APPENDIX A

Archaeological Literature Review and Field Inspection Report
Archaeological Literature Review and Field Inspection Report for the Nāwiliwili-Ahu'ula Bike Path Project
Nāwiliwili, Kalapaki and Hanamaʻulu Ahupua'a
Līhu'e District, Kaua'i Island
TMK: (4) 3-2-004; 3-5-001, 002 & 3-6-002, 019, 020, and various rights-of-way between various plats

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(Job Code: NAWILIWILI 1)

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Management Summary

Reference
Archaeological Literature Review and Field Inspection Report for the Nāwiliwili-Ahu'ula Bike Path Project, Nāwiliwili, Kalapaki and Hanamaʻulu Ahupua'a, Līhu'e District, Kaua'i Island. TMK: (4) 3-2-004, 3-5-001, 002 & 3-6-002, 019, 020, and various rights-of-way between various plats

Date
May 2008

Project Number
Cultural Surveys Hawai'i (CSH) Job Code NAWILIWILI 1

Investigation Permit Number
The field inspection was conducted under archaeological permit number 06-13 issued by the Hawai'i State Historic Preservation Division (SHPD), Department of Land and Natural Resources (DLNR), per Hawai'i Administrative Rules (HAR) Chapter 17-242

Project Location
The project area is located in coastal and near-coastal portions of three ahupua'a in Līhu'e District, Island of Kaua'i: Hanamaʻulu, Kalapaki and Nāwiliwili. The proposed bike- and pedestrian-path route alignments are located near and adjacent to the Hanamaʻulu Lighthouse, Nāwiliwili Harbor, Kaua'i Lagoons and Marriott Resort, Līhu'e Civic Center and residential areas nuihau (seaward) of the civic center, Nāwiliwili Park and Harbor, and Nāwiliwili. This area is depicted on portions of the 1996 Līhu'e and 1996 Kapa'a USGS 7.5-minute topographic quadrangle maps (see Figure 1)

Land Jurisdiction
Public and private land

Agencies
SHPD

Project Description
The subject project is one phase of a larger project to connect Nāwiliwili with Anahola by a bike and pedestrian path. The subject project links Nāwiliwili, Alakai Landing, and the Līhu'e Civic Center (see Figures 1 and 2)

Size of the Project
Approximately 8 miles (12.9 km) of bike- and pedestrian-path routes are included in the current alignment options for the subject phase of the project; design and width of the various alignment options vary

Area of Potential Effect (APE)
The Area of Potential Effect (APE) consists of all the alignment-option corridors between Nāwiliwili, Alakai Landing and Līhu'e Civic Center, defined as the center line of the corridors and their immediately adjacent alignment shoulders

Historic Preservation
The Area of Potential Effect (APE) consists of all the alignment-option corridors between Nāwiliwili, Alakai Landing and Līhu'e Civic Center, defined as the center line of the corridors and their immediately adjacent alignment shoulders

Regulatory Context
Cultural Surveys Hawai'i archaeologists Gerald K. Ida, B.A. and Misty Kami, and principal investigator Hallett H. Hammatt, Ph.D. conducted the fieldwork as of May 31st, 2008.
Results

1. Seven historic properties—all in the coastal portion—have been previously identified in or immediately adjacent to the project area: three pre-Contact sites (a cultural layer at the shoehees, SHIP No. 50-30-11-409, an oval-shaped stone alignment or terrace, SHIP No. 50-30-11-421, and a 400-foot long stone wall considered to be a possible extension of Namaka Heiau, SHIP No. 50-30-11-100) and four historic-era sites (two stone wall remnants, SHIP Nos. 50-30-11-412 & -421, the ruins of a plantation camp near Akahai Landing, SHIP 50-30-06-0900, and a plantation-era piggery, SHIP No. 50-30-08-3958). If SHIP Nos. 50-30-11-422 and -423 may be impacted by the proposed project, the historic properties should not be affected by the proposed project.

2. A historic cemetery designated B004 (cf. Kikuchi and Remaldo 1992) located near Nawaiwai Park may be impacted by the proposed project.

3. Two historic bridges are located within existing rights-of-way / proposed alignments: an old railroad bridge previously modified as a pedestrian walkway spans the Nawaiwai Stream, and an old one-lane bridge in disrepair spans the Pa‘ali Stream in Nawaiwai.

4. There are three areas of dense vegetation that have not been developed with roads or trails: two alignments near the center of the project area may contain sugar cane-era sites on the ground surface. The other alignment area, near Naini Point Lighthouse, may contain older stone mounds and/or plantation-era sites or features.

5. Several coastal areas contain historic-alignment archaeological deposits, especially from Naini Point to the previous location of the long-deestroyed Akahai Heiau (located at Akahai Point, about halfway up the coast from Naini to Akahai Landing). The old Hawaiian village of Kalapaki was once located in this area. The coastal area near Nai Makekai Park also contains historic-alignment archaeological deposits.

6. The remaining portions of the project area have not been previously under commercial sugar cane cultivation and neither have been modified by modern development; it is therefore unlikely that additional historic properties (either on the surface or in subsurface deposits) are present throughout most of the project area.

Recommendations

1. Archaeological Inventory Survey (AIS) satisfying the Hawai‘i Administrative Rules (HAR) Chapter 13-276 is recommended for limited portions of the project area, including: (a) the three areas in which the proposed alignments traverse densely-vegetated lands without roads, trails or pathways, and (b) the coastal alignment corridor between Nawaiwai Point and Akahai Landing, especially the southern half of this coast, from Akahai Point to Naini Point. Where drainage improvements or other improvements requiring significant ground disturbance are planned, subsoil testing (excavation) within the footprint of the proposed improvements is recommended, given the likelihood of encountering historically-significant cultural materials in this area.

2. An Archaeological Monitoring program satisfying HAR Chapter 13-279 should be developed and implemented consisting of a combination of on-site and off-site monitoring. Monitoring specifications will depend upon results of the AIS. Monitoring should also include the alignment in Nai Makekai Park. Monitoring is probably not necessary in any of the areas (inland) areas away from the coast, since these have all been severely modified by prior historic and modern disturbances.

3. The two bridges located within existing rights-of-way of proposed alignments should be documented, and formally assessed for historic significance by a qualified Architectural Historian.

4. The historic cemetery designated B004 by Kikuchi and Remaldo (1992) is located near the Nawaiwai Park portion of the proposed bike- and pedestrian-path alignment. Archaeological Monitoring should accompany any ground disturbance along the alignment in the vicinity of Nawaiwai Park; given the potential for underwater finds.

5. No further historic-preservation work is recommended for the majority of the project area (i.e., all those lands not specifically mentioned above).
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Section 1 Introduction

1.1 Project Background

At the request of H.M. Powell Corporation, Cultural Surveys Hawai‘i, Inc. (CNS) prepared this Archaeological Literature Review and Field Inspection for the Nāwiliwili-Ahahui Bike Path Project, which is located in coastal and near-coastal portions of three ahupua‘a in Lihue‘e District, Kaua‘i: Hanama‘ulu, Kalapaki and Nāwiliwili. The proposed alignments are located adjacent to Ahahui Landing, Kaua‘i Point Lighthouse, Lihue Airport, Kaua‘i Lagoon, Marriott Resort, Lihue Civic Center and residential areas makena (swallow) of the civic center, Nāwiliwili Park and Harbor, and Nuanalua Park. This area is depicted on portions of the 1996 Lihue and 1996 Kapaa USGS 7.5-minute topographic quadrangle map (Figures 1 and 2).

The subject project is one phase of a larger project to connect Nāwiliwili with Anahola by a bike and pedestrian path, a distance of some 17 miles (27.4 km) of coastline along windward Kaua‘i. The subject project (Phase VI of the overall project) links three main sub-areas at the southern end of the overall project corridor: Nāwiliwili, Ahahui Landing, and the Lihue Civic Center. Preliminary planning includes several main alignment options (see Figures 1 and 2), all of which were inspected for this study.

Approximately 8 miles (12.9 km) of bike- and pedestrian-path routes are included in the current alignment options for Phase VI. Design specifications and widths of the different alignment options vary. The Area of Potential Effect (APE) consists of the entire approximately 8 miles of alignment-option corridors between Nāwiliwili, Ahahui Landing and Lihue’s Civic Center, defined as the center line of the corridors and their immediately adjacent alignment shoulders.

1.2 Scope of Work

The subject document is not intended to satisfy the Hawai‘i Administrative Rule (HAR) governing Archaeological Inventory Survey (BIA Chapter 13-276). This study was designed to identify known archaeological sites, and to provide recommendations relevant to the State of Hawai‘i’s historical preservation review process. The scope of work was as follows:

1. Historical research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or adjacent to the subject property.

2. Limited field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This assessment will identify any sensitive areas that may require further investigation or mitigation before the project proceeds.

3. Preparation of a report to include the results of the historical research and the limited fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. It will also provide

Figure 1. Project area location shown on portions of the USGS 1996 Lihue and 1996 Kapaa quadrangles 7.5-minute topographic map; red line depicts all proposed alignments.
mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

1.3 Environmental Setting

1.3.1 Natural Environment

The project area extends from the coastline, between Ahukini Landing in the north to Ninini Point in the south, inland approximately 2.7 kilometers (1.7 miles), rising from sea level to approximately 220 feet above mean sea level in Lihue Town. The area's topography is gently sloping up to the west; there are several shallow intermittent, unnamed drainages between Lihue Town and the coast (Juvik and Juvik 1998).

Located on the southeast coast of Kauai, the project area is exposed to the prevailing northeast trade winds, and receives 40 to 50 inches of rainfall annually along the coast and up to 100 inches annually inland (western portion of the project area). The annual average temperature ranges from 75-80°F at the airport (Giambelluca et al. 1986; Juvik and Juvik 1998).

Soils in and around the project area consist primarily of Lihue silty clay (Lsb and Lsc) and Lihue gravelly silty clay (LhLb) (Foote et al. 1972). (Figure 3) Lihue soils have a surface layer of dusky-red to dark reddish-brown firm silty clay. The substrata is soft, weathered basic igneous rock. Sugar cane has been the main commercial crop in this area in historic times.

Given the relatively large area covered by the proposed bike- and pedestrian-path route alignments, and given the presence of developed areas, roadways, resorts and other facilities (e.g., parks, harbors and the airport), vegetation in and around the project area is quite variable. Areas around the airport, for example, consist of landscaped lawns and introduced ornamental and exotic plants. Tall invasive grasses cover most of the project area that was once utilized for commercial sugar cane. The coastal strip is covered in dense vegetation with both native and introduced species, including Naupaka (Scaevola sericea), Luma (Luma jacta), Koa hostie (Lasiochloa hostiephala), Christmusherry (Schismatrichia hostiephala), and tall grasses.

1.3.2 Built Environment

Background research indicates that nearly the entire project area was, prior to the construction of the Lihue Airport, under commercial sugar cane agriculture. This agricultural use of most of the project area resulted in the grading of and repeated plowing of the project area. With the construction of the airport, residential areas to the west in Lihue Town, the resorts between Ninini Point and Nawiliwili, and other facilities and infrastructure (e.g., roadways and utilities), most of the project area was further modified by modern land uses. The coastal strip area has been less affected by modern land use, but still shows clear evidence of modifications, such as dirt trails and tracks and illegal dumping of refuse materials.
Section 2 Methods

2.1 Field Methods

The scope of work called for an archaeological field inspection of the project area to identify any surface archaeological features; to investigate and assess the potential for impact to such sites; and to identify any sensitive areas that may require further investigation or mitigation prior to proposed project. The field inspection was not intended to satisfy current standards for Archaeological Inventory Surveys in Hawai‘i. Rather, the primary objective of this report is to serve as a planning document to facilitate the environmental review process for the proposed project.

Fieldwork was conducted on May 15 and 16, 2008, by CSH archaeologists Gerard K. Ida, B.A., and Nancy "Misty" Kama, and principal investigator Hallett H. Hananui, Ph.D. With the exception of one or two heavily-vegetated areas, the entire proposed bike-path route was inspected. Most of the inspection area was covered by vehicles, with frequent stops for documentation, which consisted of digital photography and hand-written field notes. Pedestrian inspection occurred at and around the Marnot Hotel where portions of the bike-path must follow existing pedestrian paths.

2.2 Laboratory Methods

Given the scope of work for this project, which included only limited field inspection of surface sites, no materials were collected or recovered, and no laboratory work was undertaken.

2.3 Document Review

Numerous published and unpublished accounts, surveys, maps and photographs found in public and private collections pertaining to the project area were investigated by CSH. Historical documents, maps and existing archaeological information pertaining to sites in the vicinity of this project were researched at the SHPD library, CSH library and the University of Hawai‘i’s Hamilton Library.

2.4 Consultation

Community consultation was undertaken for a companion Cultural Impact Evaluation (CIE) for this project (CSH Job Code NAWILWI12). No formal consultation was undertaken for the subject Archaeological Literature Review and Field Inspection.
Section 3  Traditional Background

3.1 Overview

This section focuses on the traditional background of some and near-contemporary portions of three ahupua'a in the ma'ili (traditional district) of Pu'au: Hamanu'u, Kalaupapa and Nāwiliwili (Figure 4). The subject project area is located between the two main bays and streams of Nāwiliwili (to the south) and Hamanu'u (to the north). These two meandering streams, which drain the slopes of Kahehau Crater (1143 feet/350 meters), were once home to thousands of native Hawaiians living a traditional subsistence lifestyle.

Handy (1940:67) describes these two valleys in his chapter on the main ma'ili (town) growing locations on Panu Mokua:

(Nāwiliwili) For 3 miles inland from the sea the Nāwiliwili River twists (wililiwili) through a flat valley bottom which was formerly all in terraces. Island, just above the bay, three Hawaiian two platers cultivate wet tan in a few small terraces. Most of the land is now in pasture.

Hamanu'u River, rising below Kōloha Crater, winds its ziggy way to the sea through a relatively broad gulf, which had many small terraces commencing at a point about 2.5 miles up from the sea and continuing down to the delta of the river which begins about a mile inland. The small terraces inland from the highway are unused. The delta region is a continuous area of wetland now mostly under sugar cane and house sites. Formerly this delta must have been planted in taro.

A neighboring village called Kalapaki was located between these two major stream valleys, near the seashore, before the historic period. This portion area between the streams and ma'ili of the present towns of Līlua'e, maluol of the village house sites, had several fishponds and small drainages. The valley was located east and north (around and up the coast) from Kalapaki Beach. There are some unique aspects of traditional land use and settlement in the subject project areas, as discussed below (Sections 3.4 Substrance and Settlement).

Kalapaki, famous for its well, appears to have had closer ties with Nāwiliwili than with Hamanu'u. Kalapaki is well-known in a traditional scene for its several ku'o. Hamanu'u is probably best known as the birthplace of Koehe, the famous hero and Mo'o (King) of Kaua'i in the late 17th to early 18th century. Nāwiliwili is well-known for its kula at Kehili, reportedly at least four acres in size, and its associated piko'o (rock) called Paulik, located in the bay.

3.2 Place Names

Translations presented without attribution in this subsection are from Pukui et al. (1974), unless indicated otherwise.

Pukui et al. (1974) list but do not translate Kalapaki, defined simply as a “beach” in Līlua'e district. Pukui and Elbert (1986) define the word kalapaki (with a small “k”) as “double-yolked egg, Kauai”. Aside from its beach and landing, Kalapaki is probably best known in a traditional scene for its kula of Alaka'i and Nene (and possibly another at Kūd'E). Alaka'i has been translated as “alaka'i (sp) many [blessings]” (hakuna inserted by Pukui et al. 1974), and this was also the name for a house in Kaua'i. Nene has been translated as “poat” as its ma'ili was (to poor water).

Most sources suggest Nāwiliwili takes its name from the wililiwili tree (a small shrub, as in the wililiwili trees' or place of the wililiwili trees). According to Pukui and Elbert (1986), the wililiwili (Erythrina sandwicensis) is a native lignum vitae whose flowers and pods are used for lei, and whose light wood was once used for surfboards, outriggers, and net floats. Handy (1940:67) suggests a kana (hidden meaning) for the name Nāwiliwili based on a duplication of the word wililiwili, which means “twisted,” as in the meandering Nāwiliwili Stream.

Hamanu'u has been translated as “tired (as from walking) bay,” which may be related to mo'e'a (oral history) and 'o'lolo mo'e'a (poetical sayings) about the “sleepy” people of this place (see below).
Lihu'e (literally translated as "cold chill") became the modern political name for the traditional moa (district) of Puu. It is clear that Lihu'e is a traditional place name, but less certain that the subject project area was specifically called this name prior to the historic era. (It is also well known that Lihu'e was a traditional settlement area near the current Schofield Barracks area on O'ahu.) Historical documents suggest the name Lihu'e was first applied to this area of Kaua'i by Kaumualii (Governor of Kaua'i) in the 1830s, perhaps after Kaumualii's upcountry residence on the island. On the other hand, Nathaniel Emmons' translation of the Hawaiian 'au (chant) cycle of Hi luku and Pelic (see below) mentions Lihu'e with the other main places names of this area.

Kilohana, source of the water of the Nāwiwili and Hanamā'ula Streams, has several possible meanings: Paki et al. (1974) list three: "lookout point," "outer tapo," or "best superior."

3.3 Mo'olelo Associated with Specific Place Names

There are many mo'olelo associated with the project area environs. For example, one of the oldest and most famous legendary accounts in Hawaiian oral tradition describes the travels and exploits of Pele, the Hawaiian volcano goddess, and one of her sisters, Hi'iakaikolepolepo (more commonly known simply as Hi'iaka). Pele, in her lengthy 'ōi (chant) of literally hundreds of named winds of Kaua'i, lists those of Nāwiwili, Kalapaki, Ahakini, Lihu'e, Kapaa, and Hanamā'ula (Nogolomco 2000):

He ho'one la makani o Nāwiwili
He Wānahia la makani o Kalapaki
He Hō'ōlkā la makani o Ahahaini
He Paki lo hū o kāi makani lele lula o Lihu'e
He Kī'ihī'ī la hō'okalana o Kapaa
He Hō'ōhōlēhōlo hō'okalana o Hanama'ula
The wind of Nāwiwili is a Hi'oone
The wind of Kalapaki is a Wānahia
The wind of Ahakini is an 'Olohalu
A Paki wind is the scent that fetches the winds sweeping the Lihu'e plains
The wind of Kapaa is a Kī'ihī'ī'
The wind of Hanama'ula is a Hō'ōhōlēhōlo

A full description of the numerous oral-historical associations with the subject project area is beyond the scope of this document. The Cultural Impact Evaluation (CIE) for the subject project area (CIS Job Code NAWILIWI 2) contains an extensive oral-historical presentation, including specific mo'olelo about Kalapaki, Nāwiwili, Hanama'ula, Ahahaini and Nāwiwili, Kaua'i Heiau and its pāhau Pākini, and Kilohana.

3.4 Subsistence and Settlement

The ahupua'a of Hanama'ula, Kalapaki and Nāwiwili were permanently inhabited and intensively used in pre-Contact times, based on a large amount of archaeological, historical, and oral-historical documentation. The coastal areas were the locus of permanent house sites and temporary shelters, kōlua, including Le'a and Mā'ulō (both types of relatively small shelters dedicated to fishing god(s)), and numerous 'ūla. There were fishponds at Kalapaki and Nāwiwili. Further from the current project area, there were numerous house sites and intensive cultivation areas within the valley bottoms of Nāwiwili and Hanama'ula Streams.

Before the historic era, there was a village at Kaua'i, probably between Kalapaki and Ahahaini, and another, likely larger, at Hanama'ula to the southwest. Another village was located near the mouth of the Hanama'ula Stream.

The upland areas of these ahupua'a contained native forests and were cultivated with crops of 'awa (paper mulberry, Brownnumia papyrifera), 'ulu (sweet potatoes, Ipomoea batatas), and 'api (bottle gourd). Legends and historic documentation (especially Land Commission records) elaborate on many of these important natural resources.

The archaeological record of the Lihu'e District indicates a date range of circa A.D. 1100 to 1650 for pre-Contact Hawaiian habitation (Walker et al. 1991). A radiocarbon date of A.D. 1170-1490 was obtained from excavated sediments near the mouth of Hanama'ula Stream.

Land Commission documents (described in more detail below) indicate a land use pattern that may be unique to this part of the island, or to Kaua'i, in general, in which he'e (irrigated terraced gardens) and 'ōlu'lu lands in some 'āpua (portion of land), with he'ealo in a separate portion. In most places, he'ealo lands are defined as other landscapes and they do not typically occur next to, and among, 'ōlu'lu lands.

3.5 Streams

Nāwiwili and Hanama'ula Streams have their make (source) on the slopes of Kilohana Crater. Four-and-a-half miles to the west, Kilohana is associated with mo'olelo about a giant, bird hunter who was born to his death, and hau (wizards) who came to avenge the giant's murder only to be thrown to their deaths by the young bird hunter Lahi. It is important to point out that the water in these two streams running by the subject project area, literally defining its northern and southern margins, would have been closely associated with Kilohana in the pastime and expressions of native Hawaiians living a traditional lifestyle in and around the project area.

Two smaller streams, Kaua'i Stream and Kōmā Stream, are identified in Land Commission documents, although neither of these is named as any extent maps. Given the gently-sloping character of the natural lay of the land from Lihu'e to the coast, it is possible that there were once a few other smaller drainages increasing what is now the airport, resort and golf course area and that native Hawaiian planters made use of this water (Figure 5).

3.6 Heiau

There are several historic map sources showing multiple heiau along the shoreline and stream mouths in and around the general footpoint area of the proposed project (Figures 6 and 7). For the most part, all physical evidence of these heiau has been obliterated by historic activities and recent development. Despite this, however, many people still appreciate the sacred nature of the landscape areas in and around the project area. These differences between western and indigenous ideas about value and significance are rarely mentioned in archaeological studies, but they are fundamental to the understanding of traditional resources of this area.
Lt. George G. Jackson’s 1881 map of Nawiliwili Harbor shows there were major heiau on both sides of the mouth of Nawiliwili Stream (see Figure 6). On the east side, in Kalapaki Ahupua'a, Jackson’s map depicts "remnants of ancient heiau" near Kūkī’s Point. On the west side of the bay, in Nawiliwili Ahupua'a, there is an area labeled "Kahaua" near the court house; this was the previous location of Kahau Heiau.

In addition to the heiau at Kūkī and Kahau, Dames’ (1931) map shows two additional sites located in central Kalapaki Ahupua'a: Nānēna Heiau at the point of the same name, located east of Kūkī, and Ahukai Heiau, located about halfway to Hauanōlū Ahupua'a (see Figure 7).

Bennett’s (1931) archaeological survey of the late 1920s documented three heiau within the general footprint area of the proposed project (see Section 5 Previous Archaeological Research for Bennett's map). Kahau Heiau, State Inventory of Historic Properties (SIHP) No. 99, was located at Nawiliwili near the site of the old courthouse. By Thurman’s time, approximately two decades before Bennett’s work, this heiau was already described as "long since destroyed" (Bennett 1951:134). Thurman described it as:

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Archaeology Study for the Nawiliwili Harbor Project

THRC: 01-2-001, 01-3-001, 02A-3-000, 02A-001, 03-001
Section 4  Historical Background

This section is based on prior works by Damon (1931), Hammett and Creed (1993), and Creed et al. (1999). Damon's *Keouhule* (a history of the Keouh family) contains excerpts from a large number of 19th century primary sources, including first-hand observations of life and times in and around Li`ihu-i and Wai`ialii. Creed's work, in particular, contains extensive documentation and interpretation of Land Commission documents, Duram and Morgan (2000), Danforth (2001), Wilcox (1996) and Conrad and Best (1975) all document historical aspects of commercial sugar cane, railroads, irrigation, plantations, and other 19th and 20th century changes.

4.1 Early Historic Period

The first written accounts of Ka`a`a`i are from traders, missionaries, and surveying expeditions. Missionary accounts of first half of the nineteenth century provide the majority of the early written records for this particular part of Ka`a`a`i (Figure 5).

Damon (1931:401) wrote about Hiram Bingham's 1824 observations from his memoir, *A Residence of Twenty-One Years in the Sandwich Islands* published in 1847:

In 1824, when walking around the island from Waimea to counsel the people after the wreck of *The Cipriana's* Surges, Rev. Hiram Bingham crossed from Haupopa, as has been seen, over the old upland trail back of Kohala, and wrote of it as 'a country of good land, mostly open, unoccupied and covered with grass, sprinkled with trees, and watered with lives; means that descend from the forest-covered mountains and wind their way along invites to the sea—such a fine country than the western part of the island.'

In the 1830s, another missionary, Rev. Peter Guick, was living on Ka`a`a`i at Waimea and Kaloa. He made the following observations about the kind of provisions one could find in Hanana`i at the time:

...The governor (Kilikokewai) reached Hanana`i in his canoe just as we entered on horseback... This is the governor's custom, when he travels. A man is sent before to give notice that provisions may be made, at the different stopping places, for him and his train which frequently amounts to two hundred people... I with a few natives had a comfortable house at Hanana`i. The inhabitants brought us fish fresh from the ocean, fowls, turn, potatoes, and a pig, all except the fish roasted or baked in the ground... A yam who went with me for the purpose prepared my food. My bed, which was made with mats, was covered with ten tarps; these were the bed clothes which according to custom were passed to the guest for whom they were spread. (Damon: 93:366)

At this same time, in the 1830s, the Governor Ka`i`i`i`ewai founded a village at Wai`ialii that eventually developed into Li`ihu-i. According to Hammett and Creed (1995), the name Li`ihu-i was not consistently used until the establishment of commercial sugar cane agriculture in the middle 19th century; and from the 1830s to the 1870s, the names Wai`ialii and Li`ihu-i
were used interchangeably to some extent to refer to a settlement along Nāwiliwili Bay. Some sources attribute the decision to call this area Libu’e (literally translated as “cold chill”) to Kāka‘ako‘e, who apparently named it after his mother’s home, Waimauu and Kōloa were preferred anchorages compared with Nāwiliwili, which opened directly east to the trade winds.

By 1830, the sandalwood trade had waned and the whaling industry was just beginning. At the same time, commercial agriculture was being established on Kaua‘i. When the first crop of sugar cane was harvested at Kōloa, the king himself commanded that portions of his private land be planted in cane. The Governor of Kaua‘i, Kaikī‘e‘e‘e in 1839 began farming the slopes of Nāwiliwili Bay where there was more rain than at Kōloa (Durantce and Morgan 2000). He also built a house and church in Nāwiliwili Aha‘apua‘a.

Donough (2001:54) describes Governor Kāko‘e’a’s attempt to establish the first commercial sugar mill and plantation in Libu’e in 1839:

During the early decades of Kōloa Plantation, other sugar plantations had started up on the island. One was to result in the ascendency of Libu’e to the principal town and seat of government on Kaua‘i, replacing Wailua. When Kāko‘e’a was appointed governor, he located his home in what is now the Libu’e District. He planned to grow sugar cane but died in 1839 before his plans could be realized. Kāko‘e’a was responsible for the name Libu’e, which means “cold chill,” the name of his previous house at a higher and drier altitude on O‘ahu.

Donough (2001:94) describes observations by James Jarves, who passed through Libu’e in 1838:

[He] found only a church built by Kāko‘e’a and a few grass houses. He commented the governor had selected Hanamū‘ulu Bay as the harbor, “entirely overlooking the fact that it opened directly to the windward.”

Kāko‘e’a died in 1839 soon after the start of the sugar plantation, which lasted only one year and closed down in 1840 (Durantce and Morgan 2000).

Around this time, perhaps as late as 1842, the first missionaries settled in the Libu’e area led by Dr. and Mrs. Thomas Lafayette, and assisted by Rev. Peter Collyer from Kolea. Schools were opened, and some missionaries attempted to grow cotton as the first intensive cash crop, but were unsuccessful (Quinn 1991).

An account of the United States Exploring Expedition, which passed through Libu’e in 1840, talks about the area, but also mentions the forced removal of some canoe from the coastal areas:

At noon they reached Libu’e, a settlement lately undertaken by the Rev. Mr. Lafayette, for the purpose of inducing the natives to remove from the sea-coast, thus abandoning their poor lands to cultivate the rich plains above. Mr. Lafayette had the charge of the mission district lying between those of Kōloa and Waipouli. This district (Libu’e) was a short time ago formed out of the other two.

The principal village is Nāwiliwili, ten miles east of Kōloa. This district contains about forty square miles, being twenty miles long by two breadth. The soil is rich; it produces sugar-cane, taro, sweet potatoes, beans, etc. The only market is that of Kōloa. The canoe suffer somewhat from the high winds on the plains.

The temperature of Libu’e has much the same range as that of Kōloa, and the climate is pleasant: the trade-winds sweep over it universally, and sufficient rain falls to keep the vegetation green throughout the year. No cattle are to be seen, although the pastures are good. (Wilkes 1843:67-68)

With the death of Kāko‘e’a, government of Kaua‘i was transferred for a brief period to his widow Kanawamahi. Then followed the brief tenure of Chiefess Kohohamoku and her husband Kealiiholani (son of King Kaumuali‘i) after which the government passed to Paulo Kanaka in
1848. Kaua'i had two houses overlooking Nawiwilli Bay; one on the bluff south of Nawiwilli Stream (the present site of Kaua'i High School) and another at Papililihina, north of the bay (Danas 1911).

William DeWitt Alexander, son of Waioli missionary William P. Alexander, traveling from Kilauea to the north shore of Kaua'i in 1847 recorded some descriptive facts about Hanama'ulu:

A few miles farther on we entered the picturesque valley of Hanama'ulu. This valley is greatly bordered by groves of Kula'i, i.e., hala trees, and it is well cultivated with taro. A fine stream flows through the midst of it, which makes a remarkable bend at this place like a horseshoe. We then traveled along the southeast at the foot of a range of hills through groves of hala, & among hills of sand. It was now after dark, but the moon shone brightly, and there was no difficulty in finding our way. About eight o'clock we arrived at the banks of the Waialua river. (Kaua'i Historical Society 1991:123)

One of the last vestiges of the pre-cash crop landscape is depicted in the diary entry for the Rice family's arrival on Kaua'i in 1854. During the second half of the nineteenth century, western settlers and entrepreneurs set their sights on southeast Kaua'i. Danes describes the Waialua landscape at the time of the family's arrival at Nawiwilli Bay:

From the deck of their river craft in 1854 Mrs. Rice and the children could plainly see above the rocky shore and mists of Kilauea, the old heiaus, or temples, and nearby on the bluff the flowering blossoms of a great willow tree among koa trees which ten grew almost down to the water's edge. (Danes 1911:17:18)

4.2 Middle to Late 19th Century

The middle 19th century brought great changes to Lihu'e, including private and public land ownership laws known as the Māhele (literally, 'to divide' or 'to section'), and commercial sugarcane agriculture, which firmly established Lihu'e's place in state and global economic markets. Coulter's (1991) population density estimates for 1853 (Figure 9) show a relatively large settlement around Nawiwilli Bay.

4.2.1 The Māhele

In the middle 19th century, during the time of Kamamumana III, a series of legal and legislative changes were brought about in the name of "land reform" (see the works of Jon Clark 1958, 1971 for a thorough and well-written explanation). Previous to the Māhele, all land belonged to the ali'is (gods), held in trust for them by the paramount chief, and managed by subordinate chiefs. Following the enactment of a series of new laws from the middle 1840s to middle 1850s, all land in the Hawaiian Kingdom was divided into three main types: government (or Crown) land, ali'ia (chiefly) lands; and commoner lands, which maka'ainana could in principle obtain in fee simple, following passage of the Kuleana Act in 1850. This act allowed maka'ainana (in principle) to own land parcels at which they were currently and actively cultivating and/or residing. In theory, this 'set aside' of hundreds of thousands of acres as
4.2.1.3 Kalapōlā

In Kalapōlā, Hāpu‘u’s kila (taro) lo‘i claims were on the south side of Nāwiliwili River (the waiaka land in Claim 2007 on the south side of the river being the site of an excavation and along the smaller drainages of Kalapōlā and Kōomalu‘a, where there were also reported springs. Two streams, Kōomalu‘awa‘ui and Kōomalu‘awa‘akai were also identified in the claims, but neither is named on current maps. These two streams, however, can be seen on an undated photograph of a file at the Kau‘a‘i Museum (see Figure 5, above).

Most Kalapōlā claimants lived at the site in the kū‘ula kau‘ululā, or village, of Kaliapōlā, located near Nāwiliwili Bay. Several claimants describe their village house lots in relation to the fishponds of Kōomalu‘awa‘ui (Kōomalu‘awa‘ui and Kōomalu‘awa‘akai). There is also a description of the malialo, or estuary, of Kōomalu‘awa‘akai.

Claim 3649 mentions a forgepath for the ia‘i of Līhelele near the site in the boundary between Hānu‘mā‘u and Kalapōlā. These claimants therefore indicate a northsouth path along the shoreline, and other pathways going inland from the shore, which is a traditional ‘au‘au pati for Kau‘a‘i’s ia‘i ‘au‘au.

Paula Kanเคe, Governor of Kau‘a‘i, at the time of the Mō‘īhāle, claimed both the ahu‘pua‘a of Hānämā‘u and Kalapōlā but was awarded neither. Instead, Victoria Kanekaula was awarded both ahu‘pua‘a’s under LCA (Land Commission Act) No. 7713:2. A portion of this award (7713:2 part 7) includes land within the present project area. Following the defeat of Victoria Kanekaula in 1866, Princess Ruth Ke‘elikōlani inherited her lands. In 1870, Ke‘elikōlani sold large portions of her Kalapōlā and Li‘ihele lands to William Hyde Rice of Li‘ihele Plantation. In addition, in 1870, Paul Iosebong purchased the ahu‘pua‘a of Hānämā‘u from J.O. Demers, which includes the land of the present airport area. William Hyde Rice made subsequent land purchases from Princess Ruth in 1879.

William Hyde Rice, who already had his own home on the land east of the mill, bought a large malia portion of the ahu‘pua‘a of Kalapōlā from Princess Ruth in 1879 and there conducted the Li‘ihele Ranch. In later years he sold most of this land to the planters. (Damon 1951:747)

The large tracts of inland areas (kai‘a’i, ko‘o) on the river valleys or at the shore, are not described in the claims, and were probably in use. This kai‘a‘i land at the time of the Mō‘īhāle belonged to Victoria Kanekaula. Land use is not elaborated in her claims for Hānämā‘u or Kalapōlā.

Traditional ‘au‘au resources for all claimants would have included medicines, herbs, construction materials such as pili, grant and trees for building houses, canoes, and perhaps litic materials for tools. Sweet potatoes and other dryland crops, such as waiaka, probably existed in patches throughout the area at one time or another.

4.2.1.4 Nāwiliwili

Victoria Kanekaula was awarded over two thousand acres of Nāwiliwili Aha‘pua‘a (LCA 7711), along with much of Nāwiliwili, Hānämā‘u, and Kōomalu‘a, as well as Kalapōlā and Kōomalu‘a. In addition to Kanekaula’s large award at Nāwiliwili, there were many smaller ‘au‘au awards. According to Hānämā‘u and Cielo (1993):

Within the valley floor and adjacent to the alluvial plain (in Nāwiliwili) are 14 land Commission Awards for which there are testimonies available in the Land Commission records. The awards vary in size between one lo‘i and two acres and are generally around one acre. The majority of land recorded is for lo‘i (wetland agriculture) but kai‘a‘i (dryland plots) are present as are a few hanaṁa‘u.

In all there are 54 lo‘i recorded. Each award is generally two to three lo‘i plots. The largest award consisted of 8 lo‘i; a single award consisted of one lo‘i. All awards consisted of lo‘i and none of the fifteen total awards had kai‘a‘i lots. Without exception, the nine awards consisting of lo‘i mentioned only one kai‘a‘i per award. This is consistent because it shows that the alluvial plain was not entirely dedicated to wetland planting and that a small kai‘a‘i lot was essential for subsistence agriculture.

Some awards at Nāwiliwili mention heiau along the shoreline.

4.2.2 Commercial Sugar Cane Agriculture

As a direct result of the availability of large tracts of land for sale during the Mō‘īhāle, in 1849, Li‘ihele Plantation “was established on the site Kalapōlā two lots had chosen, and the cluster of homes and stores around it was the start of the town of Li‘ihele” (Damon 2001:94). The plantation was started by Henry A. Pierce, Judge Will, Lui‘lu‘u, chairman of the Land Commission, and Charles Reed Bishop, doing business as Harry & White and Company (Damon 1931). The first 3,000 acres were purchased in Nāwiliwili and an additional 300 acres were purchased in Aha‘pua‘a in 1865. The Li‘ihele Plantation became the modern plantation at that time in all Hawai‘i. It featured a steam-powered mill built in 1853, the first use of steam power on a Hawaiian sugar plantation, and the ten-mile-long Hānämā‘u Ditch built in 1856 by plantation manager William H. Rice. The first large-scale irrigation project for any of the sugar plantations (Mokihana and Fitchpatrick 1999:105). Dorrance and Morgan (2002) provide a slightly different list of achievements for Li‘ihele Plantation: “The first irrigation ditch in Hawai‘i was dug in 1857 at Li‘ihele, and in 1859 the first steam engine in a Hawai‘i’s mill was installed at Li‘ihele Plantation.”

The residential and administrative heart of Li‘ihele Plantation was located in the western portion of the adjacent project areas, now downtown Li‘ihele, Kau‘a‘i’s political center and most developed area. There are many documentary resources about the history of commercial sugar cane in Li‘ihele’s area, e.g., the Kau‘a‘i Museum’s website, http://www.kauaimuseum.org. Dorrance and Morgan (2002) have summarized highlights of the history of both the Li‘ihele and Hānämā‘u Plantations (see pp. 26-29), and these are other, more detailed histories of these operations (e.g., Condé and Rant 1975; Williams 1996; Damon 2001).

The success of the Li‘ihele Plantation allowed it to continue to expand. When the owner of Hānämā‘u Aha‘pua‘a, Victoria Kanekaula, died in 1878, all 9,177 acres in the aha‘pua‘a were purchased by Paul Iosebong, the manager of Li‘ihele Plantation from 1866-1878 (Damon 1951:747-748). By 1870, the plantation owned 17,000 acres in Hānämā‘u, a total of 20,000 leased acres in Waimea were later added in 1878. Li‘ihele Plantation built a second mill in 1877. The mill opened on the seafront, recorded in 1885 map of Hānämā‘u Plantation by Lt. George G. Jackson. This mill operated until 1920, when it was converted into housing for laborers.
4.2.3 Changing District Names

The traditional districts, or maka'ainana, of Kaua'i were replaced in the middle to later part of the 19th century by modern political-district names (Figure 10). Given its economic importance to the island, Lihu'e became the modern district name, as described by Rice:

The name Lihu'e, applied in a larger sense, included the districts of what are now Kaua'i and Lihu'e, reaching from Asahina to the Cap, being made so by law in about the year 1864, according to early court records, but some years later divided into the present two districts. The large district was also known as the Puna district, and is found on early maps as such. It was August nineteenth, 1860, that the district was divided into two, by act of Legislature with King Kalakaua's signature. ... Lihu'e, in a local sense, and from which the name of the district was derived meant only that little portion of land upon which the present village, consisting of bank, post office and store, now stands. (Rice 1914:40)

4.2.4 Later 19th century

Māhāle records indicate that taro continued to be cultivated in Nawiliwili Valley through the middle 19th century. However, later in that century, much of the two lands in Nawiliwili, as in other wetland regions of the Hawaiian Islands were converted to rice cultivation. This shift was dictated by changes in the ethnic make-up of the islands' population and economic demands. Little is known of the rice industry in Nawiliwili; however, an 1881 map of Nawiliwili Bay shows the entire lower portion of Nawiliwili Valley under rice cultivation. Early 20th century photographs in the Bishop Museum Archives show large rice terraces within the valley. Rice was also grown in the Hālau'ula valley of the pali (cliff) of Kalihi.

According to Dormán and Morgan (2002:24-25), there were at least four different major sugarcane operations (i.e., mills and/or plantations) in the near vicinity of the subject project area during the later 19th century, including the Liliuokalani and Hanamaulu Plantations (founded 1870, closed 1898) as well as the Hanamaulu Mill Company (founded 1870, closed 1880) and Charles L. L'Orange (founded 1882, closed 1885).

In 1870, the Liliuokalani Company bought up approximately 17,000 acres of undeveloped land in Hanama'ulu, which were then used to grow sugar cane and to capture and deliver water to both plantations. Later, in 1870, George N. Wilcox started the first sugar cane plantation in Hanama'ulu, the Hanama'ulu Plantation (Dormán and Morgan 2000). In 1898, Hanama'ulu Plantation was merged into Liliuokalani.

Historic maps show most of the subject project area, especially the current airport, was not yet in commercial sugar cane agriculture by the late 19th century (Figure 11), but this would change by the early 20th century when nearly the entire subject project area was plowed under for cane.
4.3 Twentieth Century

This subsection outlines important aspects of the 20th century history of the subject project area. A full description of relevant oral-historical accounts is beyond the scope of this document. The CIE for the subject project area (C201 A0Y Code NAWE/iii/1) contains an extensive oral-historical presentation, including previously gathered interviews with kama'aini and other residents of Kaua'i, and ongoing practices and uses of the landscape.

4.3.1 Lihue Plantation

Commercial sugar cane agriculture continued in Lihue until 2000, when it and the Kekaha Sugar Co. finally shut down and terminated approximately 400 workers. The nearby Kipu Plantation, founded in 1917, operated until 1942 (Dorrance and Morgan 2000).

Lihue Plantation remained a vibrant and successful commercial operation throughout most of the 20th century, in part, because of a continued interest in technological innovation (Figure 12). For example, in 1912, Lihue Plantation installed two 240-kilowatt generators above the cane fields on the slopes of Kilohana Crater, becoming one of the first hydroelectric power producers (along with Kekaha, Kaua'i) in the Hawaiian Islands (Dorrance and Morgan 2000).

There are many first-hand recollections about life in the early 20th century plantation days of Lihue, including extensive documentary archives maintained by the historical museum at Grove Farm Homestead (refer to the companion CIE for details).

4.3.2 Ahukini Port and Village

There are many recollections about the nearly-forgotten port village of Ahukini, located at the northern end of the proposed bike-path route, but also reporting more generally to the coastal area of Hanamī'sulu (Figure 13). According to Cosobough (2001), a dock for large ships was initially built at Ahukini in 1921 because Hanamī'sulu Bay, totally exposed to the trade winds, was too treacherous. In 1950, Ahukini was abandoned as a commercial dock in favor of Nawiliwili Bay.

A series of newspaper articles (Baptiste 1933a, b) documented the impacts of the 1946 tidal wave on Ahukini, which had been transformed by the 1930s and 1940s into a relatively prosperous little port village. Robert Yotada talked fondly about these days, and the effects of the big wave:

... Coconut groves, fish. We used to fish all the time. We caught little fish with our little bamboo poles. We’d stand around and catch fish. ... Since the tidal wave in 1946, the path of the Hanalei river has changed. It changed the bottom of the ocean, too ... Fish were in the trees all over. (Baptiste 1933b:7)

4.3.3 The Development of Nawiliwili Harbor

The federal River and Harbor Act of March 2, 1919 authorized the construction of a modern harbor at Nawiliwili. Some aspects of the construction phases of this bay can be gleaned from historic maps and aerial photographs (Figures 14–16).
Figure 12. Lahue Plantation Co. in 1941 with subject project area in lower left-hand portion of the image (source: Conde and Best 1973:166).

Figure 13. Ahukini port in 1946 (from Baptiste 1953a).
The selection of Nawiliwili as the harbor of the future on Kaua‘i was preceded by a year’s worth of debate between advocates of Hanapepe and Nawiliwili. The specifications for the harbor included support from local government and business interests:

Upon completion of a rubble-mound breakwater 2,456 feet long along the west dividing the inner and outer harbors, the entrance channel would be dredged to a depth of 35 feet, a minimum width of 400 feet, and a length of 2,400 feet. Also included in the estimated cost of $1,086,000 was a harbor basin 35 feet deep, 1,025 feet wide, and averaging 2,000 feet in length. The same act provided an annual appropriation of $250,000 for construction of the harbor. Local interests were to assure eventual railroad connections between Nawiliwili and the southern part of the island 'in reasonable time,' while the Territory of Hawaii or the County of Kaua‘i was to give the Secretary of War $200,000 toward the project. (von Hofsten 1970: 11)

The dredged material would be used as fill for the proposed wharf areas. Construction of the breakwater, the initial phase of the harbor project, began in October 1921.

By 1924, a total of 1,454 feet of breakwater had been set in place. However, dredging within the now semi-enclosed bay could not begin until the Territorial Legislature appropriated the $200,000 promised in the project. Action by the legislature was delayed when the sugar companies on west Kaua‘i – continuing to press for Port Allen at Hanapepe as the island’s major harbor facility – threatened to boycott the Nawiliwili harbor after its completion. The Legislature finally approved its share of the funding in 1925, and the breakwater was completed in March 1926. Development of the harbor continued as:

...the Territory took over the Federal camp and equipment and began construction of a concrete wharf. As soon as the Government dredge A. Mackenzie finished [dredge work] at Pili‘o, the breakwater at Nawiliwili in fiscal year 1939, and dredging was completed in July 1950. The official opening of the $1.3 million harbor on 12 July inaugurated an entrance channel 600 feet wide, 2,400 feet long, and 35 feet deep, a harbor basin 1,025 feet wide, 2,000 feet long, and 35 feet deep, and a rubblemound breakwater 2,150 feet long. (von Hofsten 1970: 11-18)

Construction of the wharf facilities continued throughout the 1930s.

Hersch's maps and photographs document Nawiliwili Bay before and after the construction of the harbor. A USGS map of 1910 shows the original configuration of the shoreline at Nawiliwili Bay before the construction of the harbor (see Figure 14). The early stages of the breakwater construction are evident in an aerial photograph taken on July 4, 1924 (see Figure 15), in which the end of the newly constructed breakwater is visible in the left-central portion of the photograph. Construction of the harbor facility on the north side of the bay had not yet begun by this time.

Another aerial photograph from c. 1930 shows the continued development of the harbor (see Figure 16). By this time, the filling-in for the harbor had not been completed; the area of the current pier facility is still open water, the land behind the constructed jetty was built up by imported fill. More recent maps of the harbor, compared with the 1910 map, reveal that the modern pier area is located entirely upon a 20th century landfill.
Section 5  Previous Archaeological Research

5.1 Overview

This section focusses on the most relevant archaeological research and directly around the general footprint area of the proposed project. Results from previous studies of coastal and near-coastal areas of Hanamakulu, Kalapaki, and Nawiliwili are briefly summarized. This is followed by a detailed treatment of prior research and results from the shoreline at Kalapaki and Hanamakulu (north of the Hanamakulu Stream), immediately east (malaika) of the airport. Collectively, these observations provide some expectations regarding the types of cultural and historic resources that may be located in the subject project area.

The shoreline at Kalapaki and Hanamakulu is the most sensitive archaeological area, most of the rest of the general footprint area has been substantially modified by commercial sugar cane operations, the development of Lihue's Town Nawiliwili Harbor, Ahulani port, and the airport, the Menehune reef and golf course, and other development. Except for its shoreline segment — which runs from Ahukai Landing (i.e., south side of Hanamakulu Bay) to Nani Point (north side of Nawiliwili Bay) — the proposed bikeway route mainly travels along existing rights-of-way whose subsurface sediments have already been substantially disturbed. There are no extant heiau reconstructions at Hanamakulu; in fact the general footprint area of the proposed project, despite the fact that at least three large structures were once located along the coast from Ahukai to Kau'i's.

This archaeological review is based on a prior CSH report documenting the results of an archaeological inventory survey of the proposed impacts of improvements to Lihue's Airport (Bell et al. 2006); and other original source materials from archaeological studies of the specific coastal area of concern (Hammitt 1988, 1990; Creed et al. 1999).

Figure 17 shows prior archaeological investigations in the general footprint area of the proposed project. Figure 18 shows historic properties that have been documented in this area as a result of these studies. Tables 1 and 2 summarize previous archaeological studies and results in and around the project area. These data show there are at least 33 known cultural and historic sites of interest in this area; 36 of these are historic properties listed on the State Inventory of Historic Properties (SIHP), the other seven sites of interest are cemeteries not listed on the SIHP.

5.2 Early Documentation of Heiau

Thomas G. Thrum (1897), publisher of the Hawaiian Almanac, gathered texts of heiau on all the islands, and reported five from the ahupu'a of Hanamakulu, Kalapaki, and Nawiliwili:

1. Nani Point, Kalapaki, near site of Nawiliwili light house; described as destroyed (SIHP No. 100)
2. Ahukai, Kalapaki; described as a house of medium size, with some foundation stones in evidence at the time of Thrum's visit (SIHP No. 101)
3. Pohakolele, Kalapaki; described as a house of medium size; destroyed by the time of Thrum's survey (no site number)

4. Kaimukuhana, Hanamakulu; described as a large walled heiau that stood above the present mill; destroyed around 1850-51 (SIHP No. 102)
5. Kaua'a, Nawiliwili, near site of court house — a large paved house, whose enclosure covered an area of about four acres, long since destroyed (SIHP No. 99). The rock Pa'ae, near agave bush but formerly connected with the temple, was where the Kahuna (priest) lived.

The first comprehensive archaeological survey of Kau'a was undertaken by Wendell Bennett in the 1920s and published by the Bishop Museum in 1931. Bennett used Thrum's list for reference and documented many additional (mostly non-heiau) sites. Bennett listed two heiau for Hanamakulu (Ahupua'a) and one for Kalapaki (both described as "destroyed"). He also noted sand-dune burials (SIHP No. 103) towards the Waialae River (Figure 19). Bennett repeats the descriptions provided by Thrum for the "destroyed" Site 100-102, and adds the following:

Site 103: Dune burials, in the sand dunes that run along the shore halfway between Hanamakulu and Waialae River are many burials. (Bennett 1911:125)
Paulini Reak, a heiau or priest's house now under water in Nawiliwili harbor [this site was now designated SIHP No. 50-361-1-1999] (Bennett 1911:148)

In addition to SIHP No. 103, which is located northeast (north) of the general footprint area of the proposed project, several other sand-dune burials or grave sites have been noted in Hanamakulu, for example, at Kaua'a (SIHP Nos. 50-30-68-746 and 1827, documented by Roseberry 1990) and CSH archaeologist Kaipo Akana during a field survey of damage after Hurricane Iniki by the Kau'a (Kau'a) Island Rural Council in 1992.

Hammitt (1990:11) archaeological reconnaissance of the Kau'a Lagoon Reserve identified a "high well-constructed wall running 400' north of Na'au Lighthouse (as) possible political wall and possibly related to the former Na'au Heiau (SIHP No. 100)." A dune midden scatter (SIHP No. 421), two probable cist walls (SIHP Nos. 422 and 423), and an oval terrace alignment (SIHP No. 424) were also recorded.

Bennett places Ahukai heiau (SIHP No. 101) "in Kalapaki, near Ahukai Point on the bluff overlooking the sea. This is now entirely destroyed" (Bennett 1911:125).

Bennett (1911:137) lists Pohakolele heiau in Kalapaki under "Kau'a sites not located." Bennett probably would have mentioned its location if he had known about it. The do not seem to be other references to Pohakolele heiau in Kalapaki, and it is unknown if Bennett used Thrum for his source, or if he knew the information from people on Kau'a. Although Bennett could not verify its existence, and its location is speculative, it is included as a non-located site of pre-Contact Kalapaki, passed down in local memory. There was a heiau in the neighboring (north) ahupua'a of Waialae called Pohakolele, said to have been located just mauka of the junction of Opakaa Stream and the Waialae River (Dykes 1917:20). It is possible that these two heiau are the same, and Thrum was confused on the location. It is also possible that this was the name of an unmarked heiau on Kau'a Point. Neither Thrum nor Bennett mention a heiau noted by Lt. George G. Jackson, Navy surveyor for the Hawaii Government Survey Office in 1881 (see Figure 6) at Kau'a Point. The Kau'a Community College newsletter, Archaeology on Kau'a (1971:3), notes that the "residents of ancient heiaus" noted by Jackson are "where the cacti and cactuses now stand."
Figure 19. Detail of Bennett's (1913) map of Kaua'i showing location of archaeological sites.
<table>
<thead>
<tr>
<th>SHIP No.</th>
<th>Site Type</th>
<th>Algebra's Location and Reference</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-30-14-509</td>
<td>House (Nisga'a house, large panel house, where elders sat on an open area of about four acres; long house)</td>
<td>Kalsors</td>
<td>Thorne IN Bennett 1993:124</td>
</tr>
<tr>
<td>50-30-14-1100</td>
<td>Nisga'a House (rear site of Nisga'a Potlatch House, double panel wall, posts)</td>
<td>Kalsors</td>
<td>Thorne IN Bennett 1993:124</td>
</tr>
<tr>
<td>50-30-14-101</td>
<td>Kalsors</td>
<td>Thorne IN Bennett 1993:125</td>
<td></td>
</tr>
<tr>
<td>50-30-14-102</td>
<td>Kalsors</td>
<td>Thorne IN Bennett 1993:125</td>
<td></td>
</tr>
<tr>
<td>50-30-14-1101</td>
<td>House (rear site of Nisga'a Potlatch House, double panel wall, posts)</td>
<td>Kalsors</td>
<td>Thorne IN Bennett 1993:125</td>
</tr>
<tr>
<td>50-30-14-1102</td>
<td>House (rear site of Nisga'a Potlatch House, double panel wall, posts)</td>
<td>Kalsors</td>
<td>Thorne IN Bennett 1993:125</td>
</tr>
<tr>
<td>50-30-14-1103</td>
<td>House (rear site of Nisga'a Potlatch House, double panel wall, posts)</td>
<td>Kalsors</td>
<td>Thorne IN Bennett 1993:125</td>
</tr>
<tr>
<td>50-30-14-1104</td>
<td>House (rear site of Nisga'a Potlatch House, double panel wall, posts)</td>
<td>Kalsors</td>
<td>Thorne IN Bennett 1993:125</td>
</tr>
</tbody>
</table>

Ethel Damon (1915) mentions Kalsors House in Nawiulvili, placing it near the location of the Court House (see Figure 7). She mentions Polmoe-ctele, location unknown, and Polmoe Rock (SHIP No. 2099), located at Kalsors Beach, Nawiulvili Bay:

An additional area of four acres was during this year, 1851, sold to the government for timber and road near Nawiulvili Bay. The first sighting point in this deed was the north corner of Kalsors House (Damon 1915:415)

From the deck of their river-boat in 1854 Mrs. Rice and the children could plainly see above the rocky shore the ruins of Kalsors, the old house, or temple, and across the bluff the flowering blossoms of a great willow tree among low bushes which then grew almost down to the water's edge. (Damon 1913:17)

On the bluff overlooking the bay of Nawiulvili, where the public High School now stands, was once the large paved house called Kalsors, extending over about four acres of ground. It was in its day the largest and most famous temple on the island. Below it, in the bay, is still the rock called Panahli, which was said to be its companion or sister house, and was probably also the home of the kahmoa, or priest, of Kalsors. In ancient times this rock was connected with the shore near the site of the former boat landing. All the dredging and filling in for the modern wharves have not yet touched this old rock of Panahli, the sole remnant of the famous houses of Nawiulvili Bay. For almost no traces, even of the great Kalsors temple, are now [in 1931] to be found; and of the three small houses in the neighboring strump of Kalapsli, those of Nisti, Kalsors and Polmoe-ctele, little more than the names survive. (Damon 1931:397-398)

In a collection of Kali's Place names (Kalesy n.d.), the heima of Kali is also mentioned: nawiulvili, out te awa tamalwa, out tola te heina of Kalius, Kalapsli, and tua maalea a Nawiulvili.

Nawiulvili is the harbor. The temple of Kalius is there. Kalapsli is on the headland of Nawiulvili.
Thurin placed the location of Kahanu Heiau near the "Court House," which is labeled on a 1881 Jackson map (see Figure 6) in an area called "Kahana." Jackson does not label any structure as the heiau, so it may have been destroyed sometime between 1854, when Mrs. Rice and her children saw it from the harbor, and 1881, when Jackson made his map. According to Dr. William Kānekāloha (personal communication), the heiau was destroyed when people took the rocks to use for other purposes. Its general location was near the ironwood tree next to the Kāna‘i High School Stage pole (Kalama and Wainiha Road 1911:8-5). Nancy McMahon (SHJP Archaeologist for Kaua‘i) indicated that the Punahoe Rock location in Kalapaki Bay was shown to her by Cheryl Lostalke in 1999, and subsequently added to the State Inventory of Historic Properties (SHJP No. 1999).

5.3 More Recent Archaeological Projects

The following archaeological projects studied lands located within the general footprint area of the proposed project. Most of these investigations yielded no significant historic or cultural sites, or relatively minimal finds:

(1) McMahon (1990) conducted a brief walk-through field check of three parcels of land immediately west of the airport, and east of Lihue’s town center. These previously identified historic residences (SHJP Nos. 50-30-9530, -9491 and -9492) were documented; no archaeological remains were identified.

(2) Hammond and Creed (1993) conducted an archaeological survey of 61 acres of land in Nawiliwili. Historical evidence suggested this land was intensively used for agriculture in both pre- and post-Contact times. They documented three `inaauai (traditional irrigation ditches) (SHJP Nos. 50-30-1-491, -492 and -493); and a single rock (SHJP No. 50-30-1-494) interpreted as a burial marker.

(3) Franklin and Walker’s (1994) archaeological inventory survey of 552.3 acres including portions of the airport showed that nearly the entire area was previously disturbed and most sites obliterated. Two sites were documented: a stone wall (SHJP No. 18422) interpreted as a historic boundary marker (possibly marking off an old agricultural field), along the south side of Hanamakū Valley near Kapaa; and a historic structure (SHJP No. 94003) associated with Radio Station KUAM located in the Kalapaki portion of the airport.

(4) Hammond and Folk (1995) conducted an archaeological and ethnological study of Nawiliwili Cemetery (SHJP No. 50-20-1-6009), located between Kauai High School and Kalapaki Bay. A total of 69 burials of historic age were documented, disturbed, and reburied nearby; the burials represent a wide variety of ethnicities and ages. Walker and Rosenfield (1991) surveyed the same general area and discovered 34 intact, historic burials with several associated headstones.

(5) Creed et al.’s (1999) archaeological inventory survey of several discontinuous parcels within the airport area documented no evidence of prehistoric or early historic sites. However, extensive remains of Akahai Camp (part of Akahai Landing, SHJP No. 50-30-1-5009) were documented at Hanamakū Bay. The remains consisted of 1.5 concrete slabs believed to have been associated with residential structures, concrete drainage systems

remains, piles of historic trash, railroad tracks, loading dock and camp-related infrastructure. Additionally, a large wooden house (the Bertman House) with attached garage/live area and an associated rock wall lie within the project area, adjacent to the south of Akahai Landing.

(6) Bull et al.’s (2000) archaeological inventory survey of approximately 1/2 acres of discontinuous lands in Hanamakū and Kalapaki Ahupu‘a’s associated with proposed improvements to Lihue Airport identified two historic properties (SHJP No. 50-30-0-3558), a piggery dating from the plantation era. This site is located approximately 150 meters (490 feet) east of the proposed alignment (see Figure 18).

Just north of the subject project area, Walker and Rosenthal (1990) excavated sites backhoe trenches in association with the Hanamakū Affordable Housing Project from which only several small isolated coral fragments were found. No further archaeological work was recommended at this location (TMG: 9-3-7-003; portion 020), which was determined to have been entirely disturbed to a significant depth below surface by historic sugar cane operations. Walker et al.’s (1991) archaeological inventory survey near the mouth of the Hanamakū Stream identified 10 sites three of these date from pre-Contact times: a subsurface cultural deposit associated with a traditional living site area (SHJP No. 1838 A & B), an agricultural wall and terrace of unknown function (SHJP No. 1839 A & B), and a terraced river valley of some 30 acres (SHJP No. 1847). SHJP No. 1839 provides a radiocarbon date of 1170-1400 AD. Other sites documented by Walker et al. (1991) north of the subject project area include plantation-era structures, and a historic cemetery (SHJP No. 144 Japanese-Buddhist and Filipino-Catholic cemetery).

Just south of the subject project area, in Niumau, Folk and Hammond’s (1991) archaeological inventory survey at the Kanoa Estate Lands documented two fallows originally recorded by Ching et al. (1973). In addition, a previously unrecorded ‘inaauai was found connected to one of these fallows, known as Kanoa’s fallow, to Koke‘a Stream. Kāne‘ohe and Remaldo’s (1992) note six cemeteries in Hanamakū and Kalapaki. Descriptions do not exist for two of them (B015, B004). A pre-Contact burial platform on Kalapa Ridge was found by Kapeka Akana in 1991 in an excavation of areas damaged by Hurricane ‘Iniki’. These burial sites are not located within the subject project area.

5.4 Coastal Portions of Hanamakū and Kalapaki Ahupu‘a

Four previous studies have looked at portions of the shoreline at Kalapaki Ahupu‘a and Hanamakū’s North (south of the Hanamakū Stream), which constitute the most sensitive archaeological portions of the general footprint area of the proposed project.

Hamann’s (1988, 1990) archaeological reconnaissance and survey of this coastal area documented five sites, including two dry-stacked stone walls (both incomplete remains) dating from the historic era (SHJP Nos. 50-30-1-433 and 434, shown in Figure 30 as "Site 1" and "Site 2", respectively) on a bayou terrace (sediment scatter) along the wave-cut shoreline (SHJP No. 50-30-1-435, shown in Figure 26 as "Site 3"), a coastal terrace (SHJP Nos. 50-30-1-431, shown in Figure 30 as "Site 4", and a 490-foot-long stone wall considered to be a possible extension of Niiha Heau (SHJP No. 50-30-1-100, shown in Figure

Archaeological Study of the Hanamakoluma Area: Shirahata Niiha Heau Project

TMN: 3-5-3-001, 3-5-3-002, 3-5-3-003

Archaeological Study of the Hanamakoluma Area: Shirahata Niiha Heau Project

TMN: 3-5-3-001, 3-5-3-002, 3-5-3-003
20 as "Site 5" (Figure 20). Hammond noted that much of the area had been heavily disturbed by prior activities, and that no definitive traces of Alakau literal (SHNP No. 101) could be found.

Coad et al.'s (1999) archaeological inventory survey of several discontinuous parcels within the airport area included portions of the coast at Hamama'ula (south of the stream, but documented no evidence of pathways or early historic sites, but did find extensive ruins of the early 20th century port of Alakau (see Figure 18).

As stated above, Bell et al. (2006) documented one historic property (SHHP 50-30-08-395K), a pigsty dating from the plantation era. This site is located approximately 150 meters (490 feet) east of the proposed alignment (see Figure 18).

Figure 20. Archaeological sites along the coast at Kalsqui, documented by Hammond (1988, 1990).

Section 6 Results of Fieldwork

Fieldwork was conducted on May 15 and 16, 2008, by CSHE archeologist Gerald Uda, B.A., and Poleman "Moo" Komai, and principal investigator Hollowell. Wrennert R.E. Specific methods and documentation details have been described in Section 2 (Methods).

The scope of work called for a field inspection of the project area to identify any surface archaeological features; to investigate and assess the potential for impact to such sites, and to identify any sensitive areas that may require further investigation or mitigation prior to proposed project.

6.1 Currently Undeveloped Portions of the Project Area

The field inspection showed that most of the proposed bike-path route segments follow paved or unpaved roads, or parking areas (as in Hikos through the Marriott Hotel property). Only in three places are there pre-existing developed roads or paths (Figure 21). These are the only places in which surface archaeological sites or features may be present. See Section 7.2 (below) for specific mitigation recommendations for the following areas:

1) Ka'ana Street is not a continuous throughway. On the east side, heading west from Kapule Highway, the street ends next to the new Police Station. On the west side, it ends east from Hardie Street and ends at the edge of a residential subdivision. The area is bordered by these two sides of Ka'ana Street is old, undeveloped cane lands (see Figure 21). This area is heavily vegetated, and may contain sugar cane-era sites or features (e.g., flume sections, ditches).

2) There is a similar situation with Ho'olei Street. It is even more confusing because of a new road in the area of the new police station and a private building. The original Ho'olei Street started near Rice Street, headed generally north, then took a sharp right turn along the north side of Vida Ina Stadium and ended at Kapule Highway. The current Ho'olei Street follows the same route from Rice Street, but continues a little past the stadium where it makes a sharp right turn to the east, then a sharp left turn to the north along the new Judiciary Building and Police Station, and ends at Ka'ana Street. The portion of the proposed bike-path route that extends to the north from Ho'olei until it hits Alakau Road is not currently a road or path. It crosses old, unimproved cane lands (see Figure 21). This area is heavily vegetated, and may contain sugar cane-era sites or features (e.g., flume sections, ditches). Current plans have eliminated this segment between Ho'olei and Alakau Road.

3) There is a small portion of the proposed bike-path route that leaves MacOS Point Road, just a little northwest of the lighthouse (see Figure 21). The route apparently conforms to future plans to extend the perimeter fence around the south end of a runway at Lihue Airport. The area is heavily vegetated, and may not have been included in previous archaeological work in this area (cf. Hammond 1988, 1990).
6.2 Previously Developed Portions of the Project Area

Field inspection results from the rest of the project area, arranged by existing roads and rights-of-way, are listed below. See Section 7.2 for specific mitigation recommendations.

6.2.1 Niulaulu Park to Nawiliwili Park

Portions of Niulaulu Park could be a concern with respect to subsurface archaeological deposits because it appears to consist of largely unmodified shoreline (Figure 22). There is also a one-lane bridge on the route in Niulaulu that crosses Pē'ē Stream (Figure 23). This bridge appears to be over 50 years old, and could be a concern (historical-architectural impacts) if it needs to be modified.

6.2.2 Nawiliwili Park to the Marriott Hotel

Historical background research suggests that Nawiliwili Park proper was constructed more or less entirely of artificial fill sediment. Thus, there are no specific concerns with respect to subsurface archaeological deposits. There is an old railroad bridge which crosses Nawiliwili Stream that is currently used as a pedestrian walkway and access to two restaurants on the grounds of the Marriott Hotel (Duke’s and Cali’s Portfolio) from a parking lot adjacent to the Anchor Cave mall (Figures 24 and 25). The bridge, which appears to be over 50 years old, has already been modified to make it a narrow pedestrian pathway. Further modification could be a concern with respect to historical-architectural impacts.

6.2.3 Lima Road

Lima Road, which is paved, crosses the Kaua‘i Lagoons golf course. Given prior subsurface disturbance from historic-era sugar cane operations and from the construction of the golf course, there are no historic-preservation concerns for this portion of the proposed bike-path route.

6.2.4 Road from Kapule Road to Ninini Point by way of Whaler’s Brew Pub

Most of Ninini Point Road (i.e., the inland section) is already paved. The makai third of this road approaching the lighthouse is roughly paved or dirt. With one exception (see next paragraph), there are no historic-preservation concerns for subsurface archaeological deposits within this portion of the proposed bike-path route, given prior subsurface disturbance from historic-era sugar cane operations and from the construction of the golf course and the airport.

The single exception is a small portion of the bike-path route that leaves the road alignment, crossing part of the golf course which was former cane land, and crossing a small gulch (Figures 26 and 27). The gulch is unimproved, overgrown with low hakea and pa‘a‘a, and likely never had sugar cane growing in it. The gulch may contain surface or subsurface archaeological sites.

6.2.5 Ninini Point to Ahukini Road

This portion of the proposed bike-path route is mostly a dirt road except near the north end of the airport runways (near Ahukini) where it is paved (Figures 28 and 29). CSH (Hammett 1988, 1990) conducted an archaeological survey of Ninini Point and the coastline to the north (to Ahukini Landing) for a proposed golf course that failed to materialize following Hurricane ‘Iniki in 1992. As described above, five sites were identified (see Figure 20).
Figure 26. Southeast end of Ninini Road near lighthouse, facing northeast

Figure 27. Southeast end of Ninini Road near lighthouse, facing northwest

Figure 28. Coastal dirt road near Ninini Lighthouse, facing southwest

Figure 29. Coastal dirt road near Anukini Landing, facing north
Two of these sites will not be affected: a cultural layer at the shoreline (SIHP No. 50-30-01-01-24), and an oval-shaped stone alignment at teraence (SIHP No. 423). Three sites identified by Hamlett (1998, 1999) may be affected: two historic-era stone wall remnants (SIHP Nos. 422 and 423), and a 400-foot long stone wall considered to be a possible extension of Ninini Heiau (SIHP No. 130). Portions of this coastal area may also contain recently undiscovered subsurface archaeological deposits (see Section 7.3 for recommendations). Bell et al. (2006) also documented a plantation-era piggery (SIHP No. 30-30-01-01-355) near the north end of this alignment; however, the site is located approximately 150 meters (490 feet) east of this alignment.

6.2.6 Ahukini Road

A plantation camp once existed mau'i o Ahukini Road, just east of the intersection with Ninini Point Road. SHIP (Creed et al. 1999) previously documented ruins of Ahukini Camp (part of Ahukini Landing, SIHP 50-120-02-000), including concrete slabs, concrete drainage systems remnants, historic trash, railroad tracks, loading dock and camp-related infrastructure; however, it appears none of these features will be affected by the proposed bike-path route (Figures 30 and 31). Given prior subsurface disturbances, there are no concerns for the rest of Ahukini Road.

6.2.7 Umi Street

There are no historic-preservation concerns for this portion of the proposed bike-path route, which passes through a previously disturbed residential subdivision on old sugar cane lands.

6.2.8 Hardy Street

There are no historic-preservation concerns for this portion of the proposed bike-path route, which passes through a previously disturbed commercial area on old sugar cane lands.

6.2.9 Ka'a'a Street

As stated above, the only portion of Ka'a'a Street of concern is the part where the road has not yet been constructed (Figure 72). This is old sugar cane land and may have some surface archaeological sites dating to the plantation era (e.g., ditches and other water control devices).

6.2.10 Mala'e Street and Pu'a ile Street

There are no historic-preservation concerns for this portion of the proposed bike-path route, which passes through a previously disturbed residential subdivision on old sugar cane lands.

6.2.11 Ho'oloko Street

As stated above, the only portion of Ho'oloko Street of concern is the part where the road has not yet been constructed (Figure 73). This is old sugar cane land and may have some surface archaeological sites dating to the plantation era (e.g., ditches and other water control devices).

6.2.12 Kupule Street

There are no historic-preservation concerns for this portion of the proposed bike-path route, which passes through a previously disturbed commercial area on old sugar cane lands.
Section 7 Summary and Recommendations

At the request of R.M. Towill Corporation, Cultural Surveys Hawai‘i, Inc. (CSH) prepared this Archaeological Literature Review and Field Inspection for the Nāwiliwili-Ahakini Bike Path Project, which is located in coastal and near-coastal portions of three ahupu‘a in Līlua’s District, Kaua‘i; Hanalei, Kaua‘i; Kalapaki and Nāwiliwili (see Figures 1 and 2).

The subject project is one phase of a larger project to connect Nāwiliwili with Anahola by a bike and pedestrian path, a distance of some 1.7 miles (2.7 km) of coastline along woodward Kaua‘i. The subject project (Phase VI of the overall project) links three main sub-areas at the southern end of the overall project corridor: Nāwiliwili, Ahakini Landing, and the Līlua Civic Center. Preliminary planning includes several main alignment options (see Figures 1 and 2), all of which were inspected for this study.

Approximately 5 miles (8.1 km) of bike- and pedestrian-path routes are included in the current alignment options for Phase VI. Design specifications and widths of the different alignment options vary. The Area of Potential Effect (APE) of the entire approximately 8 miles of alignment-option corridors are listed in Nāwiliwili, Ahakini Landing and Līlua’s Civic Center, defined as the center line of the corridor and their immediately adjacent alignment shoulders.

This study was designed to identify known archaeological sites, and to provide recommendations relevant to the State of Hawai‘i’s historic-preservation review process.

7.1 Results

The following are the main results of this study:

- A total of seven (7) historic properties have been previously identified in or immediately adjacent to the project area; all seven are located in the coastal portion of the project area (see Figures 18 and 20). At least three of these appear to be traditional pre-Contact Hawaiian sites: a cultural layer at the shoreline (SHP No. 50-30-11-424), an oval-shaped stone alignment or terrace (SHP No. 50-30-11-421), and a 400-foot long stone wall considered to be a possible extension of Nānānuk (SHP No. 50-30-11-100). The latter stone wall may be impacted by the proposed project; the other two sites (SHP Nos. 421 and 424) appear to be located well away from the proposed alignment along the shoreline. The other four sites date from historic (post-Contact) times: two stone wall remnants (SHP Nos. 50-30-11-422 and 423), the ruins of a plantation camp that once existed near the site of Ahakini Road, just east of the intersection with Nānānuk Point Road (part of Ahakini Landng, SHP No. 50-30-08-900), and a piggery (SHP No. 50-30-08-955). The plantation camp ruins and the piggery appear to be located well away from the proposed alignment near Ahakini Landing; the stone walls appear to be located within or very near the proposed alignment along the shoreline.

- Kūkūhui and Romarolo’s (1992) “Cemeteries of Kaua‘i” identify a historic cemetery designated B004 (see Figure 18) located near the Nāwiliwili Park portion of the...
proposed bike- and pedestrian-path alignment. Kikuchi and Remoaldo do not provide any additional specific information about this historic cemetery.

c. Two bridges are located within existing rights-of-way / proposed alignments (see Figure 21): an old railroad bridge previously modified as a pedestrian walkway spans the Naal readonly Stream, and an old concrete bridge in disrepair spans the Pu‘u ali‘i Stream in Niuloku. Both of these structures appear to be over 50 years old, and neither appears to have been formally assessed for historic significance.

d. There are several areas of dense vegetation that have not been developed with roads or trails; the two areas near the center of the project area may contain sugar cane-era sites on the ground surface. The other area, near Niuloku Point Lighthouse, may contain older stone ruins and / or plantation-era sites or features.

e. Several areas along the coast may contain as yet undiscovered subsurface archaeological deposits dating to pre-Contact times, especially in the area from Niuloku to the previous location of the long-destroyed Ahikihi Point (located at Ahikihi Point, about halfway up the coast from Niuloku to Ahikihi Landing). The old Hawaiian village of Kaliapali was once located in this area, and cultural deposits may be present. Likewise, the coast area near Niuloku Point may also contain as yet undiscovered subsurface archaeological deposits dating to pre-Contact times.

f. The remaining portions of the project area have been previously under commercial sugar cane cultivation and / or have been modified by modern development; it is therefore unlikely that additional historic properties (either on the surface or in subsurface deposits) are present throughout most of the project area.

7.2 Recommendations

Given the preliminary stage of the proposed project, it is unclear at this point how much deep excavation, grading, grubbing and other major ground disturbance will be necessary to install the bike and pedestrian pathways. In some places, it would seem that existing rights-of-way can be used with little additional ground disturbance. In other places, for example along the coast from Niuloku to Ahikihi Landing, the bike- and pedestrian-path alignment will be constructed makai of the existing public access dirt road in predominantly unmodified coastal lands.

CSH generally recommends the State Historic Preservation Division be afforded the opportunity to review any aspects of this project that involve significant ground disturbance. In addition to this general recommendation, CSH also offers the following specific recommendations based on the aforementioned results:

1. Archeological Inventory Survey (AIS) satisfying the Hawai‘i Administrative Rules (HAR) Chapter 13-275 is recommended for limited portions of the project area, including:

a. the three areas in which the proposed alignments traverse densely vegetated lands without roads, trails or pathways (see Figure 21); of these three areas, it is likely that subsurface testing (excavation) may only be necessary in the segment near Niuloku Point Lighthouse, the other two being located within previously disturbed sugar cane lands;

b. the coastal alignment corridor between Niuloku Point and Ahikihi Landing, especially the southern half of this coast, from Ahikihi Point to Niuloku Point. For drainage improvements or other improvements involving significant ground disturbing activities, subsurface testing (excavation) within the footprint of the proposed improvements is recommended, given the likelihood of encountering historically-significant cultural materials in this area.

2. An Archaeological Monitoring program satisfying HAR Chapter 13-279 should be developed and implemented consisting of a combination of on-site and off-call monitoring. Specifications of the monitoring program (e.g., precisely where on-site monitoring is required) will depend upon the results of the AIS. Monitoring should probably also include the alignment in the vicinity of Niuloku Park. It seems unlikely that monitoring would be necessary in any of the mausoleum (island) areas away from the coast, since these have all been severely modified by prior historic and modern disturbances.

3. The two bridges located within existing rights-of-way / proposed alignments (see Figure 21), including an old railroad bridge previously modified as a pedestrian walkway spanning Naalreadonly Stream, and an old concrete bridge in disrepair spanning the Pu‘u ali‘i Stream in Niuloku, should be documented and formally assessed for historic significance by a qualified Architectural Historian.

4. The historic cemetery designated B004 by Kikuchi and Remoaldo (1992) located near the Naalreadonly Park portion of the proposed bike- and pedestrian-path alignment (see Figure 18) appears to be situated makai of the bikepath alignment. However, isolated finds of human remains and other cultural materials are possible anywhere in this area, given the clear evidence of considerable pre-contact and post-contact habitation. Archaeological Monitoring should be undertaken for any ground disturbance in the park area, given the common occurrence in Kau‘ai and the State of Hawai‘i of “extra” unmarked burial adjacent to historic-coincidences.

5. No further historic-preservation work is recommended for the majority of the project area (i.e., all those lands not specifically mentioned above, and not indicated in Figure 21).
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