened in 1991.

By this time, the tourist industry had successfully attached the name "Po'ipū Beach" to the entire coastline beginning just west of the subject parcel at Kōloa Landing, and continuing east to Makahū'ena Ledge. With the development of the Poipu 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).

By 1985, annual "Plantation Days" festivals were held in the open field adjacent to the former site of the 1841 sugar mill in Kōloa Town. The Kōloa Mill at Pā'ā was finally closed in 1996, and remains a landmark of the countryside as one makes the drive to Po'ipū (Figure 24). Future plans within the Kōloa district will place more demands on beachfront properties along the Lāwa'i and Po'ipū coastline. Over 1,000 acres of former McBryde Sugar Company lands are slated for hotel and condominium development surrounding both coastal resort areas (Donohugh 2001). Future development plans for the upland areas involve both large tracts of lands, as well as regional redevelopment within Kōloa Town itself.

3.6 The Kōloa Field System

A portion of the proposed project area is located outside an expansive agricultural system that spread out across the *makai* plain of Kōloa Ahupua'a and the west side of the Weliweli Ahupua'a.

It has often been assumed the majestic, soil-rich valleys were the preferred environments for the development of irrigated agriculture in the Hawaiian Islands and that the modifications of broad lava plains and slopes for irrigation (e.g., Kōloa on Kaua'i and Lālāmilo on Hawai'i Island) came as later developments in response to a need to expand food production. Based on archaeological investigation—including detailed mapping, excavation of habitation and

agricultural features, and development of a C14 chronology—over an extended period in the *makai* portions of Kōloa Ahupua‘a, CSH has been able to define the *lo‘i* lands of Kōloa as a system of interrelated features harmoniously interacting to form a unified whole. This “Kōloa Field System” extended from Lāwa‘i to Weliweli, covering all of Kōloa Ahupua‘a below present-day Kōloa Town.

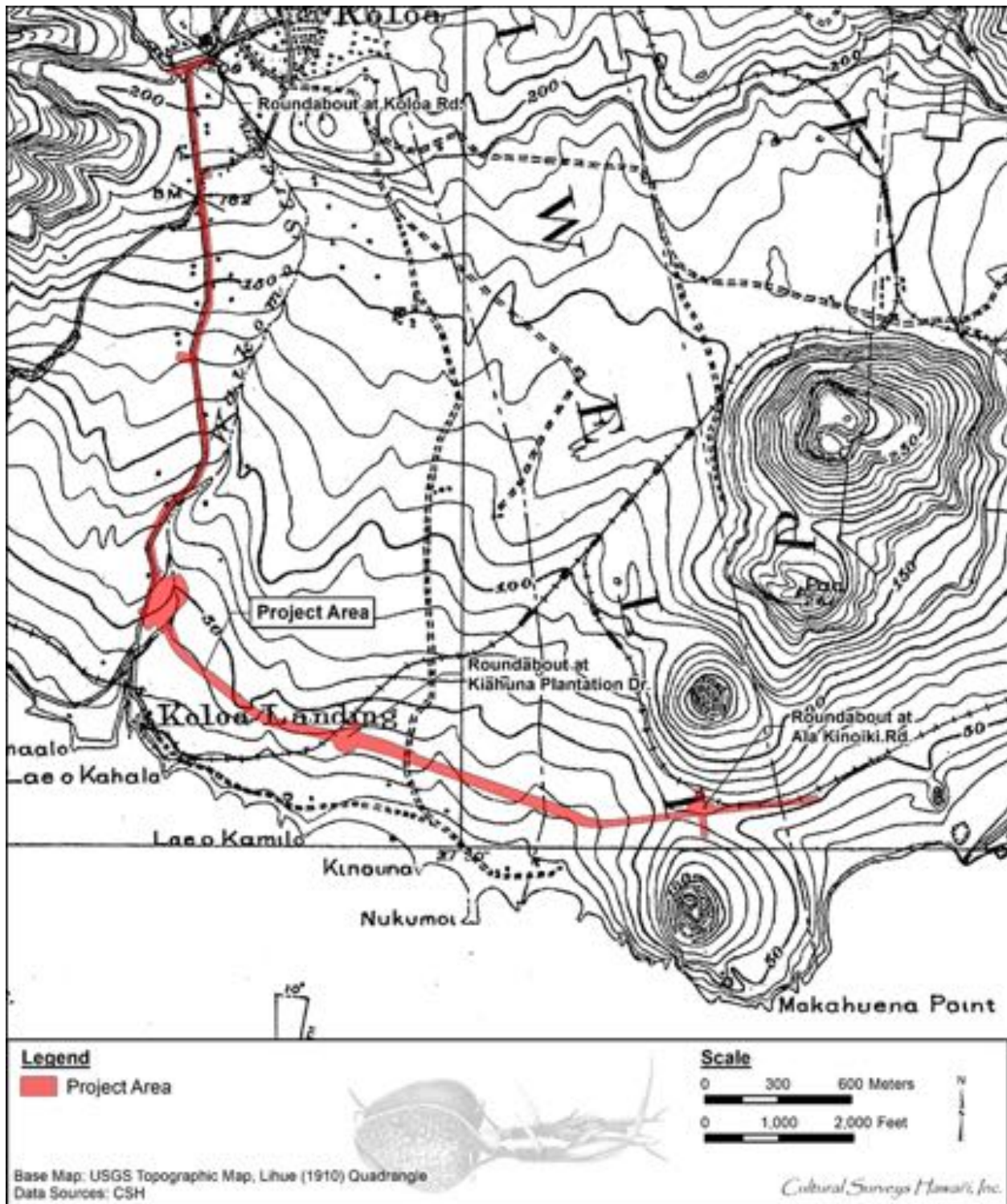


Figure 22. Portion of the 1910 Lihue USGS 7.5-minute topographic quadrangles showing limited development in the project area



Figure 23. Portion of the 1963 Kōloa USGS 7.5-minute topographic quadrangles showing increasing development in the project area



Figure 24. Portion of the 1978 USGS Orthophoto quad aerial photograph series for Kaua'i, showing increasing development in the project area



Figure 25. Photo of Kōloa Mill, built in 1912 (Kōloa Plantation Days n.d.)

This system developed contemporaneously, and in some cases earlier, than the well-known valley field networks. Although the principles and technology applied at Kōloa were similar to the valley networks, the challenging Kōloa landscape led to unique adaptations.

3.6.1 Environmental Parameters

Consideration of the local topography, climate, and soil characteristics suggest distinct advantages, in comparison to valley environments, for the development of Hawaiian agriculture in the *makai* region of Kōloa. First, there is thin soil over bedrock. This feature might seem to be a disadvantage; however, if it is recognized that this thin soil most likely supported only thin-rooted shrubs with parkland rather than dense forest, the heavy initial labor investment of vegetation clearing would be much less, compared to that in a densely forested valley environment. Secondly, the solid *pāhoehoe* basalt rock, 20-30 cm under the silt loam soil, would have led to minimal loss of water through downward percolation, compared to that in a valley environment. Thirdly, confined valley systems, particularly in the wet valleys of Kaua'i, could be wiped out or severely damaged by seasonal flooding. In Kōloa, no such problem existed. The Kōloa system is an adaptation and response to the recurrent danger of loss of subsistence production due to flooding. The Kōloa field networks are developed above the flood plain on the well-drained lava plain of the Kōloa volcanic series. In addition, Kōloa is a non-valley leeward environment. Solar radiation is higher than in most valleys and winter sun is not blocked by valley walls. Maturity periods for taro and other staples would be two to four months shorter than in valley environments.

3.6.2 Topography

The lava plain of Kōloa is not flat, nor is it level. It shows long *mauka/makai*-oriented tongues formed of old lava flows. The *'auwai* (irrigation ditch) were kept on these elevated points and could extend for long distances from the primary water source, Waikomo Stream. Some *'auwai* extended nearly 1.5 miles from the source and most originally extended to the ocean.

3.6.3 The Kōloa Field System as a Type

The Kōloa Field System was outlined as having four types of irrigated fields found in Hawai'i. Type 1 is a simple set of parallel terraces with water flow down the center, overflowing each

successive down slope terrace in turn. This is called a “barrage” type system and is considered the most simple. Type 2 involves the construction of an *‘auwai* tapped from the stream which enters the top of a series of terraces. The *‘auwai* ends at the upslope end of the terrace system as the water simply overflows down each successive terrace. Type 3 involves an *‘auwai* paralleling the upslope side of the terrace feeding water to each row of fields. Each row has a separate tap from the *‘auwai*. Type 4 involves two parallel *‘auwai* on separate levels, one downslope from the other, each of which feeds water to separate rows of terraces. The lower *‘auwai* serves as a drainage for the fields above it. This type of field is considered the most highly developed.

The Kōloa Field System does not fit any of the field types described above. In its abstracted and simplest (and unintensified) form, the Kōloa Field System consists of a series of parallel *‘auwai* flowing either on both sides or on top of a lava flow (Figure 25). This type of system would be impossible to construct in a valley environment without an impractical input of labor. It is uniquely adapted to the lava topography of Kōloa. There exist no other valleys in the Hawaiian Islands that possess the topographic features found at Kōloa. The only possible comparison could be to the extensive irrigation system at Lālāmilo in Kohala on Hawai'i Island, where the broad undulating topography required layout of *‘auwai* and fields not typical of a valley environment. Another matter of importance is the sheer size of the Kōloa Field System. Kōloa is known now to have covered over 700 acres and may have been considerably larger before the introduction of commercial sugar growing. This expanse of field land would make Kōloa one of the largest irrigated systems in the Hawaiian Islands.

Dendritic secondary *‘auwai* branches, or a braiding pattern, would have been progressively added to the main *‘auwai* as the system was intensified. Another form of intensification at Kōloa would be the purposeful creation of smaller fields adjoining the primary land at Kōloa. Aqueducted or raised *‘auwai* are one of the most intriguing phenomena of the system (Figure 26). These smaller fields are raised structures, and they likely exist as labor-intensive responses to the need for more irrigated land in places where water must be routed over low ground. This effort involved the piling of hundreds of cubic meters of sediment and rock, and it may have resulted in the ability to irrigate much more than an acre of land. This feature of the smaller irrigation fields alone is testimony to the greater productivity of irrigated fields over non-irrigated fields.

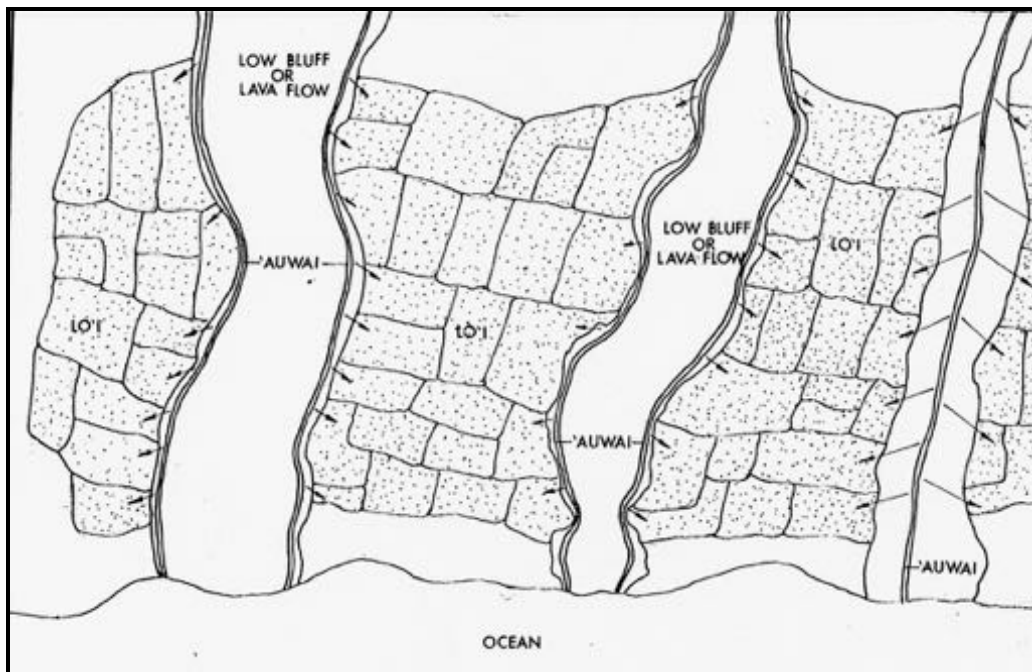


Figure 26. The Kōloa Field System, the basic type schematically represented

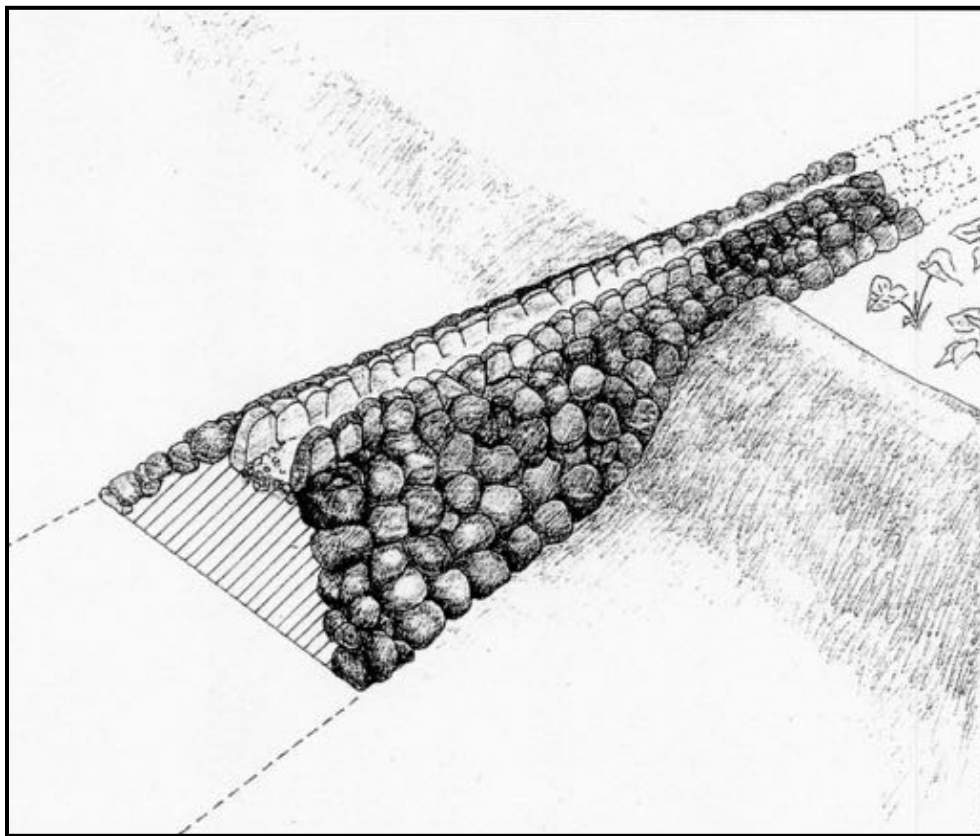


Figure 27. Cross-section of a raised 'auwai

3.7 Previous Archaeological Research

3.7.1 Archaeological Investigations in the Vicinity of the Project Area

The following is a discussion of previous archaeological investigations conducted within or near the vicinity of the proposed project area. A majority of the investigations have been conducted within the *ahupua'a* of Kōloa in conjunction with the burgeoning development of the area. In contrast, the archaeological record in the neighboring *ahupua'a* of Weliweli is relatively sparse, due to the fact that these *ahupua'a* are relatively undeveloped and have been continuously under cultivation (historic sugar followed by modern diversified agriculture) for over a century. Table 1 outlines the previous archaeological studies, while the locations of the archaeological studies involving fieldwork are depicted on Figure 27. Historic properties identified during previous archaeological studies are listed in Table 2 and presented in Figure 13.

Table 1. Previous archaeological studies in the vicinity of the proposed project area

Reference	Type of Study	Location	Results (SIHP # 50-30-10 unless otherwise noted)
Kikuchi 1963	Archaeological survey and excavations	Kōloa District	Located and assigned field numbers to 70 archaeological sites within Kōloa District
Palama and Stauder 1973	Reconnaissance survey	Haul Cane Road to Kōloa Mill, Kōloa Ahupua'a	Identified 18 historic properties (SIHP #s -03173 through -03190)
Ching et al. 1974	Surface survey and historical investigation	Weliweli, Pā'ā, and Māhā'ulepū Ahupua'a	Documented 68 prehistoric archaeological features
Sinoto 1975	Reconnaissance survey	Kōloa Ahupua'a	Documented Sites 78, 79, 85, and 86, previously identified by Bennett
Hammatt et al. 1978	Archaeological and biological survey	Kīahuna Golf Village, Kōloa Ahupua'a	Identified 583 features of intensive prehistoric and historic Hawaiian settlement and land use; features identified associated with Kōloa Field System
Connolly 1982	Reconnaissance survey	Kōloa-Po'ipū Bypass Road; TMKs: [4] 2-8-002, 005, 014; 2-8-022	Identified 18 sites (SIHP #s -00850 through -00860, -00938, -00951, -01959 through -01962, and Bennett Site 86).
Ching 1983	Reconnaissance survey	A&B lands, Kōloa Ahupua'a	Identified features associated with Kōloa Field System and Kōloa Plantation: flumes, remnants of walls, 'auwai, a historic railroad berm, agricultural terraces, and <i>lo'i</i> .

Reference	Type of Study	Location	Results (SIHP # 50-30-10 unless otherwise noted)
Landrum 1984	Reconnaissance survey	A&B lands, Kōloa Ahupua'a	Documented 37 various pre-Contact and historical feature areas, ranging from agricultural features to habitation sites to ceremonial/religious structures
Hammatt et al. 1985	Archaeological inventory survey and subsurface testing	Kōloa-Po'ipū Bypass Road, Kōloa Ahupua'a	Documented 47 archaeological sites, with SIHP designations given to 12 sites: SIHP #s -00420, -00426, -00427, -00832, and -00835 through -00842
Hammatt et al. 1988	Archaeological inventory survey	Kukui'ula Bay Planned Community, Kōloa Ahupua'a	Recorded 58 pre-Contact and historic-era archaeological sites, many associated with Kōloa Field System
Kikuchi 1988	Archaeological inventory survey	Keonelo Bay; TMK: [4] 2-9-001:002	Documented pre-Contact occupation of area and listed several previously identified sites: Bennett Sites 82, 83, and 84 and SIHP #s -03090, -03199, -03201 and -03202
Walker and Rosendahl 1990	Archaeological inventory survey	Hyatt Regency Kauai golf course; TMK: [4] 2-9-001: Por. 001	Identified 16 historic properties (SIHP #s -00426, -00431, -00432, -00475, -00480, -00481, -03203, -03210 through -03213, -03215, -03216, and temporary sites T-1, T-4, and T-6); pre-Contact and early post-Contact sites consisted of habitation, boundary, and ceremonial features in form of C-shapes, walls, platforms, terraces, and mounds; post-Contact sites consisted of agricultural clearing mounds; human skeletal remains noted eroding out of sand dunes along coast
Hammatt 1992a	Archaeological inventory survey	Kīahuna and Kukui'ula	No significant finds
Hammatt 1993	Reconnaissance survey	1.75-acre parcel; TMK: [4] 2-6-004:014	No significant finds

Reference	Type of Study	Location	Results (SIHP # 50-30-10 unless otherwise noted)
Firor et al. 1994	Archaeological inventory survey	Grove Farm Kawaihoa property	Identified 32 sites (at least ten sites previously identified, 22 newly identified): Bennett Site 87; SIHP #s -00514 through -00521, -00528, -00529, -00531 through -00534, -00536, -03097, -03220 through -03223, -03227, -03230, and -03238; and SIHP # 50-30-11-00522 through -00527, -00530, -03225, and -03226
Creed et al. 1995	Archaeological inventory survey	Po'ipū Rd; TMKs: [4] 2-8-015, 016, 017, and 018	Identified three sites: two enclosures, a terrace, and a portion of Kōloa-Weliweli boundary wall
Hammatt et al. 1998	Archaeological inventory survey	Kukui'ula Planned Community	Identified 33 traditional Hawaiian sites (SIHP #s -01803, -01915, -01922, -01924, -01925, -01927 through -01952, -03076, and -06008), consisting of habitation, agricultural, and religious features
Hammatt et al. 1999	Archaeological data recovery	Kukui'ula Planned Community	Data recovery on five sites: SIHP #s -01905 through -01907, -01909, and -01910; large amount of midden and numerous traditional Hawaiian and historic artifacts (930) collected
Cleghorn and McIntosh 2001	Archaeological inventory survey	2.0-acre parcel in Kōloa; TMKs: [4] 2-6-008:011 and 022	Identified five residential structures with SIHP designation: # -00878
Rohrer et al. 2003	Archaeological inventory survey (recorded as an archaeological assessment)	10.6-acre parcel at Kōloa; TMKs: [4] 2-8-015:043, 044, and 082	Identified two sites: SIHP #s -00362 (enclosure) and -30063 (overhang shelter)
Tulchin and Hammatt 2003	Archaeological inventory survey (recorded as an archaeological assessment)	Eric Knudsen Trust Lands; TMK: [4] 2-8-014:019 por.	Observed 30 previously identified historic properties, six with SIHP designations: SIHP #s -00900 (platform), -00911 (C-shaped structure), -00912 (C-shaped structure), -00966 (large complex), -00967 (C-shaped

Reference	Type of Study	Location	Results (SIHP # 50-30-10 unless otherwise noted)
			structure), and -00968 (C-shaped shelter, enclosure, and walls)
Wilson and Dega 2004	Archaeological inventory survey	Old Kōloa Sugar Mill; TMK: [4] 2-8-006:001	Re-identified six features of SIHP # -09302 and identified four new features, all associated with function of Old Kōloa Sugar Mill
Yorck et al. 2004	Archaeological inventory survey with subsurface testing	9.4-acre parcel along Waikomo Stream; TMK: [4] 2-6-004: por. 019	Identified seven historic-era agricultural sites with SIHP designations: #s -03873 (mound), -03874 (alignment), -03875 (alignment), -03876 (mound), -03877 (mound), -03878 (flume), and -03879 (an agricultural complex consisting of berms, flume, mound, and alignment)
Dockall et al. 2005	Archaeological inventory survey	Po'ipū Beach Park, Mauka Preserve; TMK: [4] 2-8-014:012	Documented eight site complexes containing 68 component features (largely agricultural and habitation): SIHP #s -03886 through -03893
Hammatt 2005	Archaeological inventory survey	8.15-acre Knudsen Trust parcel, northeast corner of Kōloa and Maluhia road intersection	Identified and documented SIHP # -03922, an earthen berm for a plantation road and a railroad
Hammatt et al. 2005	Archaeological inventory survey	Parcel 30 of Eric A. Knudsen Trust Lands; TMK: [4] 2-8-014:030	Documented eight previously identified sites: SIHP #s -00539 (agricultural mounds), -00540 (agricultural mounds), -00541 (temporary habitation mound), -00947 (railroad berm), -00992 (Hapa Road), -03756 (permanent habitation C-shape), -03757 (permanent habitation platform), and -03758 (permanent habitation complex including two platforms and an enclosure)
Hill et al. 2005	Archaeological inventory survey	10.6-acre parcel at Kōloa; TMKs: [4] 2-8-015:043, 044, and 082	Documented four historic properties: SIHP #s -00947 (segment of railroad berm attributed to Kōloa Sugar Co.), -00362 (pre-Contact temporary

Reference	Type of Study	Location	Results (SIHP # 50-30-10 unless otherwise noted)
			habitation stacked basalt enclosure), -00363 (pre-Contact temporary habitation overhang), and -03920 (a railroad-era rock-crushing site).
Yorck and Hammatt 2005a	Archaeological inventory survey	Roundabout in vicinity of Po'ipū and Lāwa'i roads; TMK: [4] 2-6-004	Identified one historic property: SIHP # -03895, a cut basalt stone and mortar foundation perhaps associated with Kōloa Railroad
Yorck and Hammatt 2005b	Archaeological monitoring	Kapili and Ho'onani Rd; TMK: [4] 2-8-015	No significant findings
Yorck, Madeus, Dockall, Freeman, and Hammatt 2005	Archaeological inventory survey with test excavations	<i>Makai</i> portion of Parcel 19 of Eric A. Knudsen Trust Lands; TMK: [4] 2-8-014:019 por.	Documented 16 pre-Contact/early post-Contact historic properties: SIHP #s -00966, -03766, -03769, -03770, -03771, -03775, -03779, -03785, -03790, -03791, -03896, -03897, -03898, -03899, -03900, and -03905
Yorck, Shideler, and Hammatt 2005	Archaeological inventory survey	25-acre parcel at Kōloa (present Kōloa Landing Estates); TMKs: [4] 2-8-015:025–037 and 045–074	Identified 21 archaeological sites: SIHP #s -00365 through -00384 and -00947 (previously identified)
Hammatt and Shideler 2006	Literature review and field check	Kōloa Elementary School; TMK: [4] 4-2-8-010:011	Stacked faced basalt rock wall running along NW border of school most likely a historic boundary marker for school
O'Leary and Hammatt 2006	Archaeological inventory survey	Po'ipū Rd; TMKs: [4] 2-6-004: por 3; 2-6-015: por. 1; 2-8-014: por. 27; and portions of Po'ipū Rd and Lāwa'i ad	No significant findings
Tulchin and Hammatt 2007	Archaeological data recovery	Poipu Beach Villas (present Kōloa Landing Estates); TMKs: [4] 2-8-015:025–037 and 045–074	Excavations at SIHP #-00B382 yielded large amounts of cultural material

Reference	Type of Study	Location	Results (SIHP # 50-30-10 unless otherwise noted)
Hazlett and Hammatt 2008a	Archaeological monitoring	Po'ipū Rd and Kuai Rd; TMKs: [4] 2-8-015 and 018	No cultural deposits identified as a result of project's monitoring program, but incomplete skeletal remains of at least two individuals inadvertently discovered in previously introduced sand fill material covering existing water line
Hazlett and Hammatt 2008b	Archaeological monitoring	Western Bypass Road; TMKs: [4] 2-6-003:001 and 035; 2-6-004:038, 040, and 044; 2-7-003:006	Although no significant findings, encountered a historic-era rubbish deposit
Pammer et al. 2010	Archaeological monitoring	Kōloa Elementary School; TMK: [4] 4-2-8-010:011	No significant findings

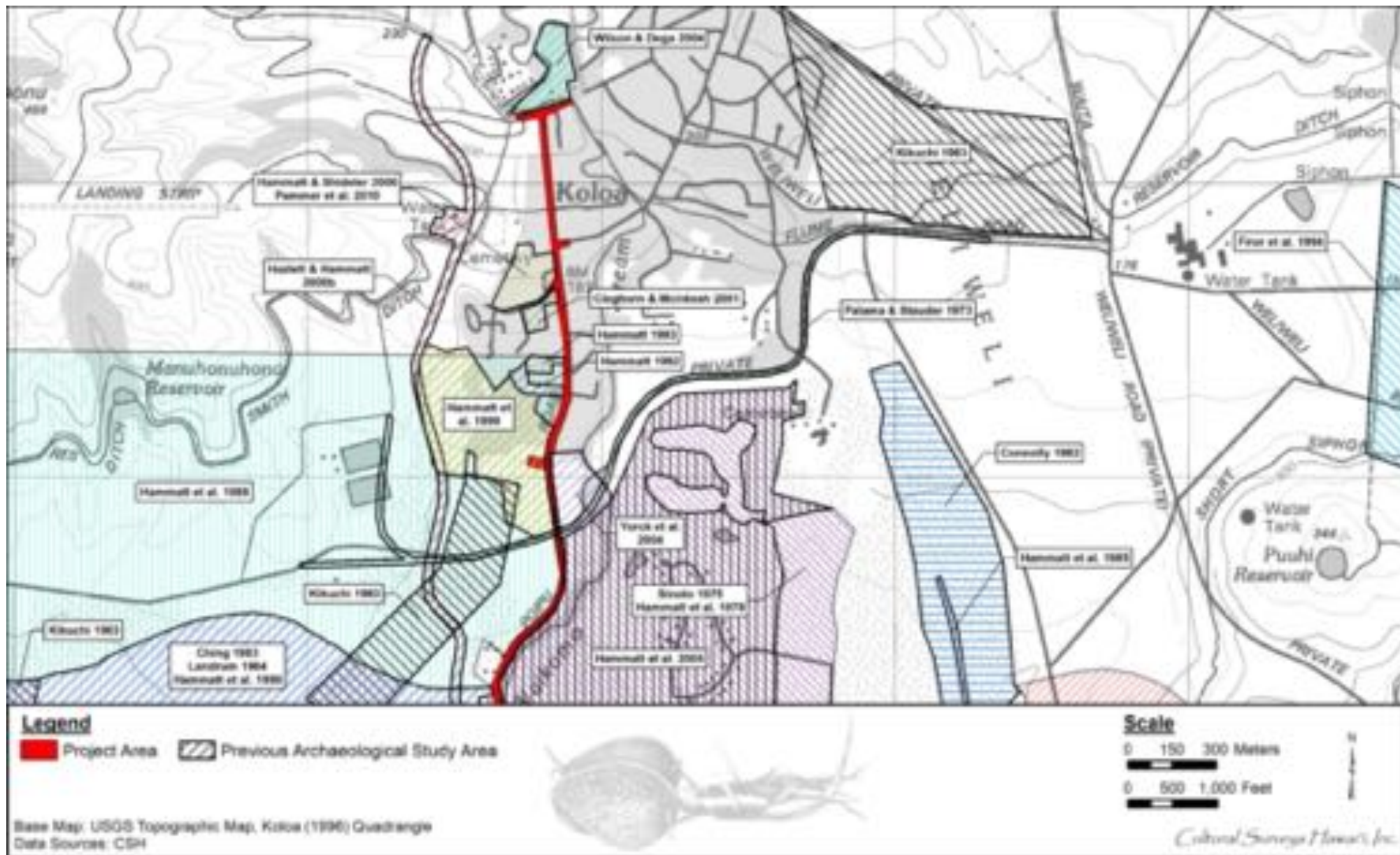


Figure 28. Previous archaeological studies located within and near the vicinity of the project area from Kōloa road to the north, south on Poipu road to the existing roundabout east of Kukuiula Shopping Center.

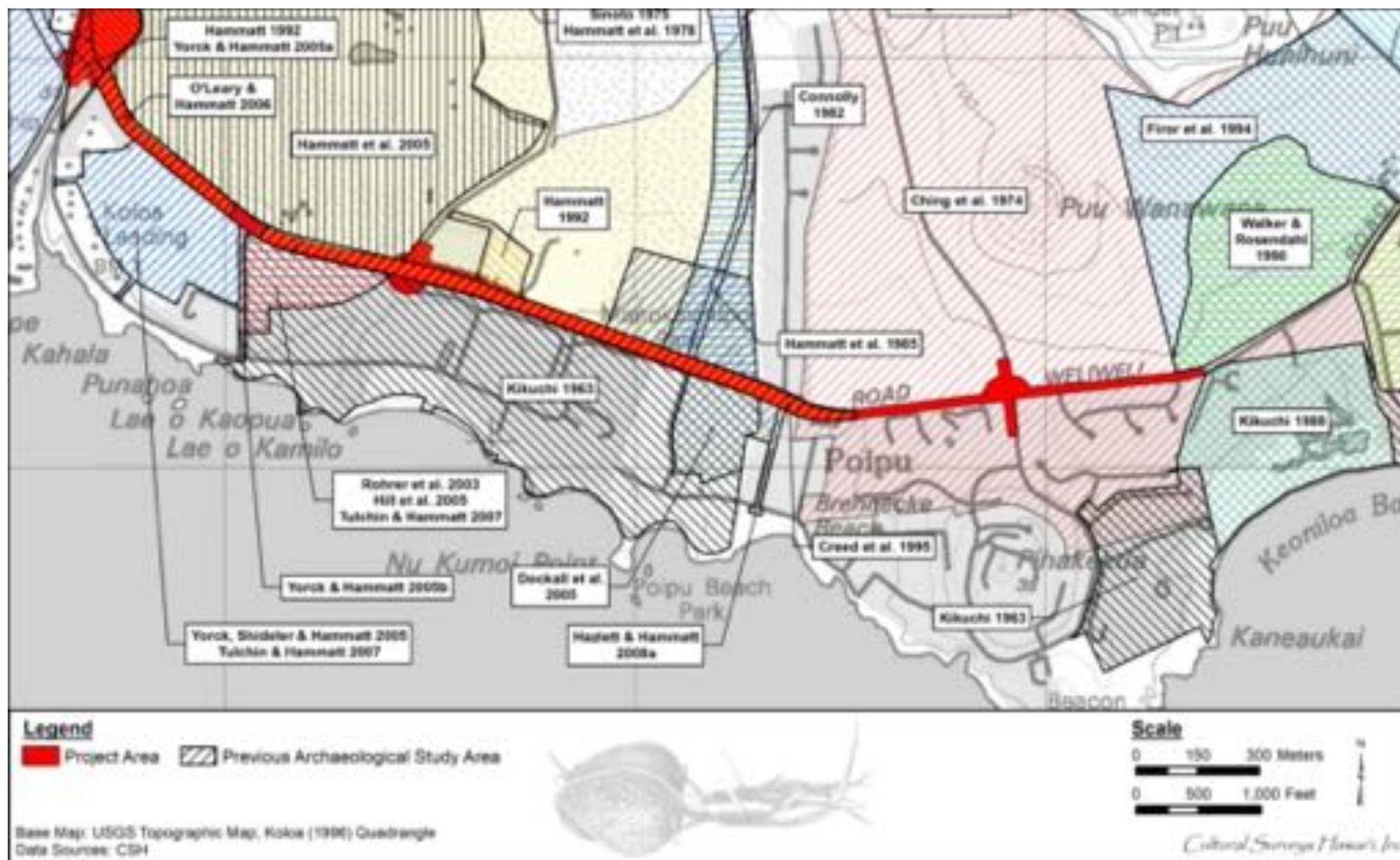


Figure 29. Previous archaeological studies located within and near the vicinity of the project area from the existing roundabout east of Kukuiula Shopping Center east on Poipu Road to the intersection of Poipu Road and Ainako Street.

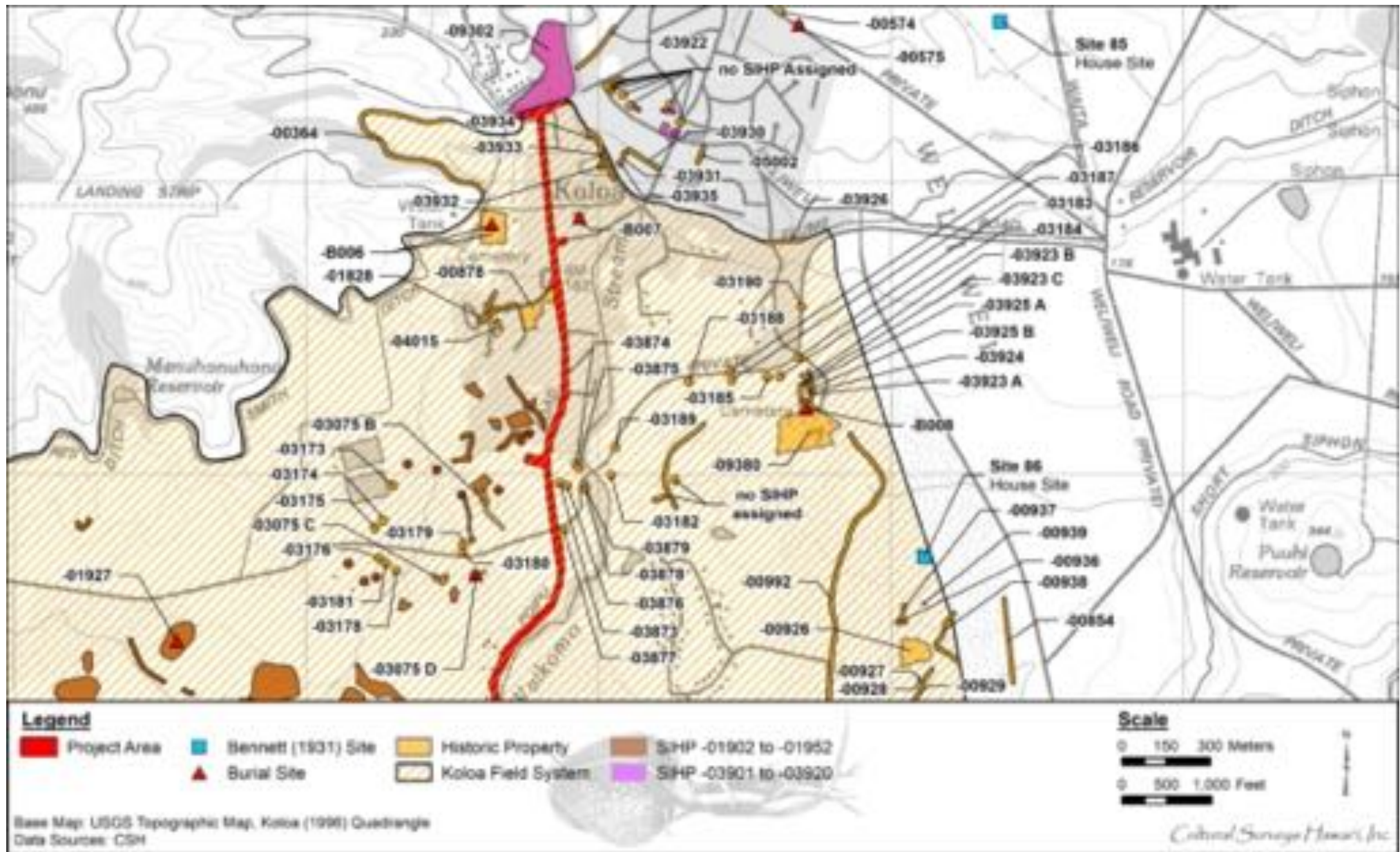


Figure 30. Historic properties identified during previous archaeological studies located within and near the vicinity of the project area from Kōloa road to the north, south on Poipu road to the existing roundabout east of Kukuīula Shopping Center.

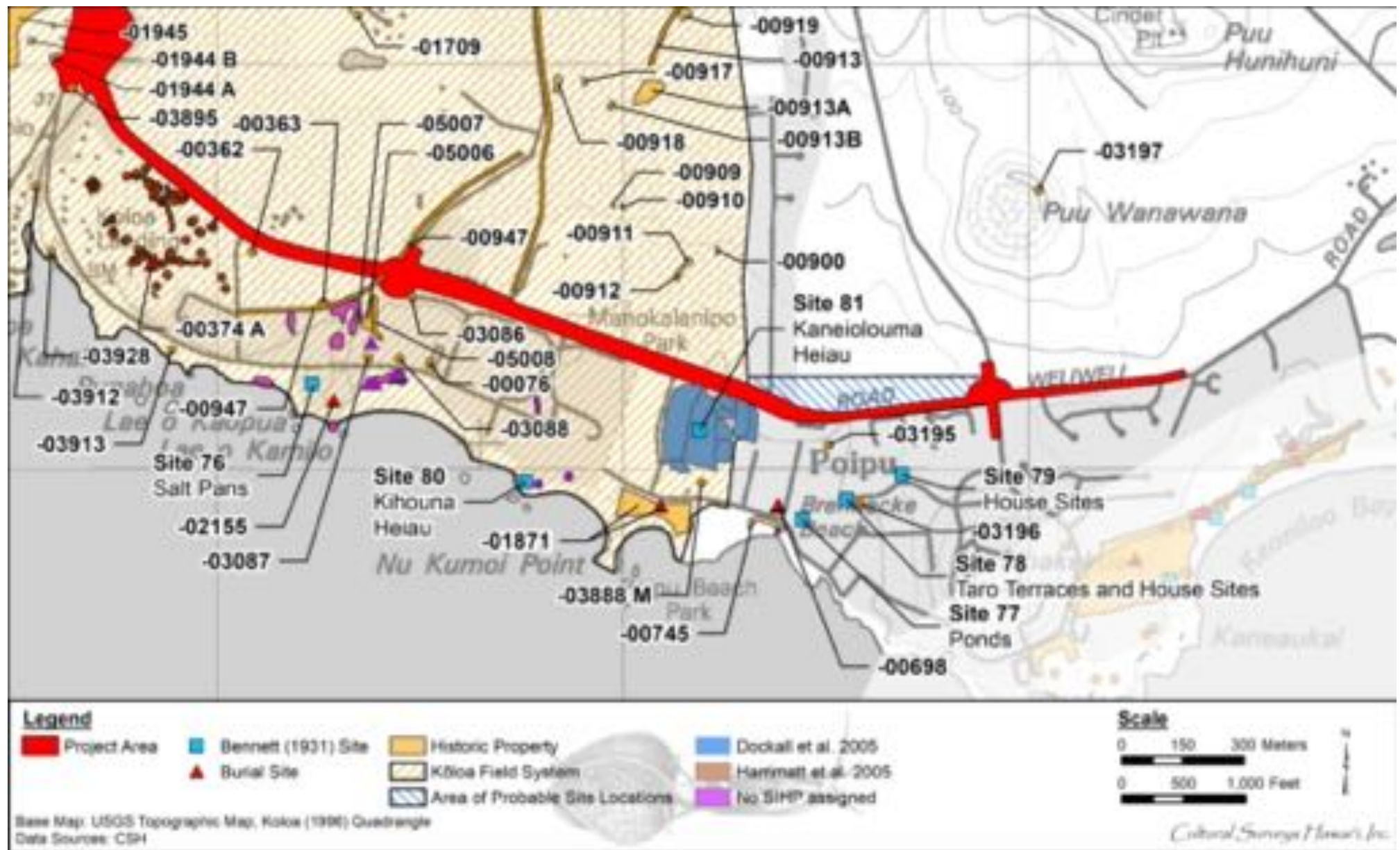


Figure 31. Historic properties identified during previous archaeological studies located within and near the vicinity of the project area from the existing roundabout east of Kukuiula Shopping Center east on Poipu Road to the intersection of Poipu Road and Ainako Street.

Table 2. Archaeological Sites Located within or in the Immediate Vicinity of the Project Area (organized numerically by site number)

SIHP Number Prefix 50-30-10-	Site Type	Comments	Reference
B006	Kōloa Hawaiian Church Cemetery		Kikuchi and Remoaldo 1992; Burke & Hammatt 2013
B007	Waterhouse Family Cemetery		Kikuchi and Remoaldo 1992; Burke & Hammatt 2013
B008	Cemetery		Kikuchi and Remoaldo 1992; Burke & Hammatt 2013
No SIHP Assigned	Historic plantation houses	Located near the old Kōloa Mill	Monahan 2005
No SIHP Assigned	Irrigation ditches and C-shape	Located within the Kiahuna golf course; associated with the Kōloa Field System	Hammatt et al. 2005
76	Salt pans		Bennett 1931; Kikuchi 1963; Burke & Hammatt 2013
77	Ponds		Bennett 1931; Burke & Hammatt 2013
78	Taro terraces & house sites		Bennett 1931; Sinoto 1975; Burke & Hammatt 2013
79	House sites		Bennett 1931; Sinoto 1975; Burke & Hammatt 2013

SIHP Number Prefix 50-30-10-	Site Type	Comments	Reference
80	Kihoua Heiau		Thrum 1906; Bennett 1931; Kikuchi 1963; Burke & Hammatt 2013
81	Kaneiolouma Heiau		Thrum 1906; Bennett 1931; Kikuchi 1963; Burke & Hammatt 2013
86	House site		Bennett 1931; Connolly 1982; Ching, Palama, and Stauder 1974; Sinoto 1975; Hammatt et al. 1991; Burke & Hammatt 2013
00362	C-shaped enclosure		Rohrer, Tulchin, and Hammatt 2003; Hill, Dockall, and Hammatt 2005; Tulchin and Hammatt 2007; Burke & Hammatt 2013
00363	Overhang shelter		Rohrer, Tulchin, and Hammatt 2003; Hill, Dockall, and Hammatt 2005; Burke & Hammatt 2013
00364	Smith Ditch		Tulchin & Hammatt 2004, Burke & Hammatt 2013
00374A	Portion of a lava tube	Part of a temporary habitation complex	Yorck et al. 2005

SIHP Number Prefix 50-30-10-	Site Type	Comments	Reference
00682	Lava tube with burial		Tulchin & Hammatt 2007; Burke & Hammatt 2013
00698	Burial		Viguie 2008
00745	Cultural layer		Hammatt et al. 1994; Altizer & Hammatt 2011; LaChance & Hammatt 2012; Burke & Hammatt 2013
00854	Wall and two rock clearing mounds		Connolly 1982; Burke & Hammatt 2013
00878	Plantation camp structures		Cleghorn & McIntosh 2001
00900	Platform		Hammatt et al. 1991; Tulchin & Hammatt 2003; Burke & Hammatt 2013
00909	Modified outcrop		Hammatt et al. 1991; Van Ryzin & Hammatt 2004
00910	C-shaped structure		Hammatt et al. 1991
00911	C-shaped structure		Hammatt et al. 1991
00912	C-shaped structure		Hammatt et al. 1991
00913	Agricultural/habitation complex		Hammatt et al. 1991
00917	U-shaped mound		Hammatt et al. 1991
00918			

SIHP Number Prefix 50-30-10-	Site Type	Comments	Reference
00919	Habitation platform		Hammatt et al. 1991
00926	Agricultural fields and ranching complex		Hammatt et al. 1991
00927	Mound		Hammatt et al. 1991
00928	Mound		Hammatt et al. 1991
00929	<i>'Auwai</i>		Hammatt et al. 1991
00936	Mound with paving		Hammatt et al. 1991
00937	Wall		Hammatt et al. 1991
00938	Wall and <i>'auwai</i>		Connolly 1982; Hammatt et al. 1991
00939	Lava tube shelter		Hammatt et al. 1991
00947	Segment of the Kōloa Sugar Company railroad berm		Hammatt et al. 1991; Hammatt, Ida, Masciangelo & Folk 2005; Hammatt, Cordy, Rainalter, Gomes, Shideler, and Folk 2005; Hill, Dockall, and Hammatt 2005; Yorck, Shideler, and Hammatt 2005

SIHP Number Prefix 50-30-10-	Site Type	Comments	Reference
00992	Hapa road		Hammatt, Ida, and Folk 1993; Hammatt, Ida, Masciangelo, and Folk 2005; Simonson & Hammatt 2010; Altizer & Hammatt 2011
01709	Wall		Powell 1999
01803	Platforms and mound		Hammatt et al. 1998
01828	Kōloa Elementary School boundary wall		Hammatt 1990
01871	Cemetery		Hammatt et al. 1994
01927	Lave tubes/sinks, walls, and terraces		Hammatt et al. 1998
01935	Enclosure		Hammatt et al. 1998
01944	Permanent habitation complex		Hammatt et al. 1998
01945	'Auwai, enclosure, and wall		Hammatt et al. 1998
02155	Burial		Altizer & Hammatt 2011
03073	Structures, pavement		Kikuchi 1963
03075	Caves		Kikuchi 1963
03076	Platform		Kikuchi 1963; Hammatt et al. 1998
03086	Shelters		Kikuchi 1963

SIHP Number Prefix 50-30-10-	Site Type	Comments	Reference
03087	Fish shrine		Kikuchi 1963
03088	Hula grounds	Pa'ū-a-Laka	Kikuchi 1963; O'Hare et al. 2003
03173	Wall		Kikuchi 1963; Palama & Stauder 1973
03174	Monument/platform burial		Kikuchi 1963; Palama & Stauder 1973
03175	Wall		Kikuchi 1963; Palama & Stauder 1973
03176	Rectangular house enclosure		Kikuchi 1963; Palama & Stauder 1973
03178	Wall enclosure		Palama & Stauder 1973
03179	Dwelling cave		Palama & Stauder 1973
03180	Dwelling cave		Palama & Stauder 1973
03181	Agricultural area/' <i>auwai</i> network		Palama & Stauder 1973
03182	Wall		Palama & Stauder 1973
03183	Wall		Palama & Stauder 1973
03184	Walled enclosure		Palama & Stauder 1973
03185	Wall		Palama & Stauder 1973
03186	Wall		Palama & Stauder 1973
03187	C-shaped shelter		Palama & Stauder 1973

SIHP Number Prefix 50-30-10-	Site Type	Comments	Reference
03188	Remnants of walls and enclosure complexes		Palama & Stauder 1973
03189	Enclosure complex		Palama & Stauder 1973
03190	Wall		Palama & Stauder 1973
03195	Wall		Ching 1983, Palama, & Stauder 1974
03196	Wall		Ching 1983, Palama, & Stauder 1974
03197	Rock/cave shelter		Ching 1983, Palama, & Stauder 1974
03873	Basalt clearing mound		Yorck et al. 2004
03874	Boulder alignment		Yorck et al. 2004
03875	Terrace		Yorck et al. 2004
03876	Basalt clearing mound		Yorck et al. 2004
03877	Basalt clearing mound		Yorck et al. 2004
03878	Flume (concrete-lined)		Yorck et al. 2004
03879	Historic agricultural complex		Yorck et al. 2004

SIHP Number Prefix 50-30-10-	Site Type	Comments	Reference
03888	Complex of 12 features including agricultural and livestock enclosures, agricultural and habitation terraces, an animal containment wall, a habitation paved area, and a wall		Dockall, Hammatt, Rainalter, and Masciangelo 2005; Tulchin & Hammatt 2006
03895	Basalt and mortar foundation		Yorck & Hammatt 2005
03912	Structures associated with the railroad crossing		Fong et al. 2005
03913	Concrete support pillar and trash dump		Fong et al. 2005
03920	Terrace		Hill et al. 2005
03922	Associated with a former plantation road and railroad		Hammatt 2005
03923	Stone walls		Tulchin, T. & Hammatt 2005
03924	Platform		Tulchin, T. & Hammatt 2005
03925	Agricultural planting areas		Tulchin, T. & Hammatt 2005
03926	Elevated metal irrigation flume		Hill et al. 2005
03928	Basalt boulder dock foundations and concrete ramp		Fong et al. 2005

SIHP Number Prefix 50-30-10-	Site Type	Comments	Reference
03930	Boundary wall		Hill et al. 2005
03931	Terrace		Hill et al. 2005
03932	Irrigation reservoir		Hill et al. 2005
03933	House foundation		Hill et al. 2005; Simonson & Hammatt 2008
03934	Irrigation ditch		Hill et al. 2005; Simonson & Hammatt 2008
03935	Stacked rock wall		Hill et al. 2005
04015	Paanau plantation camp		Kikuchi 1988; Kama'i & Hammatt 2014
05002	Stone wall		Tulchin et al. 2007
05006	Agricultural complex		Tulchin & Hammatt 2008
05007	C-shaped enclosure		Tulchin & Hammatt 2008
05008	Boundary wall		Tulchin & Hammatt 2008
09302	Old Sugar Mill of Kōloa	Placed on the National Register of Historic Places 29 December 1962; designated a National Historic Landmark in 1966 and on Hawai'i Registry of Historic Places since 1971	National Register of Historic Places; Hawai'i Registry of Historic Places; Wilson and Dega 2004
09380	St. Raphael's Historic Church District		Hammatt 1994

3.8 Background Summary

Based on previous historical accounts and previous archaeological studies, it appears that habitation and intensive irrigated agriculture (the Kōloa Field System) were widespread in the central and coastal areas of Kōloa, whereas Weliweli, an arid area, was not suited for intensive agriculture until the development of extensive sugarcane production as early as 1835 when Ladd & Company acquired rights to the land. As one of the areas longest modified for sugarcane cultivation, it is likely that many pre-Contact features were destroyed.

Information gleaned from intensive excavations in the *ahupua'a* of Kōloa and Weliweli, combined with the inventory surveys in these *ahupua'a*, clearly indicated habitation and intensive irrigated agriculture were widespread in central and coastal Kōloa. As an extensive irrigated complex, the Kōloa Field System was used to divert the waters of the Waikomo Stream for taro, native sugar, and fish. The full extent of the Kōloa Field System is hard to estimate, however, because of the widespread historic land modifications (mainly for sugarcane). As the Judd (1935:53) account asserts, it is likely that low inland areas were used for less intensive cultivation of patches of sweet potato, *pia* (arrowroot), and *wauke* and the gathering of *hala* (pandanus fiber), *kukui* nuts (oils having medicinal applications), and other resources. The coastal portion of the *ahupua'a* would have been a focus for permanent habitation, collection of marine resources, ceremonial activities, and burials. The archaeology of the region also seems to bear out the accuracy of Judd's account.

In the early historic era (1795-1880), the Kōloa Field System continued in use for foreign trade and was probably further intensified. Sweet potatoes were a main crop for the whaling and merchant ships, and the purchase of pigs, salt, oranges, and other items are noted in many ship journals. The documents of the Māhele show that by the mid-1800s there were still several traditional farmers within Kōloa who both lived and worked within the area. The individual claims—for both *lo'i* (wetland) and *kula* (dry land) agriculture—suggest that while traditional farming of taro for subsistence was still taking place, in *kula* lands sugarcane production for sale to the nearby sugar mill had begun to dominate the landscape. Of the LCAs within Kōloa, several claimed a *kula* planted with cane or a cane field or sugarcane garden. Several also identified cane lands as boundaries for the LCAs. Clearly, *kula* lands were being converted into sugar lands at an increasing rate. Within three years of sugar cultivation by Ladd & Company in 1835, residents in and surrounding Kōloa were quickly moving to adapt to the new economy based on the production of sugarcane. Eventually, most of inland Kōloa was planted with sugarcane and only the most rocky areas, unsuitable for cultivation, survived the dramatic changes in the landscape brought about during the early twentieth century.

Evidence of indigenous Hawaiian land use could include both habitation (platforms, enclosures, and C-shapes) and agricultural (terraces, mounds, field walls, etc.) features. It should be noted that due to the extensive sugarcane cultivation documented within the area, mechanized land modifications associated with sugarcane cultivation have likely disturbed and/or destroyed any or most pre-Contact historic properties that may have been present.

Section 4 Results of Fieldwork

4.1 Pedestrian Inspection Results

The fieldwork component of this field inspection was conducted on 29 December 2017 by CSH archaeologists, William Folk, B.A., and Missy Kamai, B.A., under the general supervision of Principal Investigator Hallett H. Hammatt, Ph.D. The fieldwork required 2 person-hours to complete.

There are no surface historic properties within the bounds of the three roundabouts in the project area (see Figure 10 through Figure 17). The Kiahuna Plantation Drive and Kōloa Road roundabouts do have historic properties adjacent to but outside the boundaries of the project area.

At the intersection of Kiahuna Plantation Drive and Po'ipū Road, SIHP # 50-30-10-00947, the railroad berm from Kōloa Mill to Kōloa Landing was identified just outside the northwest boundary of the intersection. The proposed project's construction of a roundabout at the intersection does not impact the railroad berm, SIHP # -00947, which lies outside the project area limits.

The historic properties adjacent to the Kōloa Road and Po'ipū Road roundabout are associated with the old Kōloa Mill and include Maulili Pool, which is an important site in myths and legends of Kōloa and is the probable source of major 'auwai that fed the Kōloa Field System. The mill and associated features are listed on the National Register of Historic Places (National Register Information System ID 66000296) and the Hawai'i State Register of Historic Places (SIHP # 50-30-10-09302), nominated in the 1960s. As long as the project infrastructure and construction activity is contained within the road right-of-way there should not be an impact to the historic properties.

Elements of the Kōloa Field System and other historic properties in Kōloa Town are adjacent to but outside of the right-of-way. Short segments of two parallel rock walls that are elements of the Hapa Road or Trail in Poipu are within the project area.

Section 5 Summary

5.1 Summary

At the request of Ms. Catie Cullison of PBR Hawaii, CSH has prepared this LRFI for the Po'ipū Road Multi-Modal Improvements project including construction of two proposed roundabouts in Kōloa and Weliweli Ahupua'a, Kōloa District, Kaua'i, Multiple TMKs as a part of the various improvements to the Po'ipū road corridor.

The field inspection of the road right-of-way showed that there are various historic properties outside of but adjacent to the road right-of-way especially in Kōloa town, and also outside the northwest boundary of the Po'ipū Road and Kiahuna Plantation Drive intersection where a remnant of the sugar plantation railroad berm (SIHP # -00947), between the former Kōloa Mill and Kōloa Landing is present.

A possible remnant of the cattle exclusion walls associated with the Hapa road corridor is present on the north or *mauka* side of existing Po'ipū road within the road right-of-way. No other historic properties were identified within the project area during the field inspection. Documented knowledge of the extensive and intensive use of the existing road right-of-way and surrounding lands for transportation, agriculture and habitation through considerable pre- and post-Contact time, supports the possibility that remnants of historic properties may be encountered during the project construction. It should be noted that the existing right-of-way has been previously disturbed through grading and construction of the existing roadway and shoulders.

Section 6 References Cited

Alexander, Arthru C.

- 1937 *Koloa Plantation 1835-1935. A History of the Oldest Hawaiian Sugar Plantation.* Edward Enterprises, Inc., Honolulu.

Altizer, Kendy and Hallett H. Hammatt

- 2011 *Burial Site Component of an Archaeological Data Recovery Plan for the Sheraton Kauai Resort Poipu Beach Villas and Sheraton Hotel Renovation Project, Kōloa Ahupua'a, Kōloa District, Island of Kaua'i TMK: [4] 2-8-016: por. 003.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Armstrong, Warwick, Ed.

- 1983 *Atlas of Hawai'i.* University of Hawaii Press, Honolulu.

Bennett, Wendell C.

- 1931 *The Archaeology of Kaua'i.* Bishop Museum Bulletin 80. Bernice Pauahi Bishop Museum, Honolulu.

Boundary Commission

- 1874 "Boundary of the Ahupua'a of Kōloa," as published in the *Boundary Commission Report, Kaua'i, Vol. 1.* Hawai'i State Archives, Honolulu.

Chinen, Jon J.

- 1958 *The Great Māhele, Hawaii's Land Division of 1848.* University of Hawaii Press, Honolulu.

Ching, Francis K.W.

- 1983 *Archaeological Reconnaissance of an A&B 230+ Acre Property, Kukuiula-Kualu, Koloa & Lawa'i, Kona, Kaua'i Island.* Royal Order of Kamehameha I Chapter 3 – Kaumuali'i, Lihu'e, Kaua'i, Hawai'i.

Ching, Francis K. W., Stephen L. Palama, and Catherine Stauder

- 1974 *The Archaeology of Kona, Kaua'i Na Ahupua'a Weliweli, Pa'a, Maha'uilepu Surface Survey of the Coastal Lands.* Archaeological Research Associates, Honolulu.

Cleghorn, Paul L. and James D. McIntosh

- 2001 *Archaeological Inventory Survey at Koloa, Kaua'i, Hawai'i (TMK 2-6-8:11 and 22).* Pacific Legacy, Inc. Kailua, Hawai'i.

Condé, Jesse C.

- 1993 *Fowler Locomotives in the Kingdom of Hawaii.* In *The Narrow Gauge*, edited by Alan Burgess, 22 Peveril Road, Peterborough, PE 1 3PY, England.

Connolly, Robert D., III

- 1982 *Archaeological Reconnaissance Survey Along Possible Alternate Routes of The Kolao-Poipu Bypass Road Koloa, Kauai.* Archaeological Research Associates, Honolulu.

Cook, Chris

- 2000 *A Kaua'i Reader: The exotic literary heritage of the Garden Island.* Mutual Publishing, Honolulu.

Coulter, John Wesley

1971 *Population and Utilization of Land and Sea in Hawaii, 1853*. Bishop Museum Bulletin 88. Bernice Pauahi Bishop Museum, Honolulu.

Creed, Victoria S., Gerald K. Ida, and Hallett H. Hammatt

1995 *An Archaeological Inventory Survey for Poipu Road Safety Improvements, Poipu, Kauai (TMK 2-8-15, 16, 17 & 18)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Damon, Ethel

1931 *Koamalu. A Story of Pioneers on Kauai and of What They Built in That Island Garden*. Privately printed, Honolulu.

Dockall, John E., Hallett H. Hammatt, Uta Rainalter, and Sarah Masciangelo

2005 *Archaeological Inventory Survey Poipu Beach Park, Mauka Preserve Kōloa Ahupua'a, Kona District, Kaua'i Island (TMK: 2-8-14:12)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Donohugh, Donald

2001 *The Story of Kōloa. A Kaua'i Plantation Town*. Mutual Publishing, Honolulu.

Dorrance, William H. and Francis S. Morgan

2000 *Sugar Islands: The 165-Year Story of Sugar in Hawaii*. Mutual Publishing, Honolulu.

Farley, J.K.

1906 Notes on Maulili Pool, Kōloa. In *Hawaiian Almanac and Annual for 1907*. Thos G. Thrum, Honolulu.

Firor, J. L., Paul H. Rosendahl, and Susan T. Goodfellow

1994 *Archaeological Inventory Survey Grove Farm Kawailoa Property. Lands of Paa and Mahaulepu Koloa District, Island of Kauai (TMK:4-2-9-Por.01, 02,03)*. Paul H. Rosendahl, Inc., Hilo, Hawai'i.

Fong, Jeffrey W. K., Sallee Freeman, Douglas Borthwick, David W. Shideler, and Hallett H. Hammatt

2005 *Archaeological Inventory Survey of an 5.947-Acre Parcel at Koloa Ahupua'a, Kona District, Kaua'i Island (TMK: 2-8-15:75)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawai'i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

Foreign Testimony

1848-1850 Foreign Testimony of Kuleana Claims to Quiet Land Titles in the Hawaii Islands. Hawai'i State Archives, Honolulu.

Fornander, Abraham

1918 *Fornander Collection of Hawaiian Antiquities and Folk-lore. Volume V*. Memoirs of the Bernice Pauahi Bishop Museum. Bishop Museum Press, Honolulu.

- 1996 *Fornander's Ancient History of the Hawaiian People*. Mutual Publishing, Honolulu.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte

- 2013 Online Rainfall Atlas of Hawai'i. *Bulletin of the American Meteorological Society* volume 94, pp. 313-316, doi: 10.1175/BAMS-D-11-00228.1. Electronic document, <http://rainfall.geography.hawaii.edu> (accessed 10 April 2014).

Google Earth

- 2013 Aerial Imagery of portions of Kōloa, Weliweli, and Pa'a Auhpua'a. Google Inc., Mountain View, California. Available online at www.google.com/earth.html.

Hammatt, Hallett H.

- 1992a *Archaeological Inventory Survey of a 3.8 Acre Property at Kiahuna Kōloa, Kaua'i (TMK 2-8:014-026)*. Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 1992b *Archaeological Reconnaissance of the Po'ipu Road and Lāwa'i Road Junction, Kōloa, Kaua'i*. Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 1993 *Archaeological Reconnaissance Survey TMK 2-6-04:14, 1.75 Acres Koloa, Kaua'i, Subdivided lots Al-A1, Al A2*. Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 1994 Results of an archaeological survey on a portion of a 15.5 acre parcel (TMK 2-08-13:04 & 09) for St. Raphael's Parish, Koloa, Kaua'i. Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 2005 *Archaeological Inventory Survey of an 8.15-acre Knudsen Trust Parcel, Kōloa Ahupua'a, Kona District, Island of Kaua'i TMK: (4) 2-8-004: por. 003 & 055*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Hammatt, Hallett H., Richard M. Bordner, Myra Jean F. Tomonari-Tuggle, Marvin T. Miura, and Francis Howorth

- 1978 *Archaeological and Biological Survey of the Proposed Kiahuna Golf Village Area Koloa, Kona, Kaua'i Island, Hawaii*. Archaeological Research Center Hawaii, Inc., Honolulu.

Hammatt, Hallett H., Gerald K. Ida, William H. Folk, David W. Shideler, and Brian Colin

- 1994 *Archaeological Testing and Monitoring, Po'ipū Beach Park, Kōloa, Kaua'i*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Hammatt, Hallett H., Douglas F. Borthwick, and David W. Shideler

- 1985 *Archaeological Survey and Testing of the Proposed Koloa-Poipu Bypass Road Koloa, Kauai*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Hammatt, Hallett H., Douglas Borthwick, David W. Shideler, and Mark Stride

- 1988 *Archaeological Inventory Survey of the Proposed Kukuiula Bay Planned Community, Kōloa, Kaua'i*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Hammatt, Hallett H. and David W. Shideler

- 2006 *Archaeological Literature Review and Field Check Study of Eight DOE Schools, Island of Kaua'i Hawai'i Inter-Island DOE Cesspool Project*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Hammatt, Hallatt H., Kristina W. Bushnell, Gerald K. Ida, Rodney Chiogioji, Victoria S. Creed, and David W. Shideler

- 1999 *Archaeological Data Recovery for Kukui'ula Bay Planned Community, Phase II Development Area, Kukui'ula, Kōloa, Kaua'i, (TMK 2-6-03:Por. 1 and 2-6-04:Por. 33, 38, 40).* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Hammatt, Hallett H., Ronald Chiogioji, David W. Shideler, Douglas Borthwick, Matthew McDermott, and Ian Masterson

- 1998 *Archaeological Data Recovery Report for the Kukui'ula Planned Community Phase I Development, Kōloa, Ahupua'a, Kona District, Island of Kaua'i, Hawai'i, (TMK 2-6-04:16, 22, 38, 44 and 45) Volume 1.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Hammatt, Hallett H., Gerald K. Ida, Masciangelo, and William H. Folk

- 2005 *Archaeological Inventory Survey for Parcel 30 of the Eric A. Knudsen Trust Lands, Kōloa Ahupua'a, Kona District, Kaua'i Island (TMK 2-8-14:30).* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Handy, E.S. Craighill

- 1940 *The Hawaiian Planter*, Volume I. Bishop Museum Bulletin 161. Bishop Museum Press, Honolulu.

Handy, E.S. Craighill, and Elizabeth G. Handy

- 1972 *Native Planters in Old Hawaii.* Bishop Museum Press, Honolulu.

Hawai'i Tax Map Key (TMK) Service

- 2014 Tax Map Key: [4] 2-6, 2-8, and 2-9. Hawai'i TMK Service, Honolulu.

Hazlett, Alex and Hallett H. Hammatt

- 2008a *Archaeological Monitoring Report for the 16-Inch Waterline Replacement along Po'ipū Road and Kuai Road, Kōloa Ahupua'a, Kōloa District, Kaua'i Island, TMK: (4) 2-8-015 & 2-8-018.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- 2008b *Archaeological Monitoring Report for the Western Bypass Road Project Kōloa Ahupua'a, Kōloa District, Kaua'i Island, TMK (4) 2-7-003:006, 2-6-003:001 and 035, and 2-6-004:038, 040, and 044.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Hill, Robert R., John E. Dockall, and Hallett H. Hammatt

- 2005 *Inventory Survey of an Approximate 10.6 Acre Parcel at Kōloa Ahupua'a, Kona District, Island of Kaua'i (TMK: 4-2-8-15:43, 44, 82).* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Ho'oulumāhie

- 2008a *Ka Mo'olelo O Hi'ikaikapoliopole.* Awaiaulu Press, Honolulu.
- 2008b *The Epic Tale Of Hi'ikaikapoliopole.* Puakea Nogelmeier, translator. Awaiaulu Press, Honolulu.

Jarves, James Jackson

- 1844 *Scenes and Scenery of the Sandwich Island, and a Trip Through South America, 1837-1842.* James Monroe & Company, Boston.

Judd, Bernice

- 1935 Kōloa, A Sketch of Its Development. Presented within the *Kaua'i Historical Society Papers*, Volume II, Honolulu.

Kame'eleihiwa, Lilikala

- 1992 *Native Land and Foreign Desires (Ko Hawai'i 'Aina a me Na Koi Pu'umake a ka Po'e Haole): Pehea la e Pono ai? (How Shall We Live in Harmony?)* Bishop Museum Press, Honolulu.

Kikuchi, William K.

- 1963 *Archaeological Survey and Excavations on the Island of Kauai, Kona District Hawaiian Islands*. Committee for the Preservation of Hawaiian Culture, Līhu'e, Kaua'i, Hawai'i.
- 1988 *Archaeological Survey and Subsurface Testing of Proposed Hyatt Regency Resort, TMK 2-9-01:2, Keonelo Bay, Ahupua'a of Pa'a, District of Kōloa, Kaua'i*. ARCHAIOS, Kaua'i, Hawai'i.

Kent, Harold Winfield

- 1986 *Treasury of Hawaiian Words in One Hundred and One Categories*. Masonic Public Library of Hawai'i, Honolulu.

Kirch, Patrick V.

- 2010 *How Chiefs Became Kings: Divine Kingship and the Rise of Archaic States in Ancient Hawai'i*. University of California Press, Berkeley, Los Angeles, and London.

Kōloa Plantation Days

- 2020 Kōloa Plantation Days website. Available at www.koloaplantationdays.com.

Lahainaluna Schools

- 1885 *Lahainaluna Schools: 1885 Heiaus and Fishing Grounds* [of Koloa, Kauai]. [Translation]. HEN Vol.1 165–169, 208–210, 211–216, 217–222. Bishop Museum Press, Honolulu.

Landrum, James III

- 1984 *Archaeological Reconnaissance of Alexander and Baldwin Lands at Kukui'ula, Kola, Kaua'i*. Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Missionary Herald

- 1827 Article. *Missionary Herald*, June:12.

Native Register

- 1847 *Native Register of Kuleana Claims to Quiet Land Titles in the Hawaii Islands*. Hawai'i State Archives, Honolulu.

Native Testimony

- 1847 *Native Testimony of Kuleana Claims to Quiet Land Titles in the Hawaii Islands*. Hawai'i State Archives, Honolulu.

O'Leary, Owen and Hallett H. Hammatt

- 2006 *Archaeological Assessment for the Kukui'ula – Po'ipū Road 24-Inch Sewer Line, Kōloa Ahupua'a, Kōloa District, Island of Kaua'i TMK: [4] 2-6-004: por 3, 2-6-*

015: por. 1, and 2-8-014: por. 27, and portions of Po‘ipū Road and Lāwa‘i Road. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Pacific Commercial Advertiser

1857 Article on Koloa. *Pacific Commercial Advertiser*, 19 February.

1867 Article on Koloa. *Pacific Commercial Advertiser*, 21 December.

Palama, Stephen L. and Catherine Stauder

1973 *The Archaeology of Kona, Kaua‘i from the Ahupua‘a of Kōloa to the Ahupua‘a of Weliweli. Archaeological Reconnaissance of the Proposed Cane Haul Road to the Koloa Mill for McBryde Sugar Co., Ltd.* Archaeological Research Associates, Honolulu.

Pammer, Michelle F., Sarah Wilkinson, and Hallett H. Hammatt

2010 *Archaeological Monitoring Report for Kōloa Elementary School, Hawai‘i Inter-Island DOE Cesspool Project Kōloa Ahupua‘a, Kōloa District, Island of Kaua‘i TMK: [4] 2-8-010:011.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Powell, Jim

1999 *Results of Archaeological Monitoring and Mapping of Rock Wall/Site 50-30-10-1709] for the Benton Family Kiahuna Golf Village TMK: 2-8-28: 20 Koloa, Kona, Kaua‘i.* Applied Planning Systems, Kaua‘i.

Pukui, Mary Kawena

1983 *‘Ōlelo No‘eau. Hawaiian Proverbs & Poetical Sayings.* Bishop Museum Special Publication No. 71. Bishop Museum Press, Honolulu.

Pukui, Mary K. and Samuel H. Elbert

1986 *Hawaiian Dictionary.* University of Hawaii Press, Honolulu.

Pukui, Mary K., Samuel H. Elbert, and Esther Mookini

1974 *Place Names of Hawaii.* University of Hawaii Press, Honolulu

Rohrer, Steve, Todd Tulchin, and Hallett H. Hammatt

2003 *Archaeological Assessment of an Approximately 10.6 Acre Parcel at Kōloa Ahupua‘a, Kona District, Island of Kaua‘i (TMK: 2-8-15:43, 44, 82).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Schmitt, Robert C.

1977 *Historical Statistics of Hawai‘i.* University of Hawaii Press, Honolulu.

Sinoto, Akihiko

1975 *Archaeological Reconnaissance Survey of Knudsen Trust Lands at Koloa, Poipu, Kauai.* Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Soehren, Lloyd J.

2013 *Hawaiian Place Names.* Ulukau: The Hawaiian Electronic Library. Electronic document, <http://ulukau.org> (accessed May 2013).

State of Hawaii Department of Accounting and General Services Survey Division

1963 Register Map 4116 at <http://ags.hawaii.gov/survey/map-search/>

Townsend, John

- 1839 *Narrative of a Journey Across the Rocky Mountains....and a Visit to the Sandwich Islands and Chile...* H. Perkins and Marvin, Boston.

Tulchin, Todd and Hallett H. Hammatt

- 2003 *Archaeological Assessment of a Portion of the Eric Knudsen Trust Lands, Kōloa Ahupua'a, Kona District, Island of Kaua'i (TMK 2-8-14:19).* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Tulchin, Jon and Hallett H. Hammatt

- 2007 *Archaeological Data Recovery Report for Four Temporary Habitation Sites (SIHP No. 50-30-10-369F, -376. -378A & -382) at an Approximately 25-Acre Parcel, Koloa Ahupua'a, Kona District, Kaua'i. TMK:[4] 2-8-15:25-37 & 45-74.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- 2008 *Addendum to an Archaeological Inventory Survey for the Proposed Sheraton Kauai Resort Expansion Project, Kōloa Ahupua'a, Kōloa District, Island of Kaua'i TMK: [4] 2-8-016: por. 004.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

USDA (U.S. Department of Agriculture)

- 2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas. <http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/> (accessed March 2005).

USGS (U.S. Geological Survey)

- 1910 Lihue USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.
- 1963 Koloa USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.
- 1978 Koloa USGS Orthophoto Quadrangle. USGS Information Services, Denver, Colorado.
- 1996 Koloa USGS 7.5-minute series topographic quadrangle. USGS Information Services, Denver, Colorado.
- 2011 Koloa USGS Orthophoto Quadrangle. USGS Information Services, Denver, Colorado.

Viguie, Scott C.

- 2008 *An Archaeological Monitoring Report for State Site 50-30-10-698 on an 11,074 Square Foot Residential Lot in Poipu Weliweli Ahupua'a, Koloa (East Kona) District, Kaua'i Island, Hawai'i [TMK: (4) 2-8-018:059].* Scientific Consultant Services, Inc., Honolulu.

Waihona 'Aina

- 2020 *The Māhele Database.* Electronic document, <http://waihona.com> (accessed 10 April 2014).

Walker, Alan T., Lehua Kalima, and Susan T. Goodfellow

- 1991 *Archaeological Inventory Survey, Lihue/Puhi/Hanamaulu Master Plan, Lands of Hanamaulu, Kalapaki, Nawiliwili, Niumahu, and Wailua, Lihue District, Island of Kauai.* Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai'i.

Walker, Alan T. and Paul H. Rosendahl

- 1990 *Archaeological Inventory Survey Hyatt Regency Kauai Proposed Golf Course Project Area, Land of Paa, Koloa District, Island of Kauai, TMK: 4-2-9-01:Por. 1).* Paul H. Rosendahl, Ph.D., Inc., Hilo, Hawai'i.

Wichman, Frederick B.

- 1998 *Kaua'i. Ancient Place-Names and Their Stories.* University of Hawai'i Press.

Wilcox, Carol

- 1996 *Sugar Water: Hawaii's Plantation Ditches.* University of Hawai'i Press, Honolulu.

Wilkes, Charles

- 1845 *Narrative of the United States Exploring Expedition, During the Years 1838, 1839, 1840, 1841, 1842.* 5 Vols. Lea and Blanchard, Philadelphia, Pennsylvania.

Wilson, Jon and Michael F. Dega

- 2004 *An Archaeological Inventory Survey Report of the Old Kōloa Sugar Mill, Kōloa Ahupua'a, Kōloa District, Kaua'i Island, Hawai'i. [TMK:(4) 2-8-006:01].* Scientific Consultant Services, Inc., Honolulu.

Yorck, Jesse and Hallett H. Hammatt

- 2005a *Archaeological Inventory Survey of a Proposed Roundabout Construction, Driveway Reconstruction and Road Widening in the Vicinity of the Intersection of Pō'ipū & Lāwa'i Roads, Kōloa Ahupua'a, Kona District, Kaua'i Island.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- 2005b *Archaeological Monitoring Report for Electrical Utility Improvements at Pō'ipu, Kapili and Ho'onani Roads, Kōloa Ahupua'a, Kona District, Island Of Kaua'i. (TMK 2-8-15).* Cultural Surveys Hawai'i, Inc. Kailua, Hawai'i.

Yorck, Jesse, David W. Shideler, and Hallett H. Hammatt

- 2005 *Archaeological Inventory Survey of an Approximately 25-Acre Parcel at Koloa Ahupua'a, Kona District, Kaua'i (TMK 2-8-15:25-37 & 45-74).* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Yorck, Jesse, Rodney Chiogioji, and Hallett H. Hammatt

- 2004 *Archaeological Inventory Survey of a 9.4 Acre Parcel Along Waikomo Stream. Kōloa Ahupua'a, Kona District, Island of Kaua'i. TMK 2-6-04: por. 19.* Cultural Surveys Hawai'i, Inc. Kailua, Hawai'i.

Yorck, Jesse, Jonas Madeus, John E. Dockall, Sallee D.M. Freeman, and Hallett H. Hammatt

- 2005 *Archaeological Inventory Survey For the Makai Portion of Parcel 19 of the Eric A. Knudsen Trust Lands, Kōloa Ahupua'a, Kona District, Kaua'i. TMK: 2-18-14-19 por.* Cultural Surveys Hawai'i, Inc. Kailua, Hawai'i.