

Findings on Resubmitted Petition: Annual Description of Progress on Listing Actions. Federal Register, 70 No. 90 (Wednesday, May 11, 2005), 24876-24934.

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Wagner, W.L., and D.R. Herbst. 1999. *Supplement to the Manual of the Flowering Plants of Hawaii*, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer, *Manual of the flowering plants of Hawaii*. Revised edition. 2 vols. University of Hawaii Press and Bishop Museum Press, Honolulu.

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## Appendix B

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### Archaeological Literature Review and Field Inspection for Kauai Community College Rezone Campus Project Cultural Surveys Hawaii, Inc. December 2010



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE HISTORIC PRESERVATION DIVISION  
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June 4, 2012

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Kaliua, Hawaii 96734

LOG NO. 2011.1458  
DOC NO. 0512TS09  
Archaeology

Dear Dr. Hammatt:

**Subject:** Archaeological Literature Review and Field Inspection for Kaua'i Community College Rezone Campus Project, Niimalu Ahupua'a Lihue District, Island of Kaua'i  
TMK: (4) 3-4-007: 001, 002, 003 and 006

Thank you for your submission of the report titled *Archaeological Literature Review and Field Inspection for Kaua'i Community College Rezone Campus Project* (Groza and Hammatt December, 2010). The report was received by our office on May 17, 2011.

The proposed project includes the reclassification of several parcels totaling 198.8 acres from current Agricultural District to Urban District. The KCC Long Range Development Plan for the area includes new construction, additions to existing buildings and new parking lots. These future actions will require further review and consultation with our office.

Ten historic sites/features are identified in the report, two of which were previously described (Palama 1973). The features are associated with Grove Farm and the plantation era Pahi Camp. The previously identified sites include is an *awahi*, or irrigation ditch (CSH9), and the Pahi Camp Cemetery (SHP Site 50-30-11-B006(CSH10). New sites (CSH through 8) include a network of four additional irrigation ditches, and three reservoirs. Preliminary significance evaluations deem all these sites as potentially significant under HRRHP Criterion "d".

We concur with your recommendations for the completion of a full archaeological inventory survey (AIS) of the project area, including additional documentation and sub-surface testing. We also concur with the proposed avoidance and implementation of protection measures for the cemetery. Given its location, surrounded by proposed developments, we recommend that a formal preservation plan be prepared in consultation with former Pahi Camp residents to ensure appropriate preservation of the cemetery. We support your suggestion that KCC students be involved in that process. If you have any questions, please contact me at (808) 933-7653 or Theresa.K.Donham@hawaii.gov.

Aloha,

Theresa K. Donham  
Archaeology Branch Chief

**Management Summary**

<b>Reference</b>	Archaeological Literature Review and Field Inspection for Kaua'i Community College Rezone Campus Project, Niimalu Ahupua'a, Lihue District, Kaua'i Island, TMK: (4) 3-4-007: 001, 002, 003 & 006
<b>Date</b>	December 2010
<b>Project Number (s)</b>	Cultural Surveys Hawai'i (CSH) Job Code: NIUMALU 1
<b>Investigation Permit Number</b>	The field inspection was conducted under archaeological permit number 10-10 issued by the Hawai'i State Historic Preservation Division (SHPD), Department of Land and Natural Resources (DLNR), per Hawai'i Administrative Rules (HAR) Chapter 13-282.
<b>Project Location</b>	The project area consists of the 198.8-acre Kaua'i Community College campus lands as shown on the U.S. Geological Survey 7.5-Minute Series Topographic Map, Lihue (1996) Quadrangle
<b>Land Jurisdiction</b>	State of Hawai'i
<b>Agencies</b>	State of Hawai'i Department of Land and Natural Resources/State Historic Preservation Division (DLNR/SHPD)
<b>Project Description</b>	The project consists of re-designating the approximately 199-acre KCC (Kaua'i Community College) from its current classification as Agricultural District to Urban District. A Special Permit was granted by the State Land Use Commission in 1973 for construction of the college campus within an approximately 99-acre parcel situated within TMK 3-4-07.03. Most of the additional approximately 100 acres (within TMK 3-4-07-01, 02, and 06) is undeveloped, except for two Hawaiian Language Immersion schools, Pūnana Leo o Kaua'i Pre-School and Kawaikini New Century Public Charter School. Pūnana Leo o Kaua'i Pre-School occupies school facilities that were built before the KCC campus. Kawaikini New Century Public Charter School occupies existing buildings and was granted a Special Permit, Use Permit and Class IV Zoning Permit in 2009 to construct additional buildings. The proposed project consists of the construction of new buildings, additions to buildings, and new parking.
<b>Project Acreage</b>	198.8 acres
<b>Fieldwork Effort</b>	The fieldwork component of the archaeological literature review and field inspection study was accomplished between August 18 and August 25, 2010, by CSH archaeologists Gerald K. Iida, B.A. and Nancine "Missy" Kamai, B.A., under the general supervision of Hallett H. Hammatt, Ph.D. (principle investigator). The fieldwork required eight person-days to complete (on a couple of days only one archaeologist carried out documentation).

**Archaeological Literature Review and Field Inspection for Kaua'i Community College Rezone Campus Project, Niimalu Ahupua'a, Lihue District, Kaua'i Island**  
TMK: [4] 3-4-007: 001, 002, 003 & 006

Prepared for  
Wilson Okamoto Corporation

Prepared by  
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and  
Hallett H. Hammatt, Ph.D.  
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(Job Code: NIUMALU 1)

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<b>Document Purpose</b>	This archaeological literature review and field inspection study was completed for use as a planning document. The proposed project is subject to Hawai'i State environmental and historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 343 and HRS 6E-8/Hawai'i Administrative Rules (HAR) Chapter 13-275, respectively]. While this investigation does not fulfill the requirements of an archaeological inventory survey investigation (per HAR Chapter 13-276), it serves as a document to facilitate the proposed project's planning and supports historic preservation review compliance by assessing if there are any archaeological concerns within the study area and to develop data on the general nature, density and distribution of archaeological resources.
<b>Results Summary</b>	A total of ten historic surface features, including two previously identified historic features (CSH 9, CSH 10), were found during the field inspection. CSH 9, an "old 'auwai" that conforms to a portion of Grove Farm's "Mauka Ditch was previously found during an archaeological reconnaissance (Palama 1973) of the western portion of the project area. Palama (1973) also recorded the location of a cemetery that was identified during the current field inspection as CSH 10. The Puhī Camp Cemetery, SHIP # 50-30-11-B006 / CSH 10, is outside of but surrounded by the project area.  The nine features found within the project area appear to be related to Grove Farm and date to the plantation era. The historic surface features consist of five irrigation ditches (CSH 1, CSH 2, CSH 4, CSH 6, CSH 9), one of which (CSH 1) is abandoned; three reservoirs (CSH 3, CSH 5, CSH 7), one of which (CSH 3) is abandoned; and an abandoned wooden flume (CSH 8).  Palama's (1973) archaeological reconnaissance also identified old plantation camp remains associated with Puhī Camp, Puhī Camp, and an area containing possible <i>lo'i</i> . These features were not present during the current field inspection.

<b>Recommendations</b> (see page iv for continuation)	Based on the findings during the field inspection, CSH recommends an archaeological inventory survey (AIS). The AIS should be undertaken after consultation with SHPD/DLNR. Additional documentation and research are recommended to formally evaluate the Hawai'i Register eligibility of the plantation features identified within the project area. This documentation should include additional research and documentation of surface features, limited subsurface testing, and potentially consultation with former Puhī Camp residents.  <b>Research</b> Additional research and documentation to include a study of documents and maps held by Grove Farm Museum, Lihū'e is recommended. While a review of Grove Farm documents and maps is generally recommended for all of the project area features, particular attention is recommended for two features, CSH 5, a reservoir that appears on the 1910 U.S. Geological Survey map, and CSH 6, an irrigation complex. If Grove Farm Museum lacks extensive resources, additional research is recommended at the Kauai Historical Society, Lihū'e.  <b>Documentation of Surface Features</b> Additional documentation of the surface features to include mapping of the nine surface features and their sub-features is recommended.  <b>Subsurface Testing</b> A program of archaeological inventory survey subsurface testing is recommended that is based on project plans and scaled to address the specific locations of planned excavations within the former location of Puhī Camp. The Puhī Camp vicinity may contain subsurface deposits related to the occupation of the plantation camp from the 1920s to 1980s. The majority of the remainder of the project area was formerly under sugar cultivation and contains plantation infrastructure. Land clearing for agricultural cultivation and agricultural activities themselves likely impacted or destroyed subsurface deposits that may have existed within the project area.
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<b>Recommendations</b> continued from page iii	<b>Consultation</b> Consultation with former Puhī Camp residents is recommended. Many of the former residents continue to reside in the vicinity (Chang 2007) and have knowledge of the project area. In consultation with SHPD/DLNR, CSH recommends contacting the Hawaiian Studies program at Kauai Community College with a request for students to conduct the cultural consultations, thus providing an opportunity for students to consult with and record oral histories and <i>mana'o</i> (thoughts) of the former residents. Additionally, this study process will connect the students with the history of Kauai Community College and Puhī Camp.  <b>Puhī Camp Cemetery / SHIP # 50-30-11-B006</b> No further work is recommended for SHIP # 50-30-11-B006 / CSH 10 as the historic property is outside of the current project area. Avoidance of the cemetery is however recommended during future development of the KCC campus. Particular caution is recommended if the road that extends adjacent to the Puhī Camp Cemetery is used during planned development. Preservation, in the form of avoidance and protection, is recommended.
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**Section 1 Introduction**

**1.1 Project Background**

At the request of Wilson Okamoto Corporation, Cultural Surveys Hawai'i, Inc. (CSH) completed an archaeological literature review and field inspection study for the Kaua'i Community College Rezone Campus Project, Niumalu Ahupua'a, Lihue District, Kaua'i Island, TMK: [4] 3-4-007: 001, 002, 003 & 006. The project area is shown on a U. S. Geological Survey topographic map (Figure 1), a U.S. Geological Survey aerial photograph (Figure 2), and on a Hawai'i Tax Map Key (Figure 3).

The project consists of re-designating the approximately 199-acre KCC (Kaua'i Community College) from its current classification as Agricultural District to Urban District. A Special Permit was granted by the State Land Use Commission in 1973 for construction of the current approximately 99-acre college campus situated within TMK 3-4-07:03. Most of the additional approximately 100 acres (within TMK 3-4-07:01, 02, and 06) is undeveloped, except for two Hawaiian Language Immersion schools, Pūnana Leo o Kaua'i Pre-School and Kawai'kini New Century Public Charter School. Pūnana Leo o Kaua'i Pre-School occupies school facilities that were built before the KCC campus. Kawai'kini New Century Public Charter School occupies existing buildings and was granted a Special Permit, Use Permit and Class IV Zoning Permit in 2009 to construct additional buildings.

The proposed project consists of the construction of new buildings, additions to buildings, and new parking as shown on Figure 4, the Long Range Development Plan.

This archaeological literature review and field inspection study was completed for use as a planning document. The proposed project is subject to Hawai'i State environmental and historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 343 and HRS 6E-8/Hawai'i Administrative Rules (HAR) Chapter 13-275, respectively]. While this investigation does not fulfill the requirements of an archaeological inventory survey investigation (per HAR Chapter 13-276), it serves as a document to facilitate the proposed project's planning and supports historic preservation review compliance by assessing if there are any archaeological concerns within the study area and to develop data on the general nature, density and distribution of archaeological resources.

**1.2 Scope of Work**

The scope of work for this archaeological literature review and field inspection study 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 near this 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

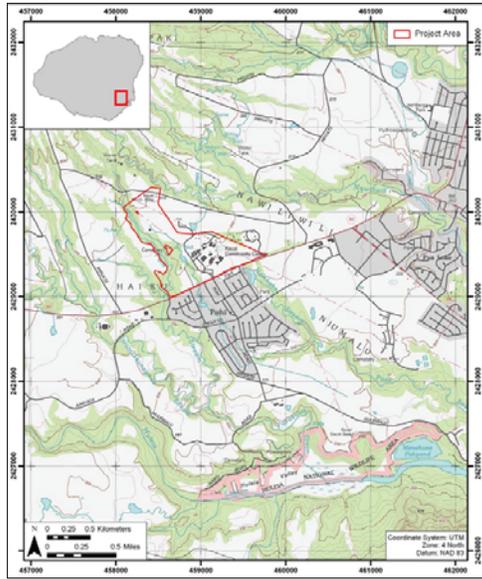


Figure 1. Portion of 1996 U.S. Geological Survey 7.5-Minute Series Topographic Map, Lihū'e quadrangle, showing the project area

Literature Review and Field Inspection for Kaua'i Community College, Niumala Ahupua'a, Kaua'i  
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Figure 2. Aerial photograph (source: U.S. Geological Survey Orthomage 2005), showing the location of the project area

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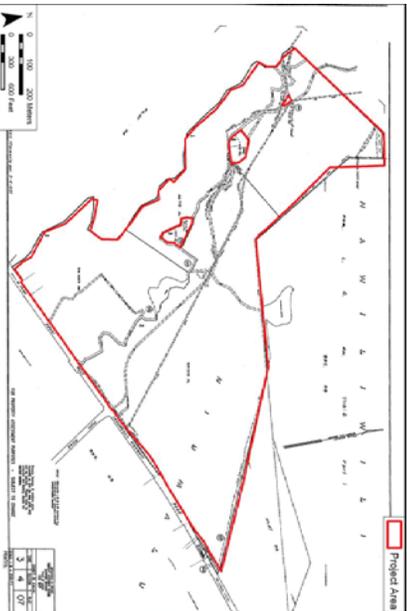


Figure 3. Tax Map Key, Plat map 3-4-007, showing the project area

Literature Review and Field Inspection for Kaua'i Community College, Niumala Ahupua'a, Kaua'i  
TMK: [4] 3-4-007: 001, 002, 003 & 006

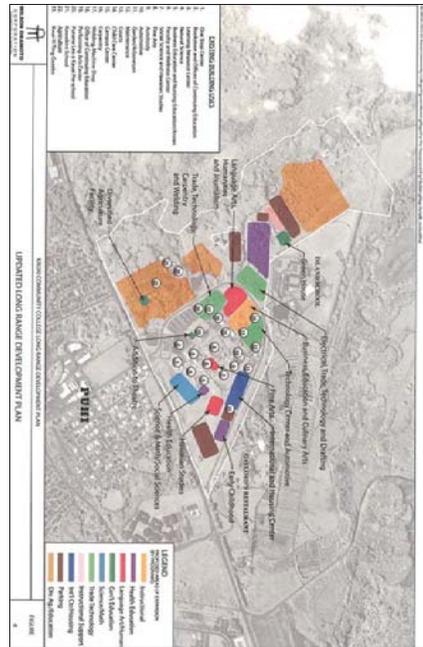


Figure 4. KCC Long Range Development Plan (provided by Wilson Okamoto)

Literature Review and Field Inspection for Kaua'i Community College, Niumala Ahupua'a, Kaua'i  
TMK: [4] 3-4-007: 001, 002, 003 & 006

Identify any sensitive areas that may require further investigation or mitigation before project proceeds.

d4 Preparation of a report to include the results of the historical research and the limited fieldwork that is an assessment of archaeological potential. Based on that research, the recommendations for further archaeological work, if appropriate, will also provide 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 is located approximately 4 kilometers (2.5 miles) east of Lili'uokalani Park of 0.000001 Hectare in Ni'malu A'upua, District of Honolulu, the southeast corner of the island of Oahu. The parcel is fairly far inland (about 2.4 kilometers) from the southeast coast. The project area is exposed to the prevailing northeast trade winds. The project area receives up to 52 centimeters of rainfall annually. The project area lies on moderately sloping lands that range from approximately 66 to 266 feet above mean annual sea level. The stream is in the eastern portion of the project area and a tributary of the stream runs through the central portion of the project area. The stream is just east of the project area.

The soils in the area predominantly consist of silty clay loams. One exception is the eastern portion of the project area in the vicinity of the stream. This area is predominantly composed of broken lava rocks. The silty clay loam consists of well-sorted soils on uplands. These soils develop in material derived from igneous rock. Slope ranges primarily from 4 to 8 percent and run-off of the silty clay loam is slow. Creating an only slight erosion. The broken lava rocks consist of very steep slopes. Frequent intermittent drainage channels. Slope is 26-76 percent. Runoff and geologic erosion are frequent. Silty clay loam is used for sugar cane pasture. The soil is very fertile and is used for agriculture. The soil is very fertile and is used for agriculture.

#### 1.3.2 Built Environment

Development in the project area consists of several administrative buildings for the Community College of Honolulu. The area also contains a parking lot and a road. The project area is located in the southeast corner of the island of Oahu.

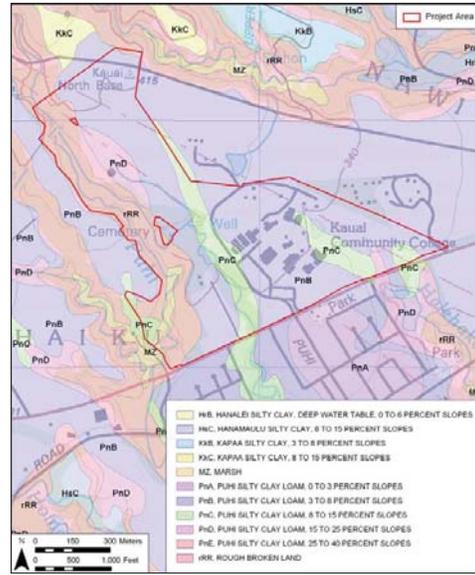


Figure 54. Location of 897 U.S. Geological Survey 7.5-Minute Series Topographic Map overlaid on the Soil Survey of the State of Hawaii. The map indicates soil types in the project area.

## Section 2 Methods

### 2.1 Document Review

Historic and archival research includes information obtained from the University of Hawaii at Manoa's Hamilton Library and the State Historic Preservation Division Library and the Hawaii State Archives. The State Land Survey Division and the Bishop Museum Archives are also reviewed. The project area is located in the southeast corner of the island of Oahu.

The research project is an environmental and archaeological investigation. The project area is located in the southeast corner of the island of Oahu.

### 2.2 Field Methods

The fieldwork component of the archaeological literature review and field inspection includes a field inspection of the project area. The project area is located in the southeast corner of the island of Oahu.

In general, the purpose of the field inspection is to develop a plan for the fieldwork. The project area is located in the southeast corner of the island of Oahu.

## Section 3 Background Research

### 3.1 Traditional and Historical Background

Ni'malu A'upua is located in the ancient *moku* or district of Uluani and is part of the traditional sense of the Menehune's *pona*.

The earliest mention of the Ni'malu area is in a legend dating to 1854. The legend tells of a man named Menehune who was killed by a woman named Waiea. The legend is a traditional Hawaiian story.

#### 3.1.1 Mythological and Traditional Accounts

Wic'ian (1898:57) relates that Ni'malu translates as "s'avev coconut trees". The name is derived from the following legend:

0 emamo 'av t'e alility to s'oot a rock from 'is sling five miles. Kanv never miss a s'oot. He is said to 'ave resivev on t'e 0 ona Uua Districts Jounvary 4 During 0 apino 'u's travels t'roug' t'e islanv 'e l as 1 arnev alout 0 emamo anv 'is c'allenges to travelers. Upon t'e air meeting K 0 apino 'u agreev to a contest 1 it' 0 emamo Kae'c' Jetting 'is most prizev possession 40 apino 'u Jet 'is spear anv 0 emamo 'is sling 40 alalea peak 1 as t'e target anv visilev from t'e air location 4 0 emamo slung a rock t' at faillev to reac' 0 alalea anv fell near Ana'ola 4 0 apino 'u's spear s'avev t'e coconut trees. K'ic' lev to t'e naming of Ni'malu. K'ic' vipped into t'e Wailua River. K'ence t'e name Waiea 'uKanv finally pierces t'e mountain at 0 alalea leaving a large 'ole t' at 1 as visilev until hust a fel years ago. W'ic' man (1898:57)

Lili'uokalani traditional song speaks of Ni'malu:

<i>Aloha 'ia no au Lihue</i>	Belowe is Lili'uokalani
<i>I ka ne'e mai a ka ua Paupili</i>	W'en t'e Uaupili rain comes 4
<i>Ua pili no au me ku'u aloha</i>	I cling to my Jelovev
<i>Me ke kau nehe mai au Ni'malu.</i>	Unver t'e soft rustling [leaves] of Ni'malu

[Clark 1896: 14]

-Alekoko's *pona* in Ni'malu is named after C'ief -Alekoko and is called Menehune. The *pona* today as its 1 all is Jelievev to 'ave Jeen Jult in one nig' t' Jy *menehune*. C'ief -Alekoko anv 'is sister C'iefess 0 a-l:l:-le'ua requestev t'e construction of t'e *pona* across t'e Hulē-ia River. T'e *menehune* agreev to construct t'e 8, 5 meter virt stone-facev vamKut only if C'ief -Alekoko anv 'is sister promisev to stay in t'eir 'ome anv not 1 ate' t'e *menehune* at 1 on 4 t'e 1 l o agreev. T'e *menehune* fornev 1 l o lines stretc'ing from t'e Wa'iala Uluani to t'e Hulē-ia River anv passv stone blocks t'roug' t'e nig' t'd. Before morning C'ief -Alekoko coulv no longer hust listen to t'e *menehune* at 1 on 4 anv t'e s'ifting of t'e stone. He have a small 'ole in t'e 'ouse's grass t'ate' anv peekev t'roug' t'e *menehune* troppv t'eir stones. K' 1 as'ev t'eir 'anvKanv left t'e *pona* incomplete as a reminder t'at promisev are not to be

broken. The menehune's hands bled from passing the rough stone that they did not have time to polish, leading to the fishpond's and the chief's name, 'Ale-koko, "rippling blood" (Wichman 1998:57-58). The pond was later completed by Chinese (Rice 1923:37)

Handy (1940:67) relates that

Niumalu is a tiny ahupua'a, a mere wedge between Nawiliwili and Haiku, but it was, and is, one of the most important fishing localities on Kauai, and contained a fairly large area of terraces along the lower mile of Puuli Stream. There were a few terraces at the lower end of Halehaka Stream where it joins the Puuli about 1.5 miles inland.

Handy and Handy (1972:427) additionally note:

....southward of the Huleia River and harbor [Niumalu] ... had fairly large *lo'i* areas at the seaward ends of its two streams, Puuli and Halehaka. Niumalu was noted in the past, as it is today, for being one of the most important fishing localities on Kauai.

The terraces and fishing area are south of the project area. Based on the concentration of *lo'i* within the vicinity of the coast and the importance of fishing, the coastal area contained a majority of the population of the ahupua'a of Niumalu.

### 3.1.2 Early Historic Period

Western homesteading and commerce were established on the lands above Nāwiliwili Bay that would evolve into Lihue's Town within a few years after the establishment of the missionary and business activities at Kōloa (approximately 11 km southwest of the current project area) in the mid 1830s. Accounts of 19th century travelers on the trail between Kōloa and Lihue present the first record of the lands surrounding Lihue and therefore also Niumalu. William DeWitt Alexander, son of the former Waioli missionary William P. Alexander, described a return visit to Kaua'i in 1849, six years after his family had left the island. Traveling on horseback from Kōloa to Wailua, Alexander noted in his diary:

We then rode through a gap in the hills, leading out from Kōloa. The scenery was very fine, and worthy of Kaua'i. Mauna Kāhili was close on the left, & on the right a beautiful range of hills extending towards the northeast, and terminating in an abrupt peak which goes by the name of "Hoary Head" [Hā'upu]. We rode on over a beautiful undulating table land, dotted with groves of luhala and kukui. After riding about five miles, we crossed a stream fifty called Stony Brook. We afterwards crossed many other streams on our way. Five miles further we passed Dr. Lafon's former residence. Here we began to descend towards the sea. (Alexander 1991:122)

Apparently, Alexander observed no conspicuous Hawaiian settlements between the Gap and Dr. Lafon's residence in the Lihue area. It may be, however, that substantial settlement down in the Huleia Stream valley was largely obscured from his view.

### 3.1.3 The Māhele

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 between the king of Hawaii, the *ali'i* (chiefs), and the common people, which introduced the concept of private property into the Hawaiian society. In 1848, Kamehameha III divided the land into four categories: certain lands to be reserved for himself and the royal house were known as Crown Lands; lands set aside to generate revenue for the government were known as Government Lands; lands claimed by *ali'i* and their *konohiki* (supervisors) were called Konohiki Lands; and habitation and agricultural plots claimed by the common people were called *kuleana* (Chinen 1958:8-15).

Victoria Kamāmalu was awarded LCA 7713, which included the ahupua'a of Niumalu. She was the daughter of Kīna'u, and thus the granddaughter of Kamehameha I, and her brothers were Kamehameha IV and Kamehameha V. Following her death in 1866, her father, Mataio Kekūānoa inherited her lands. Stauder (1973:26) relates that following Victoria Kamāmalu's father's death, Niumalu Ahupua'a was inherited by Kamehameha V, and then by "her stepister Ruth, who sold Niumalu to Paul P. Kanoa in 1883 (Bishop Trust 1930:4)." Paul P. Kanoa resided in Niumalu, and was Governor of Kaua'i. He also served as *konohiki* of Kamāmalu's lands (Stauder 1973:31-34). No *kuleana* LCAs were awarded within the project area or its vicinity.

Catherine Stauder (in Ching et al. 1973) summarized the following information from Land Commission documents. Niumalu had at least 24 Land Commission Awards with at least 80 separate *lo'i*. Dozens of separate *'ili* (a smaller land division) are named and claimants describe *loko* or *Kiowai*, translated by Stauder as "pond" (cf. LCA 3634 at Ha'ikū). Kukui and Elbert define *ki'o wai* as a "water hole." Niumalu had seven other ponds in the vicinity of the well-known Alekoko (Menehune) Loko. Survey notes (Ching et al. 1973:105) for Niumalu Ahupua'a state "[t]he fishing privilege [sic] of Huleia River belongs to the Ahupua'a of Niumalu from its mouth to the Road crossing it to Kipū Kai." The data also shows that *lo'i* and *kula* lands are described as being in the same *āpana*, a pattern that appears common to Puna Moku, Kaua'i, but is not common elsewhere in Hawai'i. Perhaps *maka ānana* were creating "kula" (drier) lands by piling up soil adjacent to wet lands. Throughout most of the Hawaiian Islands, *kula* lands refer specifically to dry sloping lands between the mountains and the sea. At Puna Moku, in contrast, *maka ānana* were referring to lands in valley bottoms as *kula*. Some claimants also describe their lands as being trampled by cattle.

### 3.1.4 Mid- to late-1800s

Lihue Plantation, situated adjacent to the project area, began as a partnership between Henry Augustus Pierce, Judge William Little Lee and Charles R. Bishop in 1849. The company obtained up to 3,000 acres of land and by 1851 a water-driven sugar mill was constructed (on the site of the Lihue sugar mill). Hawaiians made up the labor force, and many built their homes on the land surrounding the mill. Planting began in 1850 and the first crop was ground in 1853 (Joesting 1984:173). From 1854 to 1862, under the management of William Harrison Rice a former American Board of Commissioners for Foreign Missions (ABCFM) teacher, the

plantation invested heavily in irrigation ditch infrastructure known initially as "Rice's Folly" (Krauss and Alexander 1984:67).

George Norton Wilcox, son of the ABCFM teacher Abner Wilcox, was raised on Kaua'i and observed Rice's successful utilization of irrigation. Wilcox attended Yale and studied engineering and surveying, earning a certificate in 1862. Upon returning to Kaua'i in 1863 he soon began work as a surveyor for Judge Herman Widemann, owner of the Grove Farm Plantation.

Warren Goodale established Grove Farm (named after an old stand of *kukui* trees) in 1850. Goodale sold the property the same year to James F. B. Marshall for \$3,000. In 1856 the plantation was sold, to Judge Widemann for \$8,000. At the end of 1863 Judge Widemann asked George Wilcox to undertake the supervision of the cutting of a water lead or irrigation ditch for the Grove Farm plantation using Hawaiian labor. The following year, Wilcox leased Grove Farm Plantation from Widemann and rapidly expanded development of the irrigation infrastructure.

Western commerce between Kōloa and Lihue took off during the second half of the 19th century. A visitor to Kaua'i in 1865, William T. Brigham, described the route between Lihue and Kōloa:

From Lihue the road led over the plain with the mountains on the left. A ditch crossed and recrossed the road as it wound along the hills from the mountains to the canefields below. Owls (*pueo*) were very abundant. The Pass over the mountains was very good and not at all steep, and all the way which was some twelve miles, the road was very good, in fact a carriage road. Two hours riding brought me to Dr. Smith's [in Kōloa] at eight. (Lydgate 1991:143)

The "ditch" Brigham, described probably included "1st Ditch" excavated in 1864 and "2nd Ditch" which was completed in 1865. Prior to the completion of 1<sup>st</sup> Ditch, Wilcox

drove an ox cart to the beach and around the bay to a Hawaiian settlement called Niumalu where the natives grew sugar cane, as a supplementary food crop, on the earthen dams that separated their taro patches, George carefully chose stands of healthy cane, making sure that they were original plantings and not rations (Krauss and Alexander 1984:133).

In 1870 Wilcox bought Grove Farm from Widemann for \$12,000, three-quarters of which was borrowed. Four years later he had 200 acres under cultivation. The cane was milled at the Lihue Mill and exported from Nāwiliwili. In 1874, Wilcox renewed a lease, for 25 years, for a 10,000-acre tract of Ha'ikū Ahupua'a from Princess Ruth Ke'elikōlani (Krauss and Alexander 1984:179). On April 1, 1881 George Wilcox bought 10,500 acres of Ha'ikū Ahupua'a from Princess Ruth increasing the acreage of Grove Farm nearly ten-fold (Krauss and Alexander 1984:206). The sale was part of a package deal whereby Willie Rice also received Kipū Kai for a total price of \$27,500 - money that Princess Ruth used to build her palace that rivaled Kalākau's palace, also completed the following year.

An 1878 Government Survey map (Figure 6) also shows little development within the project area vicinity and sugar plantations have not expanded to their later extent; Grove Farm fields are to the southeast, and Lihue Plantation is to the east. Kaunua'i Highway appears to be an unimproved or dirt road.

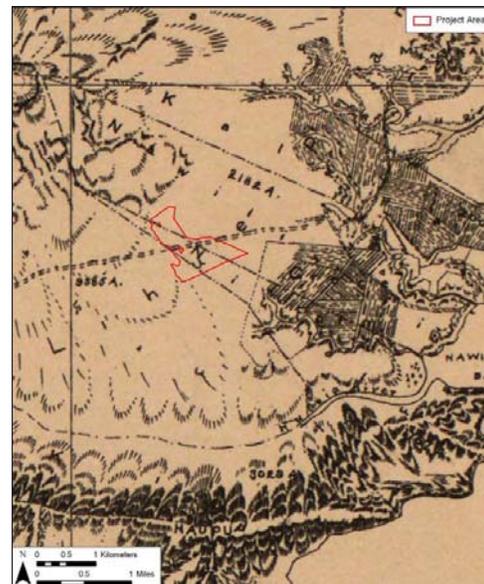


Figure 6. Portion of 1878 Government Survey map by W.D. Alexander, showing location of project area

3.1.5 1900s

At the beginning of the 20<sup>th</sup> century, Grove Farm developed agreements to secure sufficient water and also to sell any surplus. A right of way with Koloa Plantation was secured in 1906 that provided water from Kaia Stream. Grove Farm's "Upper Ditch" was constructed between 1914 and 1917 and by the 1920s "Grove Farm had 16 miles of ditches delivering 26 mgd" (Wilcox 1998:74).

In the 1920s, Grove Farm began a building program at Puhī, along the route of the present Kaunua'i Highway and just south of the project area. The continuing lack of development in the area prior to this is evident on the 1910 U.S. Geological Survey map (Figure 7).

About 1920 George Wilcox began construction of a completely modern camp at Puhī in the heart of the expanding plantation. Instead of building houses haphazardly as new families moved in, a complete village was laid out with streets, a playground, room for gardens, and lawns. The houses had proper kitchens equipped with running water and enough bedrooms for each family depending upon the number of children. (Krauss and Alexander 1984:310)

Puhī Camp also extended into the current project area, adjacent to Kaunua'i Highway. The plantation camp consisted of some 600 homes occupied by up to 1,200 workers and their families. Puhī Camp also contained a movie hall, three stores, a Chinese laundry, a slaughterhouse, and an area for social events (Chang 2007).

During the 1930s, Federal funds became available to assist the Territory of Hawai'i's highway construction program. Between 1933 and 1937 the "construction or reconstruction" of the Belt Road, the present Kaunua'i Highway was completed incrementally. Ho'omana Overpass (Ho'omana Road Bridge) was constructed in 1928, Waihoonua Bridge was built in 1934, the Lihue Mill Bridge was constructed in 1936, and the Weoweopaiua Bridge was built in 1937.

At the same time that the Belt Road construction program was underway, during the mid-1930s, Grove Farm was further expanding into Puhī with its new headquarters and the construction of a new office building, shop and stables. Figure 8 shows the 1941 location of Grove Farm in relation to Lihue Plantation Co. At that time, Grove Farm was still dependent on Lihue Plantation's mill for processing its sugar.

The Grove Farm (2010) website relates that during World War II, "large acreages ... previously used for sugar [were dedicated] to grow food for the local population and the military."

In 1948 Grove Farm purchased Koloa Plantation. This doubled the size of Grove Farm, gave Grove Farm its own sugar mill for the first time, and eliminated duplication in manpower, equipment and administrative costs. In 1948/49 a cane haul truck tunnel (the Wilcox Tunnel) was excavated under the Hoary Head Range connecting the sugar cane fields of Ha'ikū to the Kōloa Mill (Krauss and Alexander 1984:366-368). Figure 9 shows Grove Farm, identifying the plantation's original areas and subsequent acquisitions. The graphic also shows "Mauka Ditch" extending north to south through the center of the project area.

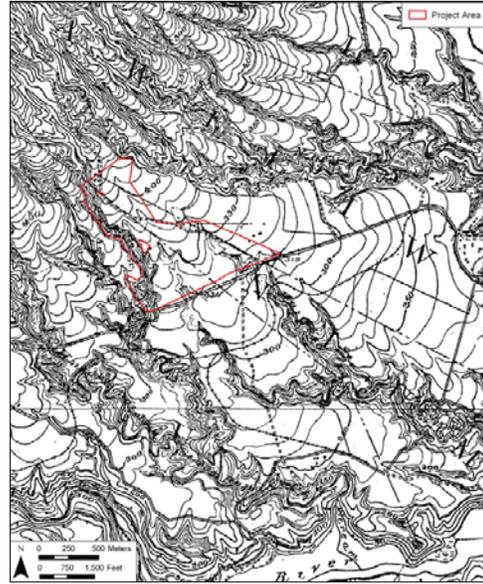


Figure 7. Portion of 1910 U.S. Geological Survey Map, Lihue quadrangle, showing the project area



Figure 8. Portion of 1941 Lihue Plantation Co. map showing the location of the project area adjacent to the plantation and within Grove Farm



Figure 9. Grove Farm showing the approximate location of the project area within the plantation (adapted from Krauss and Alexander 1984)

In 1954 an airstrip was developed at Ha'ikū for aerial spraying of fertilizer and herbicides. In the early 1960s the nearly one mile long Kuia-Waita Tunnel was completed bringing Ha'ikū water to the drier Kōloa side. Development within the project area and its vicinity can be seen on the 1963 U.S. Geological Survey map (Figure 10). The symbols for buildings adjacent to Kaunua'i Highway on Figure 10 are the homes within Puhī Camp.

Wilcox (1998:76) reports that despite almost 100 years of irrigation ditch construction, "Grove Farm's ditch system was a modest one not known for any outstanding technical or physical achievements. This may reflect the limited watershed available to Grove Farm, the small size of the plantation's acreage, or G.N.'s [Wilcox] personal sense of scale."

**3.1.6 Modern Land Use**

A 1965 aerial photograph (from Foote et al. 1972) (Figure 11) shows the extent of sugar cane cultivation within the project area and vicinity prior to the construction of KCC. In the mid-1960s Sam Wilcox of Grove Farm donated 200 acres of former sugar land to the state for KCC (Kamins and Potter 1998:275). Grove Farm ended its sugar business in 1974, setting aside lands for development and also for the continuation of sugar cultivation by leasing its Lihue lands to Lihue Plantation, and its Kōloa lands to McBryde Sugar (Wilcox 1998:76). A 1977-1978 aerial (Figure 12) shows the new college campus and development within its vicinity although the northern- and western-most portions of the approximately 200-acre campus still appear to be undeveloped.

Most of the Puhī Camp housing was removed in the 1970s prior to the construction of KCC. In the 1980s, the last homes in Puhī Camp were dismantled (Chang 2007).

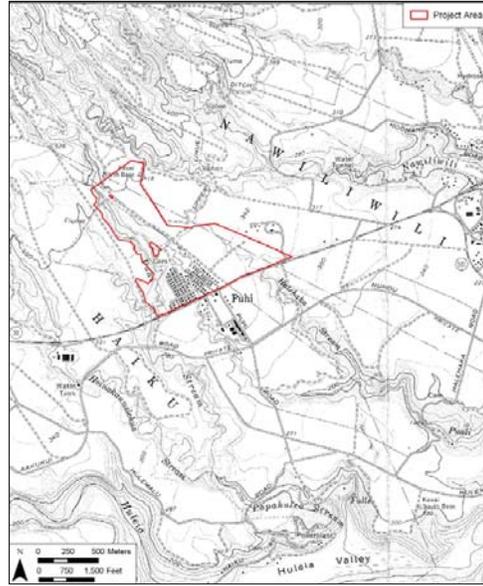


Figure 10. Portion of 1963 U.S. Geological Survey 7.5-Minute Series Topographic Map, Lihue quadrangle, showing the project area

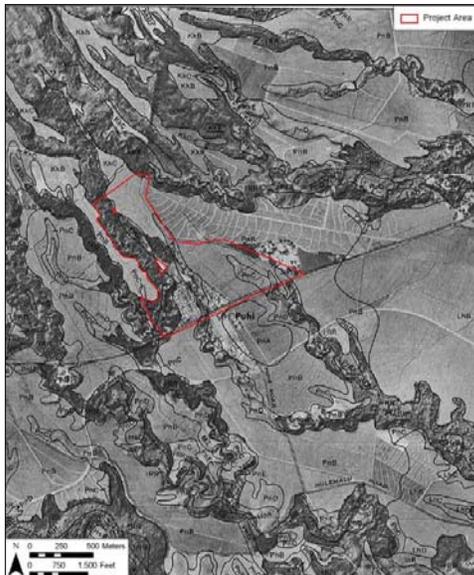


Figure 11. 1965 aerial photograph (from Foote et al. 1972) showing the extent of sugar cane within the project area and its vicinity



Figure 12. 1977-1978 U.S. Geological Survey aerial photograph of Lihue and vicinity showing the project area and its vicinity

### 3.2 Previous Archaeological Research

#### 3.2.1 Early Archaeological Studies

The first attempt at a comprehensive archaeological survey of Kaua'i was undertaken by Wendell Bennett (1931) of the Bishop Museum. Bennett's survey report identifies no archaeological sites within or in the vicinity of the present project area. The "Ni'amalu" or "Menehune" Fishpond (Bennett Site 98) is approximately 3 km (kilometers) southwest of the project area.

The Ni'amalu [sic] fish pond consists principally of a stone-faced, dirt wall that runs for over 900 yards and cuts off a large bend in the river for use as a fish pond. It is today [in the early 1930s] used both for fish and ducks. Cement walls and iron gates have obscured any old method of controlling the water or the fish. Bennett (1931:124)

#### 3.2.2 Recent Archaeological Studies

The major focus for more recent archaeological studies in the vicinity has been at the mouth of the Hulē'ia River, Nāwiliwili Bay, and the associated river banks leading down to the bay. The agricultural fields within and surrounding the proposed project area have been slowly converted to other uses, particularly in the 1990s, and some archaeological work has been undertaken within the vicinity.

A discussion of the previous archaeological studies in the vicinity of the project area follows, with the work summarized in Table 1 and Figure 13.

Table 1. Previous Archaeological Studies within the Vicinity of the Project Area

Study	Location	Type	Findings
Bennett 1931	Island Wide Survey	Recordation of Major Pre-contact Sites	Identified 1 site in the area (Site 98)
Palama 1973	Kaua'i Community College area	Reconnaissance Survey	Noted portions of 'auwai, possible <i>lo'i</i> , a cemetery and a historic military complex
Neller and Palama 1973	Lower portion of the Hulē'ia River	Reconnaissance Survey	31 sites identified including 1 historic human burial
Ching et al. 1973	Kanoa Estate, Ni'amalu	Reconnaissance Survey	9 features associated with the 'Alekoko (Menehune) Fishpond were identified and documented
Walker and Rosendahl 1988	Grove Farm Lihū'e/Puhi Project	Surface and Sub-surface Survey	Identified two historic properties, Japanese cemetery SIHP -503; and historic residence SIHP -9390

Literature Review and Field Inspection for Kaua'i Community College, Ni'amalu Ahupua'a, Kaua'i

Study	Location	Type	Findings
Kido 1986	Alekoko Fishpond and Hulē'ia Estuary	Preliminary Survey	Mangrove encroachment on pond wall, breaks in wall and rubbish used to fortify wall. Recommends a more comprehensive survey
Rosendahl 1989	Eight Additional Areas of the Grove Farm Lihū'e/Puhi Project	Archaeological Inventory Survey	No cultural material observed
McMahon 1990	Lihū'e	Archaeological Fieldcheck	3 previously-identified historic residential sites (50-30-9390, -9401, -9402)
Walker et al. 1991	Lihū'e District	Archaeological Inventory Survey	Identified 10 historic properties; 3 pre-contact, 7 historic including a concrete bridge, concrete wharf, cultural deposits, terraces, roads, walls, retaining walls, a possible agricultural area, and a historic cemetery
Henry et al. 1993	590-acre Grove Farm Lihū'e/Puhi Project Site	Inventory Survey w/ Subsurface Testing	2 historic properties identified including a cemetery and residence (revised report same as Walker and Rosendahl 1988)
O'Hare et al. 1993	100-acre Puakea Golf and Country Club, Lihū'e	Inventory Survey w/ Subsurface Testing	No cultural material observed
Hammatt and Chiogioji 1998	11.5 km portion of Kaumuali'i Highway corridor	Archaeological Assessment	4 historic properties identified: Grove Farm office building in Puhi, the Lihū'e Mill Bridge, the Ho'omana Overpass Bridge, and the Lihū'e Public Cemetery
Hammatt and Shideler 2004	One-Stop Center at KCC	Archaeological and Cultural Impact Evaluation Study	No cultural material observed and no cultural impacts anticipated

Literature Review and Field Inspection for Kaua'i Community College, Ni'amalu Ahupua'a, Kaua'i

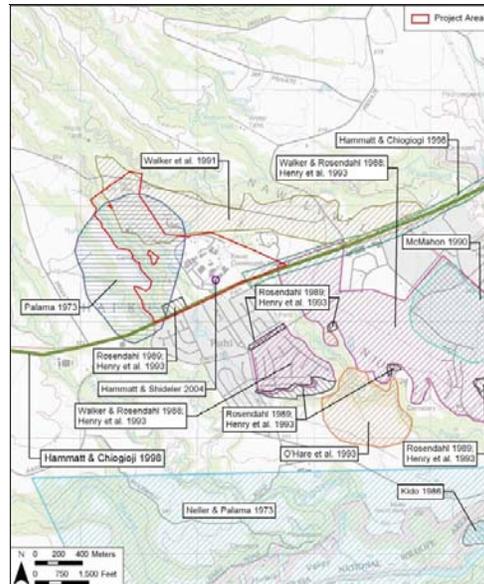


Figure 13. Portion of 1996 U.S. Geological Survey 7.5-Minute Series Topographic Map, Lihū'e quadrangle, showing previous archaeological studies in vicinity of the project area

Literature Review and Field Inspection for Kaua'i Community College, Ni'amalu Ahupua'a, Kaua'i

Neller and Palama (1973) carried out an archaeological reconnaissance of the lower portion of the Hulē'ia River and vicinity recording a number of historic properties. The archaeological richness of that area from the "Menehune Fishpond" downstream and near the crest of the trail to Kipū Kai is clear. They did, however, also document four historic properties upstream of the Menehune Fishpond, the nearest of which (SIHP -3010) consists of contiguous rock wall enclosures and several other features. This historic property is described as:

...a compound, probably belonging to a chief or other important person. Nearby there are stone-faced river terraces, irrigation ditch (*auwai*), and a stone bridge crossing the *auwai*. The area is worth restoring to its prehistoric condition. It is an impressive site. (Neller and Palama 1973:3)

SIHP -3009, also identified by Neller and Palama, is approximately 1.6 km from the current project area, and consists of an "agricultural area along both sides of the river, including rock-walled terraces and irrigation ditches (*auwai*). Also includes cement covered grave of G. Kalili, died Dec. 17, 1898" (Neller and Palama 1973:11).

Ching et al. (1973) conducted detailed research on Alekoko (Menehune) Fishpond and its vicinity. Nine archaeological features and feature complexes were identified and documented, including three fishpond features (*loko kuapā* and two *loko wai*), two '*auwai*, and four *lo'i* complexes.

Walker and Rosendahl (1988) conducted an archaeological surface and subsurface inventory survey of 450-acre Grove Farm Lihū'e/Puhi extending from Puhi Town, south of Kaumuali'i Highway nearly to Nāwiliwili Bay. A total of two historic properties were identified, a historic Japanese cemetery SIHP -503, and a historic residence SIHP -9390. The following year, Paul Rosendahl (1989) produced an addendum report covering eight additional separate small adjacent areas. No historic properties or cultural material were identified. Henry et al. (1993) covers the same project area and is the final archaeological inventory survey for this area.

O'Hare et al. (1993) carried out an archaeological inventory survey on a 100-acre Puakea Golf and Country Club project area located approximately one km south east of Puhi Town. No historic properties or cultural materials were identified.

#### 3.2.3 Studies within or adjacent to the project area

##### 3.2.3.1 KCC Archaeological Reconnaissance (Palama 1973)

In 1973, the Archaeological Research Center Hawaii conducted an archaeological reconnaissance of approximately 57 acres of the gully portion of KCC (Palama 1973), an area north and west of the currently developed portion of KCC. During the archaeological reconnaissance an "old '*auwai*" (conforming to Grove Farm's "Mauka Ditch", see Figure 9), an old military complex, a Japanese Cemetery, old plantation camp remains, an extant plantation camp, and possible *lo'i* were found (Figure 14). Palama (1973:2) asked plantation camp residents whether they ever found evidence of taro cultivation or if they farmed within the gully in the western-most portion of the current project area. Apparently only very limited farming had ever been conducted in the gully, and the plantation workers were not aware of any taro cultivation. Palama (1973:2) "recommended that no further work is warranted" for the historic features he identified and no state site numbers were assigned.

Literature Review and Field Inspection for Kaua'i Community College, Ni'amalu Ahupua'a, Kaua'i



Figure 14. Locations of historic resources found within western portion of current project area during 1973 archaeological reconnaissance (adapted from Palama 1973:4)

### 3.2.3.2 Rosendahl (1989)/Henry et al. (1993) AIS

One of the eight additional separate small adjacent areas surveyed by Paul Rosendahl (1989) in the addendum report described above is within the southwestern portion of the current project area and adjacent to Kaunuaui'i Highway. Designated as Area 1, it is described as consisting of "residential homesteads and yards" (Henry et al. 1993:18).

### 3.2.3.3 Lihue/Puhi/Hanamaulu Master Plan (Walker et al. 1991)

Approximately 220 acres within and adjacent to the project area were included in the 1,550 acre Lihue/Puhi/Hanamaulu Master Plan AIS (Walker et al. 1991). Designated as Section No. 1, this area is described as:

...bounded on the north and east by the Nawiliwili Stream gulch, on the south by Kauai Community College and Kaunuaui Highway, and on the west by the Puhi Stream gulch. This entire parcel has been modified and is presently in sugar cane (*Saccharum officinarum* L. hybrid) cultivation. (Walker et al. 1991:2)

The report states that:

areas in sugar cane were only sampled ... [and] were not generally surveyed ... because areas altered by sugar cane cultivation are unlikely to contain archaeological features, and because sugar cane cultivation within the present project area does not occur in low swale or alluvial flat areas that may contain buried cultural deposits. (Walker et al. 1991:7)

While Section No. 1 is listed as an area subjected to "inventory-level survey" in the Conclusion section of the report, this statement is further explained that "only very limited surface survey was done in sugar cane fields ... [and] no subsurface testing was performed in sugar cane fields" (Walker et al. 1991:18). No additional descriptions of the project area and its vicinity are included in the report. Additionally, none of the ten historic properties (SIHP -1838 through -1847) identified during the Walker et al. (1991) study, including a concrete bridge, concrete wharf, cultural deposits, terraces, roads, walls, retaining walls, a possible agricultural area, and a historic cemetery, was identified in or within close proximity to the project area.

### 3.2.3.4 Kaunuaui'i Highway Archaeological Assessment (Hammatt and Chiojioji 1998)

CSH (Hammatt and Chiojioji 1998) conducted an archaeological assessment of an approximately 11.5 km-long portion of the Kaunuaui'i Highway corridor, a portion of which is adjacent to the southern boundary of KCC. During the reconnaissance survey no historic properties were found in the vicinity of the school campus. No surface traditional Hawaiian archaeological sites were observed during the entire survey although four historic properties (two bridges, a cemetery and an office building) were noted. No state site numbers were assigned.

### 3.2.3.5 2004 KCC One-Stop Center AIS and CIA (Hammatt and Shideler 2004)

In 2004, CSH conducted an archaeological and cultural impact evaluation study for the One-Stop Center at KCC (Hammatt and Shideler 2004). The proposed project involved construction of a two-story building of approximately 35-40,000 net square feet (about 55-60,000 gross

square feet) located in the southwest (Kaunuaui'i Highway) side of the existing KCC campus. A field inspection of the vicinity of the proposed project was conducted and observed to be a graded, established lawn with no observed indicators of any archaeological concern. As the project area was under sugar cane cultivation for many decades and the location of the project area was observed to be graded with an established lawn, it was concluded that there were unlikely to be any cultural impact issues associated with the "one-stop" project.

A summary of the proposed project and findings was mailed to Dr. Pua Aiu (then of the Office of Hawaiian Affairs) and to Mr. Dennis Chun of the Hawaiian Studies program of KCC on December 23, 2003. Follow-up telephone consultation was held with Mr. Chun of February 19, 2004 and with Dr. Aiu on February 24, 2004. A brief telephone conversation on the subject was also held with Ms. LaFrance Kapaka-Arboleda of the Kaua'i Office of Hawaiian Affairs and the Kaua'i/Ni'ihau Islands Burial Council on February 20, 2004. None of these parties expressed any concerns for adverse impacts to cultural practices by the proposed project as described.

The SHPD concluded that: "No further archaeological work is needed for the project" (see present Appendix A).

## Section 4 Results of Fieldwork

### 4.1 Field Inspection Findings

CSH archaeologists Gerald K. Ida, B.A. and Nancine "Missy" Kamai, B.A., completed the field inspection between August 18 and August 25, 2010, which required eight person-days (on a couple of days only one archaeologist carried out documentation). All fieldwork was conducted under CSH's annual archaeological permit No. 10-10 issued by SHPD per HAR Chapter 13-282, and also under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator).

The field inspection consisted of a pedestrian inspection of the KCC campus. Few access restrictions impeded the inspection, however, ground visibility was somewhat obstructed by vegetation and previous development. A total of ten historic surface features, including two previously identified historic features (CSH 9, CSH 10), were found during the field inspection. CSH 9, an "old auwai" that conforms to a portion of Grove Farm's "Mauka Ditch" (see Figure 9) was previously found during an archaeological reconnaissance (Palama 1973, refer to Figure 14) of the western portion of the project area. Palama (1973) also recorded the location of a cemetery that was identified during the current field inspection as CSH 10. The Puhi Camp Cemetery, SIHP # 50-30-11-B006 / CSH 10, is outside of but surrounded by the project area.

The nine features found within the project area appear to be related to Grove Farm and date to the plantation era. The historic surface features consist of five irrigation ditches (CSH 1, CSH 2, CSH 4, CSH 6, CSH 9), one of which (CSH 1) is abandoned; three reservoirs (CSH 3, CSH 5, CSH 7), one of which (CSH 3) is abandoned; and an abandoned wooden flume (CSH 8).

Palama's (1973) archaeological reconnaissance also identified old plantation camp remains associated with Puhi Camp, Puhi Camp, and an area containing possible *lo'i*. These features were not present during the current field inspection. An old military complex identified by Palama (1973, refer to Figure 9) is outside of the current project area, and no evidence of the complex was found during the field inspection.

As discussed in section 3.1.6, all of the Puhi Camp plantation housing was removed by the 1980s. Currently, newer buildings for the Pūnana Leo o Kaua'i Pre-School and Kawaikini New Century Public Charter School, and a few agricultural plots occupy some of the former Puhi Camp lands.

Descriptions and photograph documentation of each of the historic features identified during the field inspection are presented below in Table 2 and shown on Figure 15.

Table 2. Historic Features Identified Within and Adjacent to the Project Area

Feature	Feature Type	Function	Age	Notes
CSH 1	Irrigation ditch	Water control	Plantation era	Abandoned
CSH 2	Irrigation ditch	Water control	Plantation era	Currently in use for run-off

Feature	Feature Type	Function	Age	Notes
CSH 3	Reservoir	Water control	Plantation era	Abandoned
CSH 4	Irrigation ditch	Water control	Plantation era	Currently in use
CSH 5	Reservoir	Water control	Plantation era	Currently in use
CSH 6	Irrigation ditch	Water control	Plantation era	Currently in use
CSH 7	Reservoir	Water control	Plantation era	Currently in use
CSH 8	Flume	Water control	Plantation era	Abandoned
CSH 9	Irrigation ditch	Water control	Plantation era	Currently in use
CSH 10/ SIHP - B006	Cemetery	Burial	1920-1977	Designated as SIHP # 50-30-11-B006 (Kikuchi and Remoaldo 1992:134)



Figure 15. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the historic features found within the project area and SIHP # -B006

## 4.2 Feature Descriptions

### 4.2.1 CSH 1

FEATURE TYPE: Irrigation Ditch  
 FUNCTION: Agriculture, Water Control  
 FEATURES: 1  
 CONDITION: Good  
 AGE: Plantation era

DESCRIPTION: CSH 1 is an abandoned plantation era irrigation ditch measuring 852.3 m long by 1.6 m wide and 0.8 m deep (Figure 16). The ditch began at a concrete gate frame that lacks a gate (Figure 17) at the southwest side of a reservoir that is adjacent to and northeast of the project area. The abandoned ditch continues in a southeasterly direction forming the southeastern boundary of the proposed project area. An 82 m section of the ditch is a formed concrete flume that extends along the north side. The flume is 0.6 m wide by 0.7 m high and rests on intermittent concrete footings that are from 0.1 to 0.6 m high (Figure 18). Water was apparently diverted into the flume at one time but remnants of the ditch still exist alongside the flume. One stone and mortar culvert was also observed on the ditch that apparently diverted water to the south, into the area of what is now the main KCC campus, but there are no signs of the ditch past the culvert. The east end of the ditch is buried 4.3 m before it reaches a modern concrete culvert that apparently extended beneath the interior access road between KCC and Kiloohana Plantation.

A review of historic maps included in this report indicates that CSH 1 formed the eastern boundary of Grove Farm. A 1941 map of Lihue Plantation Co. (see Figure 8) shows that the location of CSH 1 formed a partial boundary with Lihue Plantation. The southern portion of CSH 1 does not appear to correspond to the plantation boundary.



Figure 16. CSH 1, abandoned irrigation ditch, view to east



Figure 17. CSH 1, abandoned irrigation ditch, showing the reservoir adjacent to and northeast of the project area and a concrete gate frame that lacks a gate, view to west



Figure 18. Portion of flume within CSH 1, abandoned irrigation ditch, view to northwest

#### 4.2.2 CSH 2

FEATURE TYPE: Irrigation ditch  
 FUNCTION: Agriculture, Water Control  
 FEATURES: 1  
 CONDITION: Good  
 AGE: Plantation era

DESCRIPTION: CSH 2 is a plantation era irrigation ditch that forms the northeast boundary of the proposed project area (Figure 19; see Figure 15). The earthen ditch is 703 m long, 0.9 m deep with a maximum width of 2.0 m. The ditch walls are sloped resulting in a bottom width of 1.0 m. The ditch is not currently used for irrigation but collects storm drainage and surface runoff from the Island School campus and its athletic fields, adjacent to and east of KCC.

A 1941 map of Lihue Plantation Co. (see Figure 8) shows CSH 2 forming the western boundary of field 39B, separating Lihue Plantation and Grove Farm.



Figure 19. CSH 2, earthen irrigation ditch, view to west

#### 4.2.3 CSH 3

FEATURE TYPE: Reservoir  
 FUNCTION: Agriculture, Water Control  
 FEATURES: 1  
 CONDITION: Good  
 AGE: Plantation era

DESCRIPTION: CSH 3 is an abandoned plantation era reservoir that measures 196 m by 123 m and is between 5 and 6 m deep (Figure 20). The former reservoir is located in the southeast portion of the proposed project area adjacent to existing buildings. The former reservoir is currently used as a flood control basin for the KCC campus. At the time of the field inspection, the former reservoir was grass covered. It has a water control gate/valve at the southeast side, but the actual outlet has been buried (Figure 21). Most of the walls of the former reservoir have been terraced except for the area near the old gate and the north side. A ditch that enters the former

reservoir from the north side may have marked the alignment of the original feeder ditch, but is now a modern flood control feature dug into the reservoir floor. Other modern modifications include several storm drain outlets that flow into the reservoir, and a concrete overflow drain on the southwest side.

CSH 3 is shown as an intermittent lake/pond on the 1996 U.S. Geological Survey map, Lihue'e quadrangle (see Figure 1). The reservoir is also shown on the 1910 and 1963 U.S. Geological Survey maps, Lihue'e quadrangle (see Figure 7 and Figure 10).



Figure 20. CSH 3, former reservoir with KCC buildings in background, view to southwest



Figure 21. Water exit gate associated with CSH 3, former reservoir

#### 4.2.4 CSH 4

FEATURE TYPE: Irrigation Ditch  
 FUNCTION: Agriculture, Water Control  
 FEATURES: 1  
 CONDITION: Good  
 AGE: Plantation era

DESCRIPTION: CSH 4 is a plantation era irrigation ditch measuring approximately 400 m long that courses from a reservoir that is adjacent to the east boundary of KCC (Figure 22). The ditch flows west past the existing KCC buildings and then continues south, flowing into the northeast portion of CSH 5 (reservoir). The ditch is 85 m deep with a surface width of 2.0 m. The ditch walls are sloped resulting in a bottom width of 1.0 m. The ditch is currently active (Figure 23).

The 1963 U.S. Geological Survey map (see Figure 10) shows a portion of the "Upper Lihue Ditch" that appears to include the reservoir adjacent to the east boundary of KCC. Based on

association of CSH 4 and the adjacent reservoir, CSH 4 may have also been associated with the Upper Lihue Ditch.



Figure 22. CSH 4, showing the irrigation ditch extending from the reservoir adjacent to KCC, view to north



Figure 23. CSH 4, irrigation ditch showing culvert, view to east

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#### 4.2.5 CSH 5

FEATURE TYPE: Reservoir  
FUNCTION: Agriculture, Water Control  
FEATURES: 1  
CONDITION: Excellent  
AGE: Plantation era

CSH 5 is a plantation era reservoir that measures 126.26 by 56.14 m and is located just to the east of Pūnana Leo Pre-School within the KCC campus (Figure 24). The active reservoir is situated in the center of the project area. A concrete and metal water control gate is located along the south side of the reservoir (Figure 25). Water from the reservoir flows out through the gate under the road that leads to Pūnana Leo Pre-School and exits in a concrete flume to flow down into CSH 6, ditch. The flume measures about 26 m long by 1 m wide with a height of 3.9 m. CSH 4 and CSH 9, irrigation ditches provide the water for CSH 5.

A symbol for a reservoir is shown in the location of CSH 5 on the 1910 (see Figure 7), the 1963 (see Figure 10) and the 1996 (see Figure 1) U.S. Geological Survey maps, Lihue quadrangle.



Figure 24. CSH 5, reservoir in center of project area, existing Pūnana Leo Pre-School buildings on KCC campus in background, view to southeast

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Figure 25. Water control at south side of CSH 5, reservoir, view to east

#### 4.2.6 CSH 6

FEATURE TYPE: Irrigation Complex  
FUNCTION: Agriculture, Water Control  
FEATURES: 6  
CONDITION: Good  
AGE: Plantation era

DESCRIPTION: CSH 6 is an irrigation complex consisting of six features. CSH 6a is a plantation era irrigation ditch (Figure 26) with five associated features including a concrete and metal gate, CSH 6b; three large stone pillars, CSH 6c; a cobble and concrete road, CSH 6d; a rock stacked bridge, CSH 6e; and a bridge incised with "1938", CSH 6f. CSH 6a extends from CSH 5, reservoir to a culvert along Kaumuali'i Highway. The length of the ditch measures 314.35 m with widths that vary from 1.0 m to 3.5 m and depths that vary from 0.7 to 1.5 m. CSH 6a branches off just to the west at a concrete and metal gate, CSH 6b (Figure 27), then turns and flows back into the main portion of the ditch. The branch of the ditch flows between three large stone pillars, CSH 6c (Figure 28), past a cobble and concrete road, CSH 6d (Figure 29). The ditch also extends beneath two bridges, one of which is a rock stacked bridge, CSH 6e (Figure 30), and the other is incised with "1938", CSH 6f (Figure 31 and Figure 32). The ditch then flows into a natural looking ditch and enters into a small culvert beneath Kaumuali'i Highway.

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CSH 6 may have been associated with the "Mauka Ditch" shown on the Grove Farm map (see Figure 9). A review of historic maps included in this report shows the general location of CSH 6 on the 1963 U.S. Geological Survey map, Lihue quadrangle, but it does not appear on others.



Figure 26. CSH 6a, irrigation ditch, view to east



Figure 27. CSH 6b, concrete and metal gate, view to south

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Figure 28. CSH 6a, irrigation ditch flowing through three large stone pillars, CSH 6c, note adjacent cobble and concrete road, 6d in foreground, view to southeast



Figure 29 CSH 6a, irrigation ditch, showing additional details of cobble and concrete road CSH 6d, view to south

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Figure 30. CSH 6e, irrigation ditch flowing beneath rock stacked bridge, view to east



Figure 31. CSH 6f, irrigation ditch, flowing towards second bridge, view to southeast

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Figure 32. CSH 6f, irrigation ditch flows beneath this bridge (see Figure 31) stamped with a "1938" date, view to south

#### 4.2.7 CSH 7

FEATURE TYPE: Reservoirs

FUNCTION: Agriculture, Water Control

FEATURES: 2

CONDITION: Excellent

AGE: Plantation era

DESCRIPTION: CSH 7 consists of two small reservoirs. The larger of the two, CSH 7a, measures 42.6 by 20.2 m. A small PVC irrigation line was found along the north-northwest end of CSH 7a that appears to be the source of water (Figure 33). No other water source was found. Water flows out on the south side of the reservoir through a modern pipe into CSH 6, irrigation ditch.

A small modern pipe on the east side of the reservoir flows into the second smaller reservoir, CSH 7b (Figure 34). CSH 7b is located approximately 1.5 m east of CSH 7a. This smaller reservoir measures 18.7 m by 4.9 m. No apparent outlet for the water was found and the function of the smaller reservoir may be for overflow from the larger reservoir.

The CSH 7 reservoirs do not appear on any of the historic maps reviewed for this study.

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Figure 33. CSH 7a, larger of the two reservoirs, note the PVC irrigation line in the background that may be the water source, view to west



Figure 34. CSH 7b, smaller of the two reservoirs, note the modern pipe in the background that connects the two reservoirs, view to north

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**4.2.8 CSH 8**

FEATURE TYPE: Flume  
 FUNCTION: Agriculture, Water Control  
 FEATURES: 1  
 CONDITION: Poor  
 AGE: Plantation era

DESCRIPTION: CSH 8 is a plantation era wooden flume that appears to be intact for the most part with a small portion of the central area missing. The flume measures 1.32 m wide and 0.75 m deep, however, the length of the flume beyond the gulch is undetermined due to inaccessibility. The portion of the feature that is accessible is located along the slope of the gulch and extends across the gulch (Figure 35). The flume is approximately 4.8 m above the bottom of the gulch. Retaining walls constructed of concrete and boulders are situated on both sides of the gulch to support the flume (Figure 36). The two retaining walls measure 4.7 m long, 1.8 m high, and 0.32 m thick.

A flume symbol is shown at the location of CSH 8 on the 1963 (see Figure 10) and the 1996 (see Figure 1) U.S. Geological Survey maps, Lihue's quadrangle. The flume appears to begin and end in very close proximity to the flume depicted on the maps.



Figure 35. CSH 8, flume, view to northwest

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Figure 36. CSH 8, flume, showing concrete and boulder retaining wall beneath flume, view to east

**4.2.9 CSH 9**

FEATURE TYPE: Irrigation ditch  
 FUNCTION: Agriculture, Water Control  
 FEATURES: 1  
 CONDITION: Good  
 AGE: Plantation era

DESCRIPTION: CSH 9 is an active plantation era irrigation ditch that extends southeast from the north boundary of the project area, past the south side of SIHP # 50-30-11-B006, the cemetery (see below), and flows into CSH 4, irrigation ditch. CSH 9 measures 816.32 m long, 0.75 m deep with an uppermost width of 3.0 m and a bottom width of 1.5 m due to the sloping of the walls (Figure 37).

This irrigation ditch appears to be a portion of the Grove Farm Mauka Ditch shown on Figure 9.

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Figure 37. CSH 9, irrigation ditch, view to west

**4.2.10 SIHP # 50-30-11-B006 (CSH 10)**

SITE TYPE: Cemetery  
 FUNCTION: Burials  
 FEATURES: 1  
 CONDITION: Good  
 AGE: Historic

DESCRIPTION: CSH 10 is a cemetery that extends 104.08 m long by 47.33 m wide, and is located north of Pūnana Leo Pre-School and northwest of CSH 5, reservoir. Cemetery headstones are incised with Filipino, Japanese, and Chinese names with Filipino appearing to be the most common. Headstone material varies from marble to stone to concrete blocks (Figure 38); marble and wooden crosses (Figure 39) are also present. The cemetery is situated on a flat to gently sloping area with a short dirt road that runs in the center of the cemetery. CSH 9, ditch, flows along the north, west, and south sides of the cemetery.

CSH 10 is the Japanese Cemetery that Palama (1973) found during his 1973 archaeological reconnaissance. Palama (1973) recommended no further work and a state site number was not assigned at the time. The cemetery is within a separate parcel, surrounded by the current proposed project area, and is identified as a cemetery on the 1963 U.S. Geological Survey map, Lihue's quadrangle (see Figure 10). Cemeteries of Kaua'i (Kikuchi and Remoaldo 1992:134) lists

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the historic property as the Pūhi Camp Cemetery, SIHP # 50-30-11-B006, with 172 graves (Figure 40).

Kikuchi and Remoaldo's (1992) study details information from individual grave markers. The names associated with graves 1 through 97 are listed, and all but seven show a year of death. Dates of death range from 1920 to 1977 with the majority of dates in the 1960s, followed by dates in the 1920s. The majority of the names (graves 1-97) are Filipino, with some Japanese and Chinese names. There does not appear to be any segregating of people into particular areas. Graves 98 through 119 are "written in Japanese characters which could not be translated at this time" (Kikuchi and Remoaldo 1992:140), and therefore these graves lack information regarding date of death. These Japanese graves are situated in the southern portion of the cemetery. Graves that lack information as well as markers were later interred amongst the Japanese graves. They include graves 120 through 127, identified as "unknown graves from Kaiju Camp, March 16, 1967" (Kikuchi and Remoaldo 1992:141); and graves 128 through 153, listed as "Unknown." Many of the unknown burials lack markers but have a "concrete base" or a cross. Graves 154 to 172 "were earthen mounds or depressed areas where a grave may exist or was exhumed" (Kikuchi and Remoaldo 1992:142). The locations of graves 154 to 172 are not noted on the Pūhi Camp Cemetery map (Figure 40).



Figure 38. CSH 10, cemetery, showing various headstones, view to southwest

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Figure v94 CSH w0 cemetery sJobing darious crosses' dieb to soutJeast



Figure 30HPuhii Camp Cemetery plan' SIHP # 50-30-11-B006 (I. Haku) an. Rental. o. w/plew3)  
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### Section 5 Significance Assessments

The one previously identified historic property, SIHP # 50-30-11-B006, Puhii Camp Cemetery plan, was identified as CSH 10 during the field inspection. SIHP # B006 is outside of the project area, but surrounded by KCC property. Preservation, in the form of avoidance and protection, is recommended for SIHP # 50-30-11-B006.

The nine historic features (CSH 1 to CSH 9) identified by the current study are Grove Farm Plantation infrastructure, and therefore comprise one historic property. The features of this historic property were preliminarily evaluated for significance according to the broad criteria established for the Hawai'i Register of Historic Places (Table 3 and see discussion below). The five criteria are:

- A Associated with events that have made an important contribution to the broad patterns of our history;
- B Associated with the lives of persons important in our past;
- C Embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value;
- D Have yielded, or is likely to yield information important for research on prehistory or history;
- E Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts – these associations being important to the group's history and cultural identity.

Table 3. Preliminary Evaluation of Historic Features

Feature	Feature Type	Function	Age	Evaluation
CSH 1	Irrigation ditch	Water control	Plantation era	D
CSH 2	Irrigation ditch	Water control	Plantation era	D
CSH 3	Reservoir	Water control	Plantation era	D
CSH 4	Irrigation ditch	Water control	Plantation era	D
CSH 5	Reservoir	Water control	Plantation era	D
CSH 6	Irrigation Complex	Water control	Plantation era	D
CSH 7	Reservoir	Water control	Plantation era	D
CSH 8	Flume	Water control	Plantation era	D
CSH 9	Irrigation ditch	Water control	Plantation era	D

The proposed project may have an adverse effect on these historic features. While no additional work may be necessary for the majority of features, the level of documentation is not consistent with an archaeological inventory survey. Therefore, CSH recommends an archaeological inventory survey program to include additional research as specified under Recommendations, section, 6.2.

### Section 6 Summary and Recommendations

#### 6.1 Summary

At the request of Wilson Okamoto Corporation, Cultural Surveys Hawai'i, Inc. has conducted this Literature and Field Inspection for the proposed Kauai Community College Rezone Campus Project and proposed campus expansion that includes construction of new buildings, additions to buildings, and new parking lots within its existing 198.8-acre campus.

Few access restrictions impeded the field inspection, however, ground visibility was somewhat obstructed by vegetation and previous development. A total of ten historic surface features, including two previously identified historic features (CSH 9, CSH 10), were found during the field inspection. CSH 9, an "old 'auwai" that conforms to a portion of Grove Farm's "Mauka Ditch" was previously found during an archaeological reconnaissance (Palama 1973, refer to Figure 14) of the western portion of the project area. Palama (1973) also recorded the location of a cemetery that was identified during the current field inspection as CSH 10. The Puhii Camp Cemetery, SIHP # 50-30-11-B006 / CSH 10, is outside of but surrounded by the project area.

The nine features found within the project area appear to be related to Grove Farm and date to the plantation era. The historic surface features consist of five irrigation ditches (CSH 1, CSH 2, CSH 4, CSH 6, CSH 9), one of which (CSH 1) is abandoned; three reservoirs (CSH 3, CSH 5, CSH 7), one of which (CSH 3) is abandoned; and an abandoned wooden flume (CSH 8).

Palama's (1973) archaeological reconnaissance also identified old plantation camp remains associated with Puhii Camp, Puhii Camp, and an area containing possible *lo'i*. These features were not present during the current field inspection.

#### 6.2 Recommendations

Based on the findings during the field inspection, CSH recommends an archaeological inventory survey (AIS). The AIS should be undertaken after consultation with SHPDD/LNR. Additional documentation and research are recommended to formally evaluate the Hawai'i Register eligibility of the plantation features identified within the project area. This documentation should include additional research, limited subsurface testing, and potentially consultation with former Puhii Camp residents.

##### 6.2.1 Research

Additional research and documentation to include a study of documents and maps held by Grove Farm Museum, Lihue is recommended. While a review of Grove Farm documents and maps is generally recommended for all of the project area features, particular attention is recommended for two features, CSH 5, a reservoir that appears on the 1910 U.S. Geological Survey map, and CSH 6, an irrigation complex. If Grove Farm Museum lacks extensive resources, additional research is recommended at the Kauai Historical Society, Lihue.

**6.2.2 Documentation of Surface Features**

Additional documentation of the surface features to include mapping of the nine surface features and their sub-features is recommended.

**6.2.3 Subsurface Testing**

A program of archaeological inventory survey subsurface testing is recommended that is based on project plans and scaled to address the specific locations of planned excavations within the former location of Puhī Camp. The Puhī Camp vicinity may contain subsurface deposits related to the occupation of the plantation camp from the 1920s to 1980s. The majority of the remainder of the project area was formerly used for sugar cultivation and contains plantation infrastructure. Land clearing for agricultural cultivation and agricultural activities themselves likely impacted or destroyed subsurface deposits that may have existed within the project area.

**6.2.4 Consultation**

Consultation with former Puhī Camp residents is recommended. Many of the former residents continue to reside in the vicinity (Chang 2007) and have knowledge of the project area. In consultation with SHPD/DLNR, CSH recommends contacting the Hawaiian Studies program at Kauai Community College with a request for students to conduct the cultural consultations, thus providing an opportunity for students to consult with and record oral histories and *mana'o* (thoughts) of the former residents. Additionally, this study process will connect the students with the history of Kauai Community College and Puhī Camp.

**6.2.5 Puhī Camp Cemetery / SHIP # 50-30-11-B006**

No further work is recommended for SHIP # 50-30-11-B006 / CSH 10 as the historic property is outside of the current project area. Avoidance of the cemetery is however recommended during future development of the KCC campus. Particular caution is recommended if the road that extends adjacent to the Puhī Camp Cemetery (see Figure 10) is used during planned development. Preservation, in the form of avoidance and protection, is recommended.

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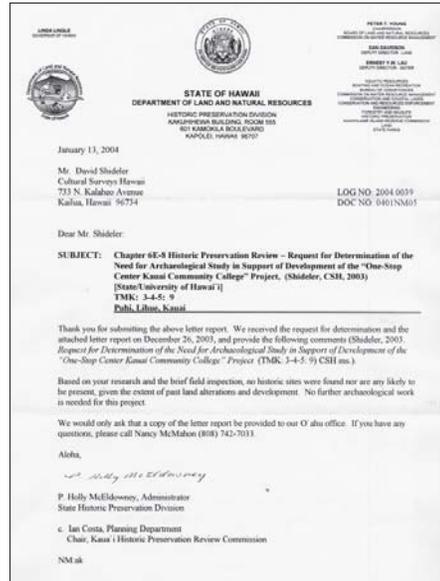
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### Appendix A SHPD Correspondence



Cultural Impact Assessment for the  
Kauai Community College Redesignation to Urban District  
Cultural Surveys Hawaii, Inc.  
April 2012

Appendix C