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## Section 10 Kumukumu, Keālia Ahupua'a

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### 10.1 Environmental Setting

#### 10.1.1 Natural Environment

The Kumukumu project area is in the *ahupua'a* of Keālia on the northeast side of the island of Kaua'i, part of the ancient district or *moku* of Puna and the current district of Kawaihau, TMK: [4] 4-7-004 (Figure 70 and Figure 71). Annual rainfall in the project area averages around 40 inches, and the topography consists of a shallow valley. Soils in the project area include a ridge of Rough Broken Land (rRR; steep land broken by numerous intermittent drainage channels), Ioleau Silty Clay Loam, Puhi Silty Clay Loam, and Lihue Silty Clay (Figure 72). There are several streams in the nearby area.

#### 10.1.2 Built Environment

The area immediately surrounding the Kumukumu project area is fairly rural, with an aerial photograph (Figure 73) showing the land being used primarily for agricultural fields. The parcel abuts Kūhiō Highway on its east end, and Kapa'a town is located about 1.5 miles south.

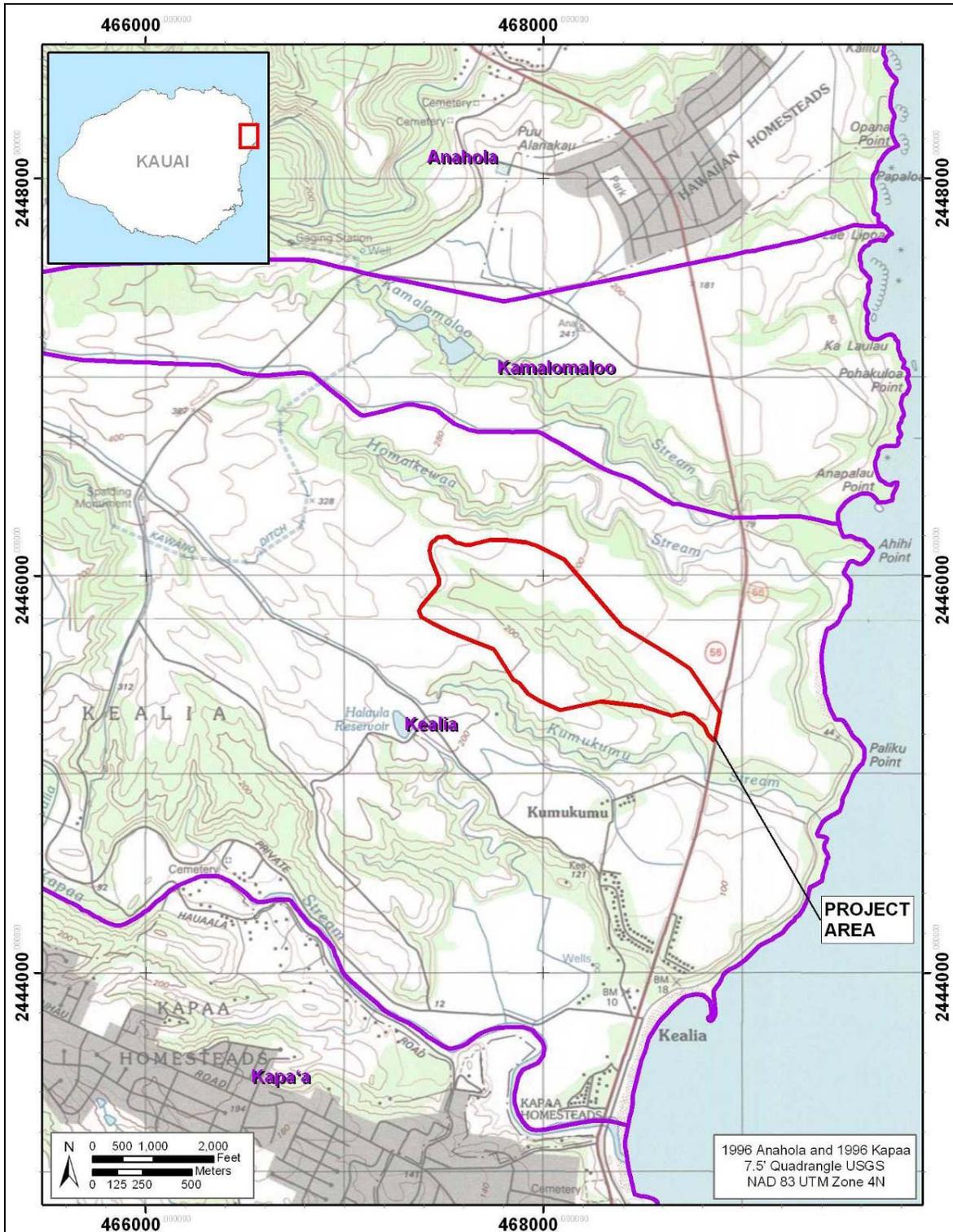


Figure 70. Portion of 1996 U.S.G.S. 7.5-minute topographic Anahola and Kapa'a quadrangles, showing the Kumukumu project area

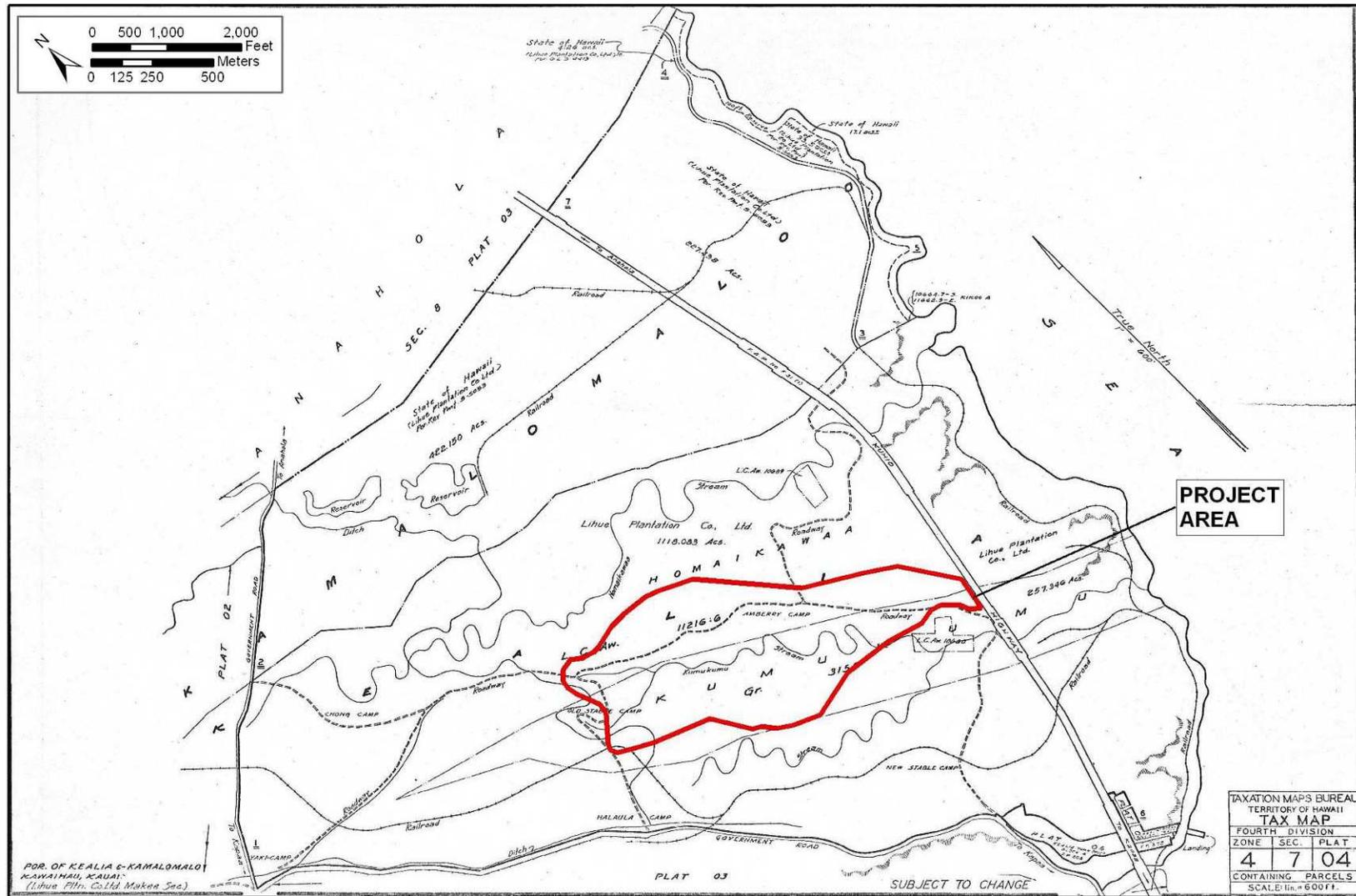


Figure 71. Tax map (TMK) [4] 4-7-004 showing Kumukumu project area location

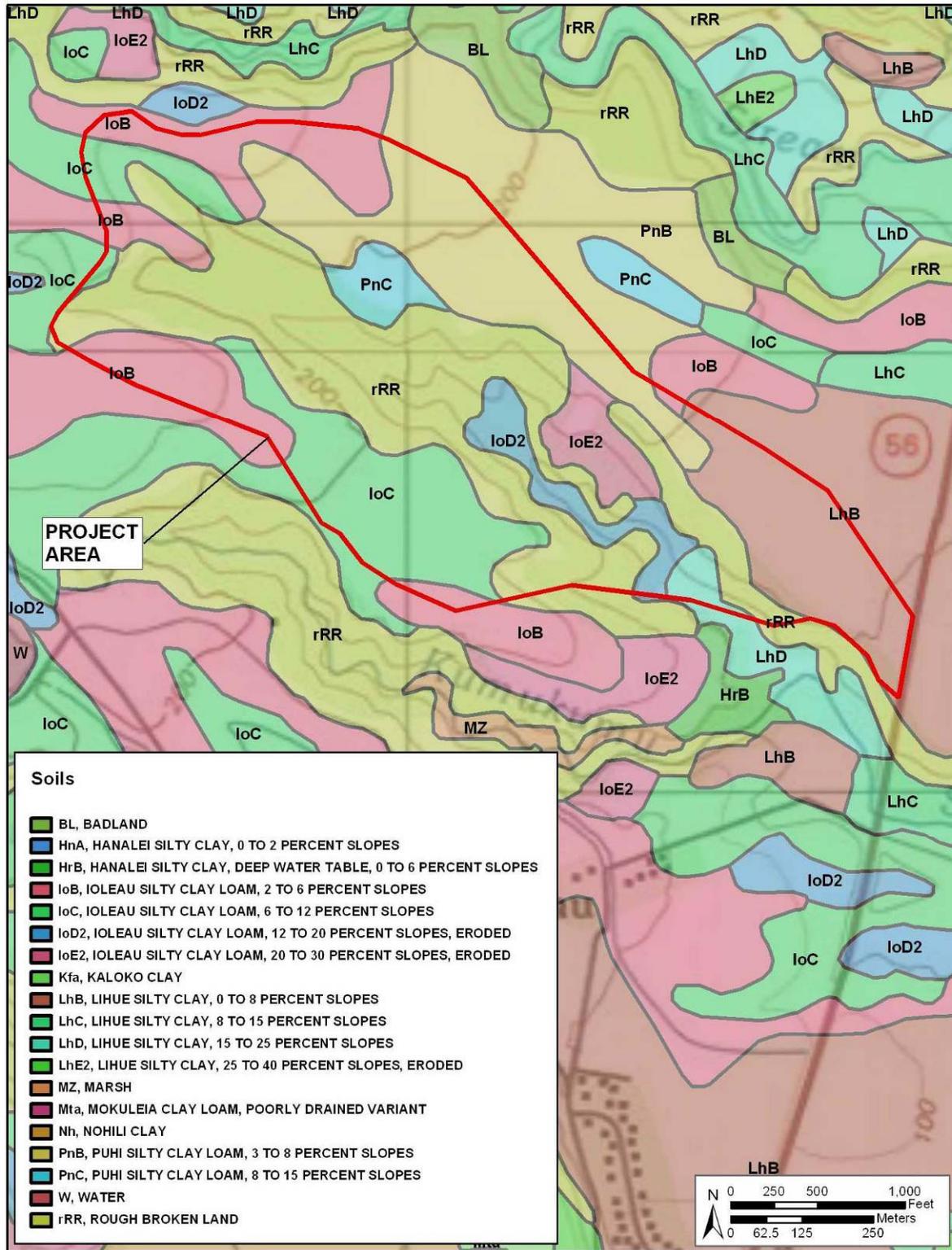


Figure 72. Soils map showing Kumukumu project area location

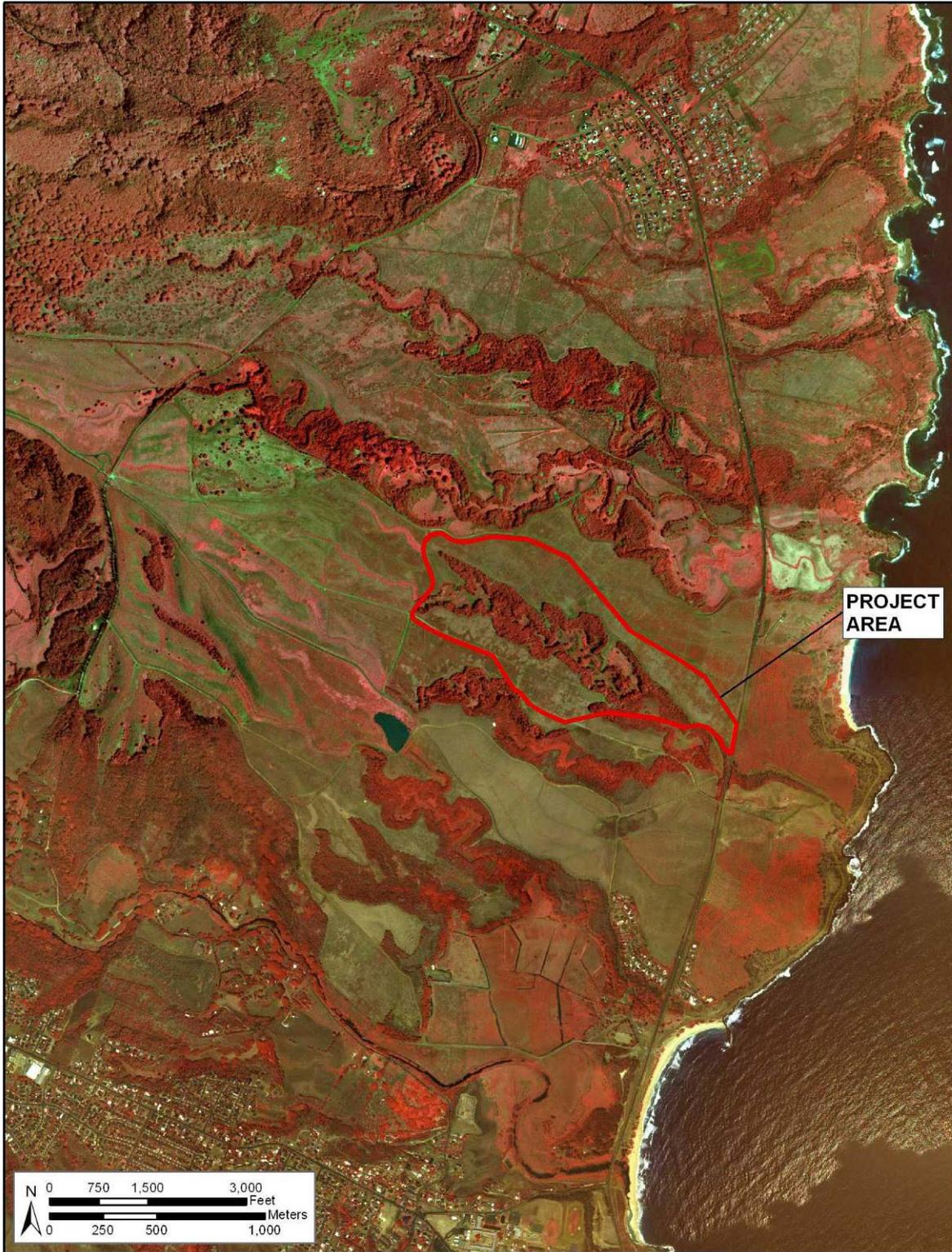


Figure 73. Aerial photograph showing Kumukumu project area location

## 10.2 Traditional and Historical Background

### 10.2.1 Mythological and Traditional Accounts

Puna was the second largest district on Kaua'i, behind Kona, and extended from Kīpū, south of Līhue to Kamalomalo'o, just north of Keālia. For taxation, educational and judicial reasons, new districts were created in the 1840's. The Puna District, with the same boundaries became the Līhu'e District, named for an important town in that district. In 1878, by act of King Kalākaua in securing a future and name for the new Hui Kawaihau, created the new district of Kawaihau. This new district encompassed the *ahupua'a* ranging from Olohena on the south to Kīlauea on the north. Subsequent alterations to district boundaries in the 1920's left Kawaihau with Olohena as its southernmost boundary and Moloa'a as its northernmost boundary.

Although Kapa'a and Keālia Ahupua'a pale to their neighbor to the south, Wailua, in so far as legendary histories and *wahi pana* or celebrated places, there are still several accounts referring to these areas:

#### *Hi'iaka and Wahine'ōma'o in Keālia*

On their way to Hā'ena, Hi'iaka and Wahine'ōma'o stopped near Keālia to help a man cook his *luau* to eat with his *poi*. Noticing an ailing woman in the man's house, Hi'iaka said a prayer which brought the woman back to health. All the *kahuna* in the region had been unable to help the woman previously (Rice 1974:14).

#### *Kaweloleimākua and Kauahoa in Waipahe'e*

In the *mauka* areas of Keālia is a place called Waipahe'e, a slippery slide used up until recent times. This *wahi pana* is associated with Kaweloleimakua and Kauahoa, who one day traveled to this place with their companion 'Aikanaka (Wichman 1998:86). Here the two boys engaged in a contest of who could make the best *lei* for their chief. Kauahoa won this contest by making his *lei* of *liko lehua* while Kaweloleimakua made his of fern. The boys then held a contest *na'ina'i mimi* to see who could urinate the longest, but because Kauahoa was much bigger than Kawelo, he also won this contest. Later, when the two were men engaged in war, Kawelo reminds Kauahoa of this boyhood excursion in an attempt to avoid bloodshed between them, however, the attempt was unsuccessful.

#### *'A'aka at 'Āhihi Point*

In Kamalomalo'o, what some consider to be the northernmost *ahupua'a* of Puna, is another *wahi pana*, 'Āhihi. 'Āhihi is a headland that juts out into the ocean in between what is now known as Keālia and Anahola (Figure 74). Wichman (1998: 87) retells a story about 'A'aka, the name of the plain *mauka* of 'Āhihi and the name of a *menehune*, Hōmaikawa'a, the valley adjacent to 'A'aka, and 'Āhihi, a plant with long runners. One of 'A'aka's favorite pastimes was to throw a stone into the ocean from 'Āhihi Point and then jump in after it. Once, when a large white shark almost swallowed him whole, 'A'aka, devised a plan to fabricate a net made from 'āhihi (a plant) to catch the shark. After ordering the canoe, "Hōmaikawa'a", he and his companions were able to catch the shark and tow it to the reef at 'Aliomanu, near Anahola.

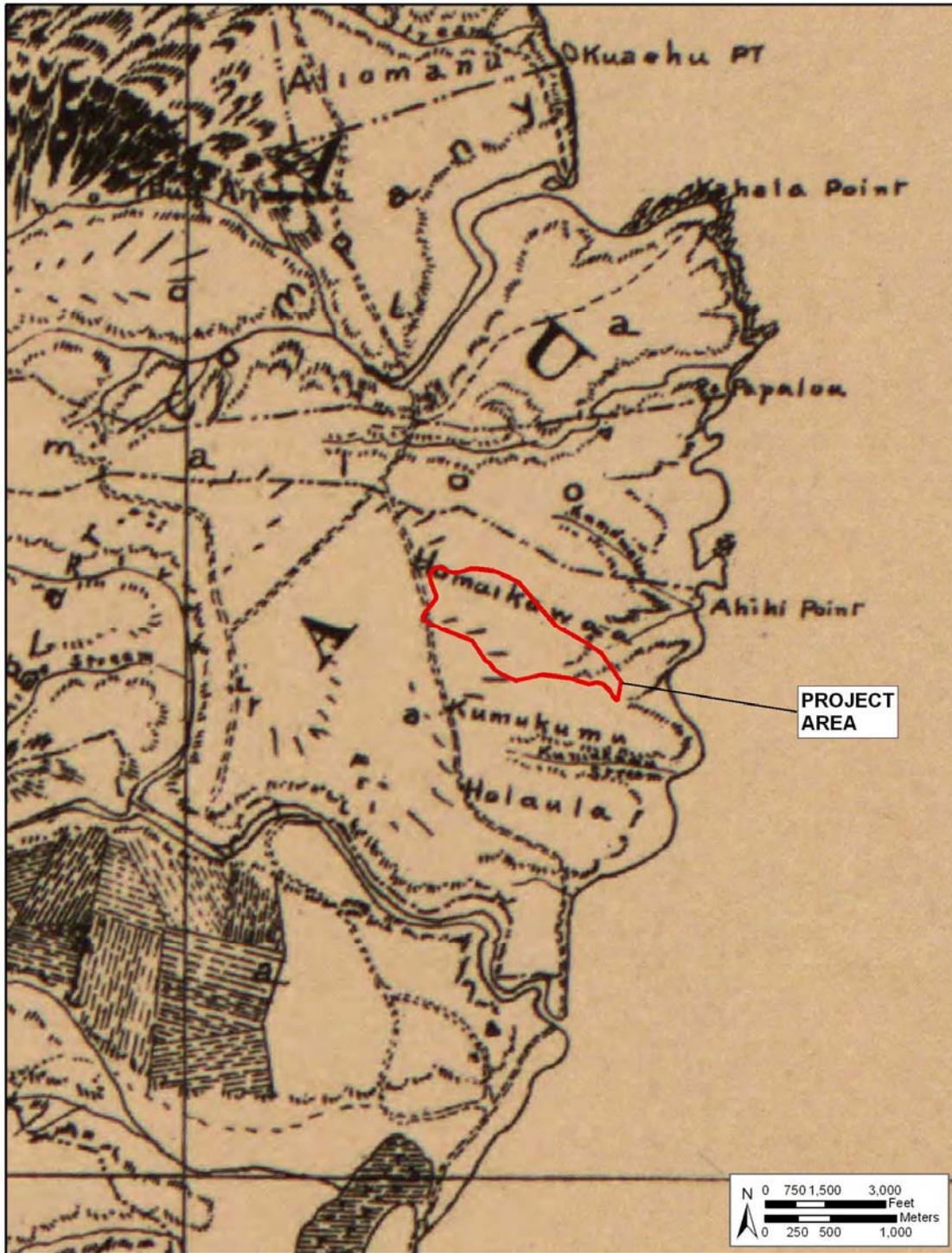


Figure 74. 1878 Government Survey map by W.D. Alexander, showing location of Kumukumu project area and “Ahiki Point”

### 10.2.2 Heiau of Kapa'a and Keālia

During their expeditions around Hawai'i in the 1880's, collecting stories from *ka po'e kahiko*, Lahainaluna students stopped in Kapa'a and Keālia and gathered information regarding *heiau* of the region. Fourteen *heiau* were named, suggesting the two *ahupua'a* were probably more politically significant in ancient times. Table 12 lists the names of the *heiau*, their location if known, their type, associated chief and priest, and any comments and the reference.

Table 12. *Heiau* of Kapa'a and Keālia (near the Kumukumu project area)

Name	Location	Type	Associated Chief/Priest	Comments/Reference
Mailehuna	Kapa'a (Mailehuna is near Kapa'a School)	unknown	Kiha, Kaumuali'i/ Lukahakona	Ref: Bishop Museum Archives (HEN I: 214) Lahainaluna Student Compositions
Pueo	Kapa'a	unknown	Kiha, Kaumuali'i/ Lukahakona	Ref: " "
Pahua	Kapa'a/Keālia	unknown	Kiha/ Lukahakona	Ref: " "
Kumalae	Kapa'a/Keālia	unknown	Kiha/ Lukahakona	Ref: " "
Waiehumalama	Kapa'a/Keālia	unknown	Kiha/ Lukahakona	Ref: " "
Napuupaakai	Kapa'a/Keālia	unknown	Kiha/ Lukahakona	Ref: " "
Noeamakalii	Kapa'a/Keālia	" <i>heiau</i> for birth of Kaua'i Chiefs, like Holoholoku"	Unknown	Ref: " "
Puukoa	Kapa'a/Keālia	" <i>unu</i> type "	Unknown	Ref: " "
Piouka	Kapa'a/Keālia	" <i>unu</i> type <i>heiau</i> "	Unknown	" <i>heiau</i> where standing chiefs quarreled over stream that flowed through them. When drought came, the water at Piouka dried up"/ Ref: " "

Una	Kapa'a/Keālia	Unknown	Kiha/ Lukahakona	Ref.: " "
Mano	Kapa'a/Keālia	Unknown	Kiha/ Lukahakona	Ref.: " "
Kuahiahi	Kapa'a (govn't school stands on site now)	Unknown	Kaumuali'i/ Lukahakona	Bishop Museum Archives (HEN I:216)
Makanalimu	Upland of Kawaihau	Unknown	Kaumuali'i	Ref.: " "
Kaluluomoikeha	Kapa'a	Unknown	Mō'ikeha	Ref: " "
Kawelomamaia	N. of Keālia/near Kawelomamaia Stream	Po'okanaka Class	Kawalo (sic.) Kawelo	"dedicated to Shark God"/ Bennett, 1931:129
Māhu-nā-pu'u- one	"kamalomalo'o, northernmost <i>ahupua'a</i> of Puna"	" <i>heiau</i> where humans were sacrificed"	Kawelomaha mahai'a	"built in 1600s; <i>heiau</i> no longer exists"/ Wichman, 1998:87

The exact locations of these *heiau* are unknown. The locations of two of the *heiau* correlate with the locations of *wahi pana* which are known to be in the vicinity of the project area, Kuahiahi and Kaluluomoikeha. Kuahiahi (also spelled Kaahiahi and Keahiahi) is the rocky headland at the north end of Kapa'a where the first Kapa'a School was once located. Kaluluomoikeha is thought to be the general area near the Moikeha Canal and the present day Coral Reef Hotel. The last two *heiau* mentioned in the table, Kawelomamaia and Māhu-nā-pu'u-one may refer to the same *heiau*. Both correspond to the same general location and both are associated with Kawelomahamahai'a. Kawelomamaia *heiau* is mentioned as site 112 in Bennett (1931), along with two other sites in the vicinity (Site 111 and 113; see Figure 75). Several *kama'āina* claimed there was a *heiau* in the area north of Keālia, but very little was known regarding the *heiau* (pers. Communication, V. Ako, J. Lovell, K. Pa, P. Rogers). One individual thought it was probably located on Paliku, the flat ledge on the south side of Kūna (Donkey Beach) (Pers. Comm., P. Rogers, August 2002).

### 10.2.3 The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the *Māhele*, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848 the crown and the *ali'i* received their lands. The common people received their *kuleana* in 1850. It is through records for Land Commission Awards (LCAs) generated during the *Māhele* that specific documentation of traditional life in Kapa'a and Keālia Ahupua'a comes to light. Several of these claims can be seen on the tax map for this area (see Figure 71 above).

Keālia was granted to the *ali'i* Miriam Ke'ahikuni Kekau'onohi (Land Commission Award 11216; Royal Patent 6071). Kekau'onohi was a granddaughter of Kamehameha, one of Liholiho's wives and served as Kaua'i governor from 1842 to 1844.

Of the seventeen land claims registered, fifteen were awarded (Figure 75 and Table 13). The grand majority of the claims were made on lands adjacent to the Keālia River, a good sized stream which was capable of supporting large scale irrigation projects. Other *kuleana* lands were situated adjacent to smaller streams or *'auwai* north of Keālia River. Sixty seven cultivated *lo'i* are claimed in the *kuleana*, with reference to numerous uncultivated *lo'i* and boundaries of other cultivated *lo'i* which were not claimed. This information suggests that taro farming continued to be central to Keālia.

Another noteworthy resource in Keālia were ponds or *loko*. Four ponds were mentioned, though no reference to location is given for two. Akiana Pond (LCA #8060) is thought to be located in the *'ili* of Akiana and Loko Waipunaula (LCA #8833) is thought to be in Waipunaula *'ili*. In addition to the fishponds providing fresh fish, the Keālia records indicate that freshwater fish were also caught in the rivers and streams. One individual claims a *kahe 'o'opu* or *'o'opu* fish trap (LCA # 2381). *Māhele* documents for Keālia indicate that people were raising turkeys, goats and pigs. One individual (LCA # 8061) claimed a *mauka* parcel of land with *noni*, a useful medicinal plant and *wauke*, a plant used in making *kapa* and cordage. There were several disputes over orange trees (LCAs # 3413B, 2381, 10473). In one case, the *konohiki* affirmed that he himself had taken away two orange trees belonging to a claimant.

Further north on the plateau land above Keālia Valley, Kumukumu was surrendered to the government (by commutation) by W. C. Lunalilo. Only one claim (LCA # 10660) was made for Kumukumu, near the project area, apparently by Pakaa, a *konohiki* under Kanoa (Figure 75 and Table 14; see also Figure 71 above). According to Pakaa, he was given the lands of Kamalomalo, Kumukumu and Halaula by Kanoa. In those lands he restored 42 *lo'i*. In Kumukumu, there were several *lo'i*, *kula* and two house lots. The Kumukumu *lo'i* were situated along the Kumukumu Stream, a small stream which flows into the ocean near the project area. Hōmaikawa'a, which according to the documents contained within the Indices of Awards, was part of the district of Ko'olau, was claimed as Government Lands.

#### 10.2.4 Early Historic Accounts of Kapa'a and Keālia (1830's-1900's)

The earliest documentation of life in the *ahupua'a* appears in the 1830's when missionary censuses recorded a total population of 283, comprising 265 adults and 18 children within Keālia (Schmitt 1973:25). Hōmaikawa'a seems to have been a small village at the time of the 1830 census with a population of 70. Other Protestant missionary records focused more specifically on areas where mission stations were established. An 1847 census of twenty three land divisions in the Hanalei and Kawaihau Districts gives population figures for Keālia, Kumukumu and Hōmaikawa'a (Schmitt, 1969). Most notable is the decline in population in Keālia, from 283 in the 1830s to 143, a reduction of almost half (Schmitt, 1969:229). The population of Hōmaikawa'a was also recorded as reduced to half of its 1830's population, with 32 individuals. Accounting for the high death toll caused by the introduction of foreign disease, this still seems like an extremely high death rate. Kumukumu's population at this time was 21.

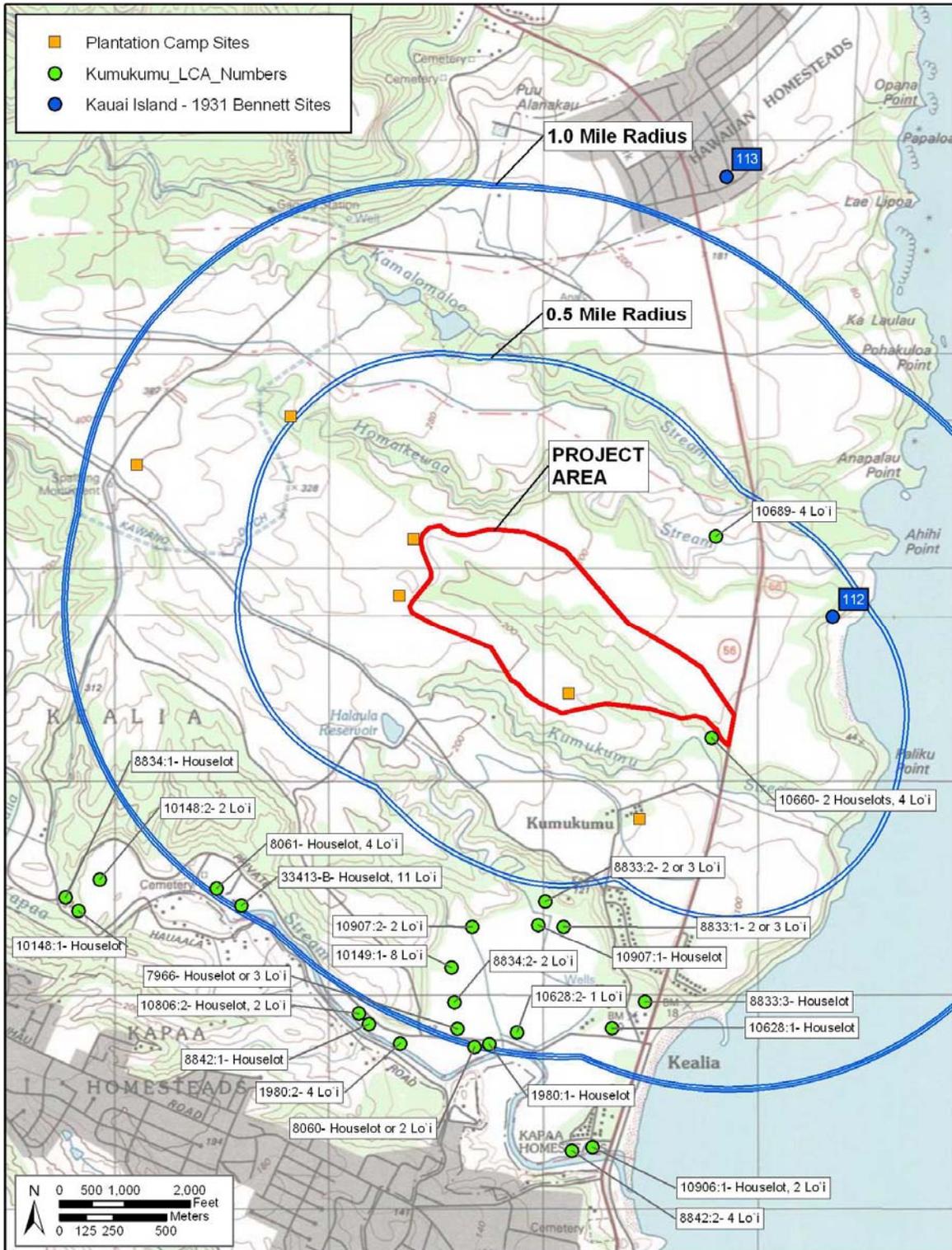


Figure 75. Map showing LCA locations (green circles), sites recorded by Bennett (1931), and approximate locations of plantation camp sites near the Kumukumu project area

Table 13. Māhele Land Claims in Keālia Ahupua'a (near the Kumukumu project area)

LCA	Claimant	'Ili	CLAIMS	AWARD
10907	Umiumi	Akiana, Hawaipahea, Awikiwili	2 <i>lo'i</i> , 1 <i>kula</i> , house lot	2 parcels
10906	Umiumi	Kaukuolono	house lot, 2 <i>lo'i</i> , <i>kula</i>	2 parcels
08833	Kiaipa	Waipunaula, Kiohale	5 <i>lo'i</i> , <i>kula</i> , house lot	2 parcels
11216 K	Kekauonohi	Keālia Ahupua'a		6500 acres
10451	Naawa		10 <i>kihapai</i> , goat enclosure	not awarded
10473	Nahi	Pauahi, Kuakahi, Kaeleele	house lot, 15 <i>lo'i</i> , <i>kula</i> , orange trees	3 parcels
10628	Puhi	Kaunakakai, Kuaiula	house lot, 1 <i>lo'i</i>	2 parcels
09973	Lono		<i>lo'i</i> and <i>kula</i>	relinquished land to konohiki
10149	Makuahine	Kealohipaa	3 <i>lo'i</i> , <i>kula</i>	1 parcel
08834	Kalawaia	Lapanui, Kahue	house lot, 2 <i>lo'i</i> , <i>kula</i>	2 parcels
08842	Kaawapupuole	Kauaha, Makapono	house lot, 4 <i>lo'i</i> , <i>kula</i>	2 parcels
08061	Hainau	Kapuna	house lot, 4 <i>lo'i</i> , <i>kula</i>	1 parcel
03413	Kaaki	Kapunakai	house lot, <i>kula</i> , 11 <i>lo'i</i> , 2 orange trees	1 parcel
02381	Kekoowai		5 <i>lo'i</i> , 2 ponds, 2 orange trees, 1 <i>kahe 'o'opu</i> , <i>kula</i>	not awarded
07966	Keaonui and Paekaia	Mahuaku, Haleki	5 <i>lo'i</i> , <i>kula</i> , house lot	1 parcel
08060	Hulialo	Haulei, Kalohipa	house lot, 2 <i>lo'i</i> , <i>kula</i>	1 parcel
01980	Puali	Haulei, Kaeleele	house lot, 4 <i>lo'i</i> , <i>kula</i>	1 parcel
10148	Mamaki	Lapanui	house lot, 2 <i>lo'i</i> , <i>kula</i>	2 parcels

Table 14. Māhele Land Claims in Kumukumu and Hōmaikawa'a

LCA #	CLAIMANT	'ILI	CLAIM	AWARD
10660	Pakaa	Naapakukui, Kumukumu	4 lo'i, kula, 2 house lots	1 parcel
10689	Puukuakahi	Kapuahola, Hōmaikawa'a	4 lo'i, kula, house lot	1 parcel
11014	Wahaeku	Hōmaikawa'a		relinquishes lands at Hōmaikawa'a
8208	Holoaumoku	Hōmaikawa'a		relinquishes lands at Hōmaikawa'a
8043	Ainoa	Hōmaikawa'a		relinquishes lands at Hōmaikawa'a
8042	Alapai	Hōmaikawa'a		relinquishes lands at Hōmaikawa'a

Although most of the historic record documents for Kaua'i in this period revolve around missionary activities and the missions themselves, there was indication that the Kapa'a area was being considered for new sugar cane experiments, similar to those occurring in Kōloa. In a historic move, Ladd and Company received a 50 year lease on land in Kōloa from Kamehameha III and Kaua'i Governor Kaikio'ewa of Kaua'i. The terms of the lease allowed the new sugar company "the right of someone other than a chief to control land" and had profound effects on "traditional notions of land tenure dominated by the chiefly hierarchy" (Donohugh 2001: 88). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawai'i State Archives, Interior Dept., Letters, Aug. 1837). The lease was granted by Kauikeaouli for the lands of Kapa'a, Keālia and Waipouli for twenty years for the following purpose:

...for the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him... (Hawai'i State Archives, Interior Dept., Letters, Aug. 1837).

Unlike Ladd & Company which eventually became the Kōloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapa'a, Keālia and Waipouli. In a brief search for information on Honolulu merchant, Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well known Honolulu merchant who is documented as having experimented with grinding sugar cane in

Waimea, Kaua'i at about the same time the 1837 lease for lands in Kapa'a, Keālia and Waipouli was signed (Joesting, 1984: 152).

In 1849, son of Wai'oli missionary, William P. Alexander, recorded a trip he took around Kaua'i. Although, he focuses on the larger mission settlements like Kōloa and Hanalei, he does mention Kapa'a and Keālia.

A few miles from Wailua, near Kapaa we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over the reef, and up on the beach, where it now lies. A few miles further we arrived at Keālia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water (Alexander, 1991: 123).

In later years, the notorious Kapa'a reef was to become the location of many shipwrecks once a landing was built there in the 1880s.

One of the first people to succeed in business in the Keālia area was a German by the name of Ernest Krull. In 1854, a government survey was prepared for Kumukumu, Kaua'i (Hawai'i State Survey, RM 141). In handwritten notes of the map, it is indicated that Mr. Krull desired to buy government interest to the land for \$200.00. Apparently Mr. Krull was successful in obtaining Kumukumu because by the early 1860s, he was running a thriving business supplying whaling ships with beef and dairy products (Joesting, 1984: 171). Mr. Krull's ranch and dairy were located in the Waipahe'e area of Kumukumu in a place called Kalualihilihi (Kapa'a School, 1983:4). His residence also served as a rest stop for travelers during the 1860s (Lydgate, 1991: 142). Mr. Krull continues to lease a portion of the tablelands above Keālia until 1876 when he sells his ranch to Colonel Z.S. Spalding and Captain James Makee (Hawai'i State Archives, Interior Dept., Letters, 1879; Kapaa School, 1983:4).

Although the 1830 missionary census records a good size village in Hōmaikawa'a and a small settlement at Kumukumu, north of Keālia, there is very little historic information on these places.

The first large scale agricultural enterprise in the Kapa'a/Keālia area began in 1877 in Kapa'a by the Makee Sugar Plantation and the Hui Kawaihau (Dole, 1916: 8). The Hui Kawaihau was originally a choral society begun in Honolulu whose membership consisted of many prominent names, both Hawaiian and haole. It was Kalākaua's thought that the Hui members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kaua'i. Captain Makee was given land in Kapa'a to build a mill and he agreed to grind cane grown by Hui members. Kalākaua declared the land between Wailua and Moloa'a, the Kawaihau District, a fifth district and for four years the Hui attempted to grow sugar cane at Kapahi, on the plateau lands above Kapa'a. After a fire destroyed almost one half of the Hui's second crop of cane and the untimely death of one of their principal advocates, Captain James Makee, the Hui began to disperse and property and leasehold rights passed on to Makee's son-in-law and new Makee Plantation owner, Colonel Z.S. Spalding (Dole, 1916: 14).

As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapa'a during the early years of the Makee Sugar Plantation. Following Captain Makee's death, Colonel Spalding took control of the Plantation and in 1885 moved the mill to Keālia (Cook, 1999: 51). The deteriorating stone smokestack and landing were still there well into the 1900s (Damon, 1931:359). Condè and Best (1973:180) suggest that railroad construction for the Makee Plantation started just prior to the mid 1890's. This railroad line was part of a twenty mile network of plantation railroad with some portable track and included a portion of Keālia Valley and in the *mauka* regions of the plateau lands north of Keālia (Condè and Best, 1973:180).

By the late 1800's, Makee Plantation was a thriving business with more than one thousand workers employed (Cook, 1999:51). The locations of various plantation camps are shown on Figure 75 above (see also Figure 71, which shows "Amberly Camp" within the current project area). However, in most instances, no physical remains of these former camps survive because they were abandoned and eventually re-planted in cane.

Narrow wagon roads gave way to macadamized roads in the early part of the 20th century. This new road was called the Kaua'i Belt Road and parts of it are thought to have followed the "Old Government Road" (Cook, 1999) sometime after 1910 as the new road is present on the 1963 U.S.G.S. survey map but not the 1910 version (Figure 76 and Figure 77). In Kapa'a, the present day Kūhiō Highway probably follows the same route as the original Government Road and subsequent Kaua'i Belt Road. The location of the *kuleana* awards in Kapa'a indicates that the majority of the houselots were situated along the Government Road.

In Keālia, however, there is evidence that there were numerous traditional trails leading to Anahola with possibly two principal routes, a *makai* route and a *mauka* route. In 1881, Z.S. Spalding, proprietor of the Makee Sugar Plantation, appealed to the Department of the Interior with a formal petition to have the *makai* road (in Keālia) officially closed stating that the natives were breaking through his fences to take short cuts between Keālia and Anahola (Hawaii State Archives, Letter: Z.S. Spalding, May 16, 1881). The exact location of the *makai* road is unknown although it is thought to be on the plateau lands, somewhat removed from the coastline, in areas fit for sugar cane production. The route of the Old Government Road, also known as the "Mauka road" is described as such, "...crossing the Kealia River above the Rice Plantation and passing over the hill near Mr. Spalding's residence" (Hawaii State Archives, Letter: Z.S. Spalding, April 21, 1882). When the Kaua'i Belt Road was constructed in first two decades of the 20<sup>th</sup> century, a portion of the old Government Road route was abandoned. The new route crossed the river at the *makai* end of Keālia Stream paralleled the ocean and the railroad track and then turned *mauka* passing through Keālia town and went up the hill to meet up with the "Old Government Road". The Keālia Bridge built for the Kaua'i Belt Road is thought to date to *circa* 1912. A traveler writing about their travels in 1913, mentions the bridge: "...In the twinkling of an eye we passed on the steel bridge of Kealia. This new bridge is beautiful" (Akina 1913).

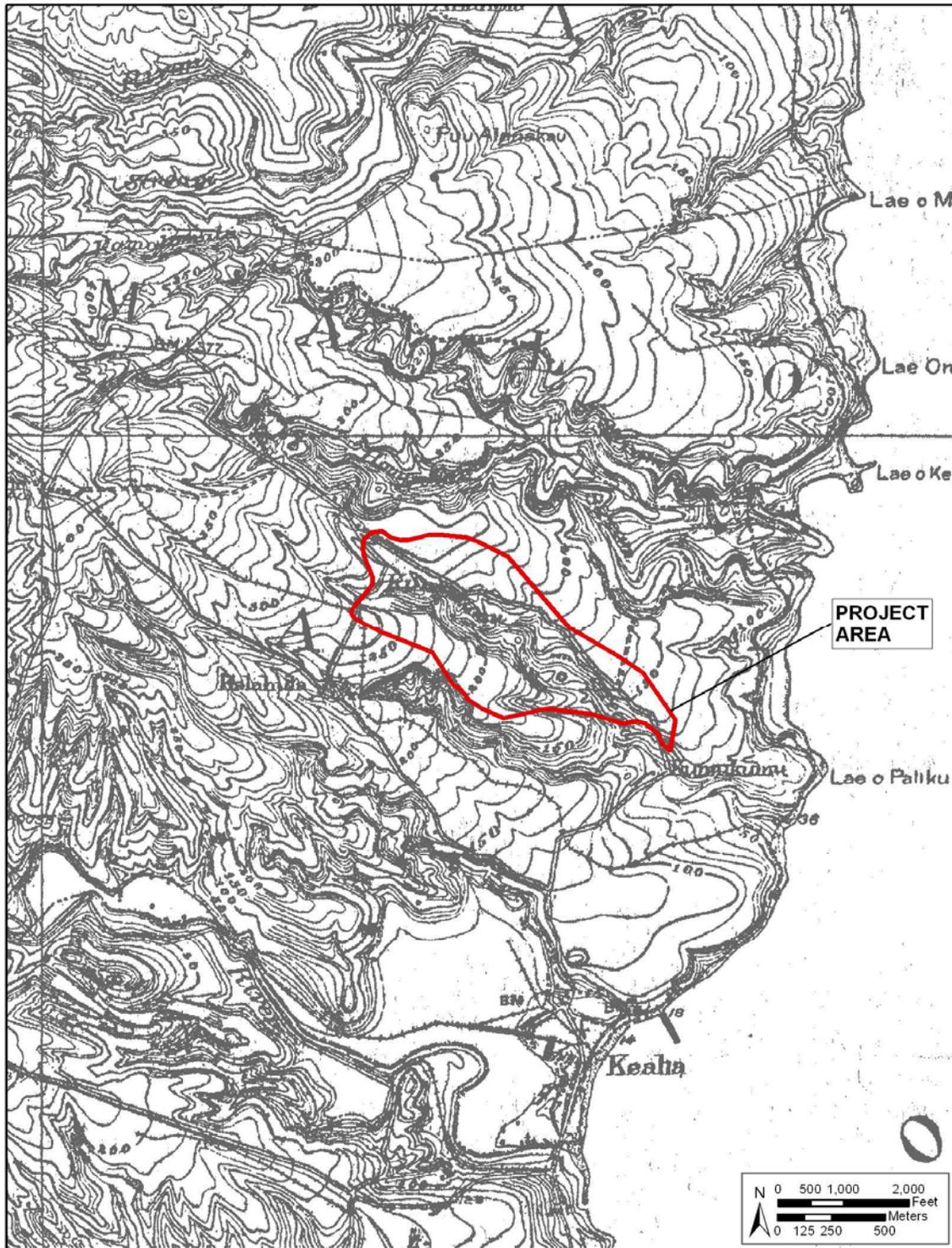


Figure 76. Portion of 1910 U.S. Geological Survey, showing Kumukumu project area

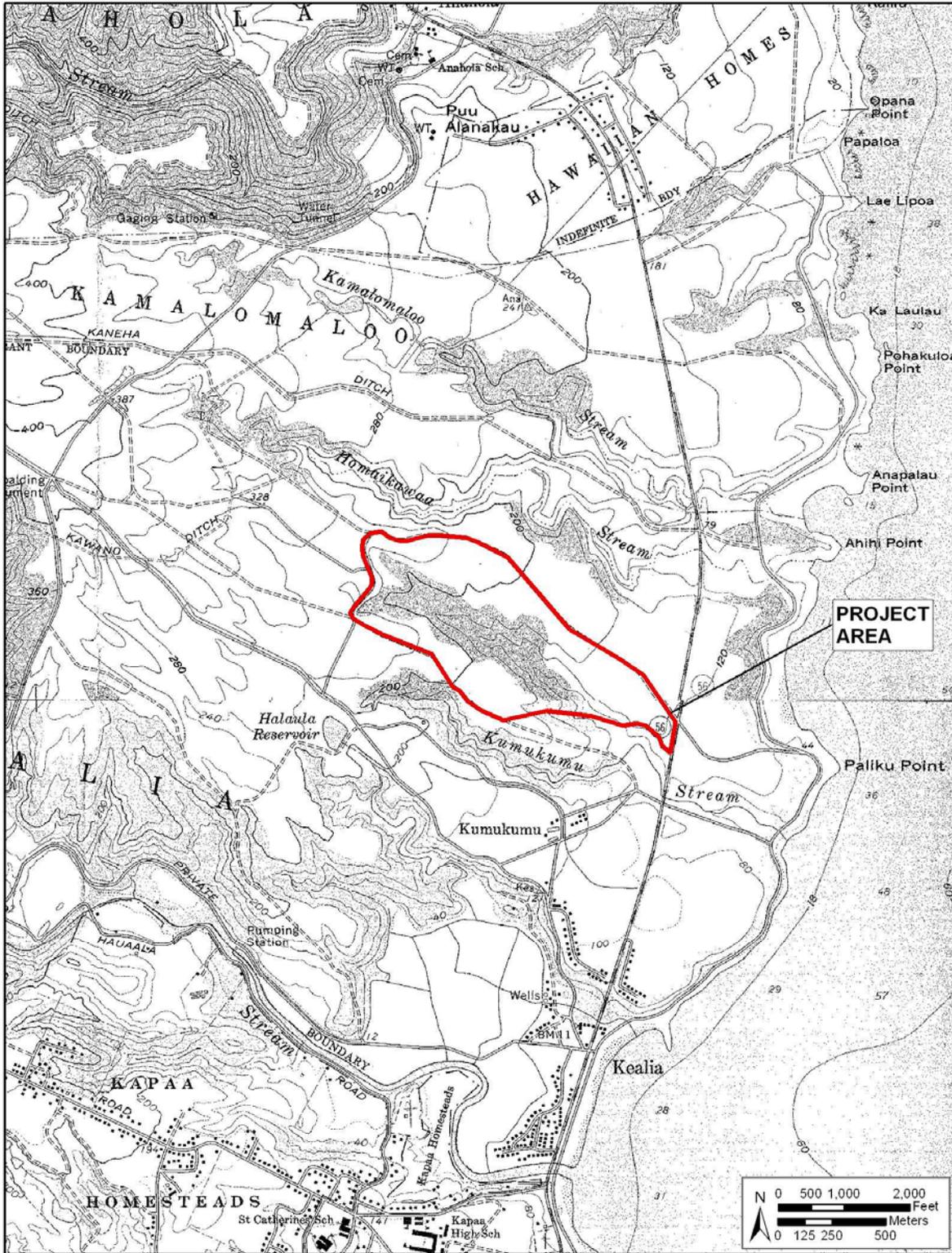


Figure 77. Portion of 1963 U.S. Geological Survey, showing Kumukumu project area

### 10.2.5 20th Century History of Keālia (1900-Present)

The Ahukini Terminal & Railway Company was formed in 1920 to establish a railroad to connect Anahola, Keālia, Kapa'a to Ahukini Landing and "provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet" (Condé and Best, 1973: 185). This company was responsible for extending the railroad line from the Makee Landing, which was no longer in use, to Ahukini Landing. In an annual report written in December 1921, the line between Ahukini and Keālia was opened by May 7, 1921 stating, "can run trains from Ahukini to Kealia on twenty four hours notice" (Condé and Best, 1973: 185).

In 1934, the Līhu'e Plantation Company absorbed the Ahukini Terminal & Railway Company and Makee Sugar Company (Condé and Best, 1973: 167). The railway and rolling stock formerly owned by Makee Sugar Company became the Makee Division of the Līhu'e Plantation. At this time, besides hauling sugar cane, the railroad was also used to haul plantation freight including "fertilizer, etc...canned pineapple from Hawaiian Canneries to Ahukini and Nawiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd." (Hawaiian Territorial Planning Board, 1940: 11). Former plantation workers and *kama'āina* growing up in Kapa'a remember when the cannery would send their waste to the pineapple dump, a concrete pier just north of Kumukumu Stream (State Site No. 50-30-08-789:H) by railroad. The structure is built over the water where the rail cars would dump the pineapple waste. The current would carry the waste to Kapa'a which would attract fish and sharks (Pers.communication J. & .W. Kaneakua and R. Sugiyama, August 2002).

Līhu'e Plantation was the last plantation in Hawai'i to convert from railroad transport to trucking (Condé and Best, 1973: 167). "By 1957 the company was salvaging a part of their plantation railroad, which was being supplanted by roads laid out for the most part on or close to the old rail bed" (Condé and Best, 1973: 167). By 1959, the plantation had completely converted over to trucking.

Keālia Town slowly dispersed after the incorporation of Makee Sugar Company into Līhu'e Plantation in the 1930s. Many of the plantation workers bought property of their own and moved out of plantation camps. The plantation camps which bordered Kūhiō Highway were disbanded in the 1980s. The Līhu'e Plantation began to phase out in the last part of the 20th century. In 1997, the entire *ahupua'a* of Keālia was sold off as an effort to downsize Amfac's landholdings and because Keālia is the most distant from the Līhu'e Plantation sugar mill, it was considered the least profitable (*Honolulu Advertiser*, July 7, 1997). The Līhu'e Plantation completely folded at the end of the 20th century.

### 10.2.6 Settlement pattern summary for Keālia Ahupua'a

The prehistoric settlement pattern shows coastal permanent habitation and inland agriculture as the general pattern. In Kapa'a, the inland agriculture and habitation loci was the perimeter of the large marshy area backshore of the coastal sand dune beach berm. In Keālia the inland agriculture and associated habitation was focused on a river valley and tributary system.

Legends, traditional accounts and *wahi pana* point to the Keālia area as being rich in pre-contact history, although it seems much of this history has been lost. Accounts name several *kupua* and known *akua* in reference to places in Kapa'a and Keālia such as Palila, Hi'iaka and

Wahine'ōmao and 'A'aka, the *menehune*. 'A'aka skirmishes with a shark at 'Āhihi Point, not far from the project area. In addition, several persons of high status appear in references to *wahi pana*, and legends associated with Kapa'a and Keālia. These include Mō'īkeha, Kaweloleimākua, Kawelomahahai'a and Paka'a. Paka'a, son of notable parents and guardian of the wind gourd, is thought to have grown up at Keahiahi, the rocky headland between Kapa'a and Keālia.

Historic records list a number of *heiau* situated in Kapa'a and Keālia suggesting the region was at one time much more significant than is portrayed by the *kuleana* records of the late 1840s and early 1850s. The specific locations of most of these *heiau* are unknown, however there are a few which carry the same names as *wahi pana* known to be located in the vicinity of the project area. These *heiau* include Kuahiahi (Keahiahi, Kaahiahi) at the rocky headland at the north end of Kapa'a and Kaluluomoikeha in Kapa'a. Oral accounts attest to a *heiau* in the vicinity of Kūna Bay, although no further information was obtained.

Historic accounts suggest a fairly sparse population in Kapa'a with Hawaiians living in a series of small settlements, probably along the *alanui aupuni* (the Kūhiō Highway) which traversed a narrow sand berm. This sand berm created the *makai* boundary of an inland swamp. Most of the *lo'i* claimed were situated on the *mauka* side of the Kapa'a swamp in shallow gulches or valleys. The more ample river valley of Keālia hosted a larger population with *kuleana* claims mostly dispersed along the Keālia River. There is one Land Commission Award adjacent to the project area at the north end of Keālia Beach and subsurface testing in this locale has yielded evidence of human occupation ranging from pre-contact times to the plantation era. According to historic documents, the plateau areas north of Keālia Valley were sparsely inhabited with areas bordering Kumukumu and Hōmaikawa'a Streams hosting the largest settlements.

Commercial sugar cane cultivation and milling initiated in the mid to late 1800's was a primary factor in settlement pattern changes in the Kapa'a/ Keālia area. Housing patterns were based on plantation camps of mainly immigrant laborers. Subsistence economy was replaced by the market-based economy. Transportation became mechanized, with rail lines from the fields to the mills, and to new landings. In the early 1900's, commercial pineapple becomes another major economic factor in the Kapa'a area with similar infrastructure as the plantation. The demise of both pineapple and sugar was concurrent with an increase in tourism and service-oriented economy. Plantation era transportation routes went into disuse or were incorporated into present transportation infrastructure. Modern construction activities in coastal Kapa'a/ Keālia however continue to unearth evidence of pre-contact, early historic, and plantation era activities.

### 10.3 Previous Archaeological Research in Keālia Ahupua'a

Numerous archaeological studies have been conducted and historic properties identified near the Kumukumu project area in Keālia Ahupua'a (Figure 78, Table 15 and Table 16).

The first systematic archaeological survey of the island of Kaua'i was performed by Wendell C. Bennett in 1929 (Bennett 1931). Bennett attempted to relocate sites previously described by Thrum (1907), as well as identify additional significant sites. Three of Bennett's sites are near the current project area, sites 111 through 113. Site 111 is a "ditch, south of Keālia Valley, inland... traditionally referred to as a Hawaiian ditch" (Bennett 1931:128). Site 112 is described as "Kawelomamaia *heiau*, said to have been located where the Kawelomamaia stream runs into the sea north of Kealia" (Bennett 1931:129). It is important to understand that Bennett's work was conducted *after* commercial sugar cane and other historic activities had destroyed or damaged many sites.

A few small scale archaeological studies were done near the project area in the 1990s. Two inadvertent burial finds were documented in a large sand deposit at the bend of the Kapa'a River and were assigned State Site # 50-30-08-1851 (Folk & Hammatt 1991, Hibbard 1991, and Joudane & Collins 1996). Komori (1996) reports on a burial (Site -1899) near Palikū Beach.

Hammatt and Chiogioji (1998) undertook a large scale archaeological assessment of the *ahupua'a*, and found that many areas had been impacted by cane and pineapple cultivation. They suggest that the shoreline areas as well as higher elevation areas (specifically near the Waiawawa Reservoir at the approximate 1000 ft elevation) are of the highest archaeological concern. In terms of the general current project area location, Hammatt and Chiogioji note: "Gulch areas at lower elevations, particularly below Spalding Monument, have been heavily modified by commercial agriculture, but subsurface sites could be present. These areas should be evaluated on a case by case basis, and subject to further survey before development plans are finalized" (Hammatt and Chiogioji 1998).

In 2000, Perzinsky et al. performed a fairly large inventory survey *makai* of the current project area, and discovered sand dune burials as well as an associated cultural layer were at "Donkey Beach" (Site -1899, see also Komori 1996). They also record two other sites, one dating to World War II and the other to the plantation era.

Bushnell et al (2003) conducted an inventory survey and sub-surface testing for the Kapa'a to Keālia Bike and Pedestrian Path. In addition to noting several previously recorded sites, they identified several new sites along the pathway, including a burial (-2074) and several historic features (i.e., a railway alignment).

Beginning in 2005, Scientific Consulting Services (SCS) conducted a 2,008-acre inventory survey in Keālia, covering a significant portion of the *ahupua'a* immediately *mauka* of Kūhiō Highway and including the current project area. The inventory survey was completed in 2007 and reported in four phases, with an inventory survey report produced for each phase (Phase I, Drennan et al. 2006; Phase II, Drennan & Dega 2007a; Phase III, Drennan et al. 2007; and Phase IV, Drennan and Dega 2007b). There were a total of 101 historic properties recorded, with over 250 individual features. Only thirteen of the sites were traditional or transitional Hawaiian sites and the rest were related to plantation era or post-contact times. Within the current project

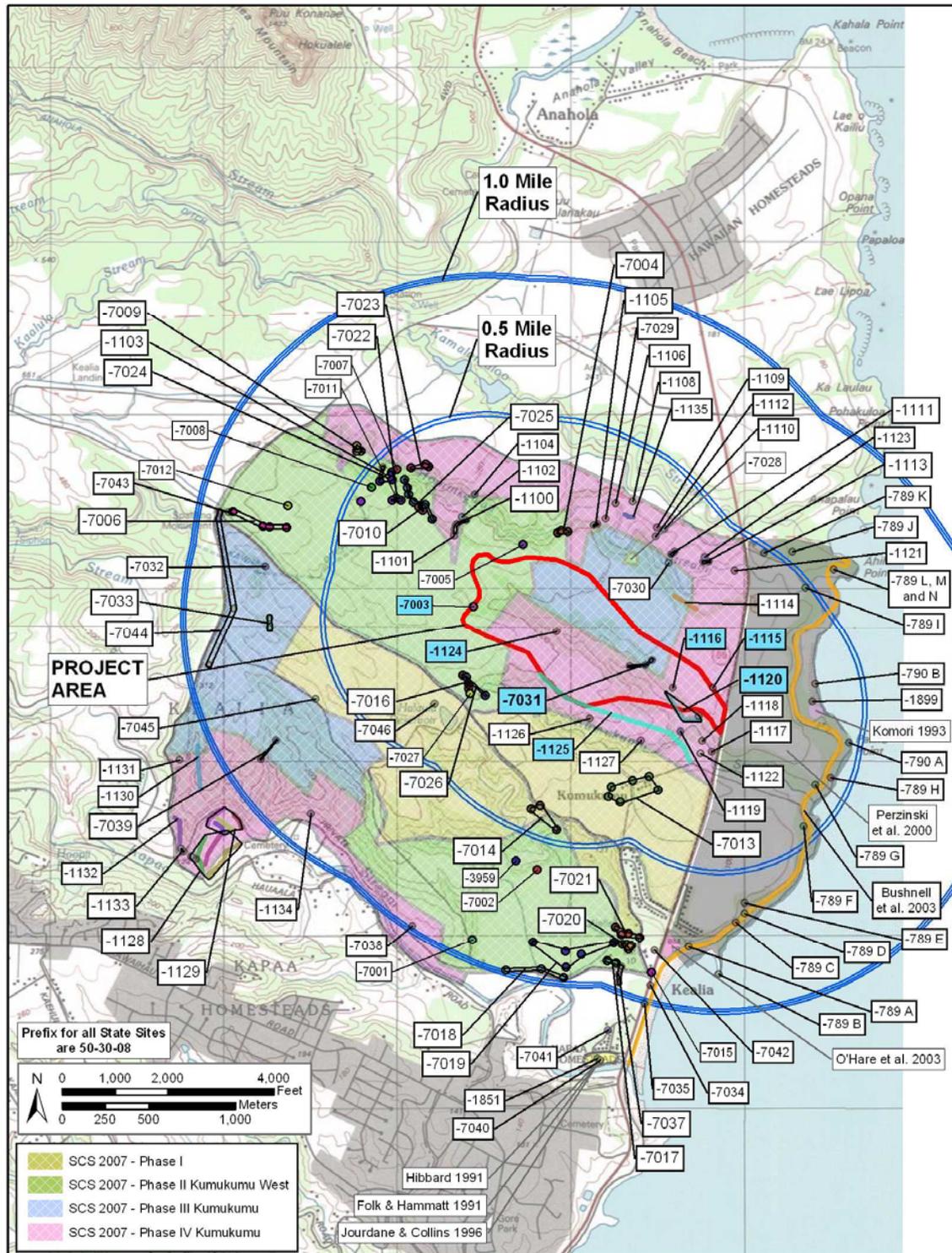


Figure 78. Previous archaeological studies and known historic properties near the Kumukumu project area, with sites located within the Kumukumu project area highlighted in blue; note that sites from Phase I of the SCS study are not shown

Table 15. Previous archaeological studies near the Kumukumu project area

Source	Location	Nature of Study	Findings
Bennett 1931	Island-wide	Archaeological reconnaissance survey of <i>heiau</i> , place of refuge	Describes three sites in the nearby area, including Kawelomamaia <i>heiau</i>
Handy and Handy 1972	Archipelago-wide	Native Planters Study	Emphasizes that agricultural production was rather clumped along the Keālia side of Kapa'a Stream seaward of its confluence with Keālia Stream.
Folk & Hammatt 1991	Bend of the Kapa'a River, just inland of Kūhiō Hwy	Archaeological Assessment	Burial finds from Site 50-30-08-1851; noted presence of historic artifacts and traditional Hawaiian midden in the vicinity, and extensive disturbance from sand mining
Hibbard 1991	Bend of the Kapa'a River, inland of Hwy	Reports field check of Nancy McMahon	Recommends further work (Site 50-30-08-1851)
Komori 1993*	Palikū Beach (Donkey Beach)	Burial Report	Burial given site number 50-30-08-1899
Jourdane and Collins 1996	Bend of the Kapa'a River, Site 50-30-08-1851	Burial Report	Burial finds from site 50-30-08-1851
Hammatt & Chiogioji 1998	Keālia Ahupua'a	Archaeological Assessment	Concludes lands formerly in cane or pineapple cultivation should be relatively free of cultural resources
Hammatt & Shideler 1998	Keālia Ahupua'a	Traditional Cultural Practices Study	Notes customary practice issues associated with the coast, streams and burials.
Perzinski, et al. 2000a*	<i>Makai</i> of Kūhiō Hwy., south Keālia Ahupua'a	Archaeological Inventory Survey	Site -789 consists of 14 plantation era features; Site -790 consists of two WWII defensive features and burial site -1899 included 3 additional burials in the same general location as Komori's (1993).
Perzinski et al. 2000b*	Palikū Beach (Donkey Beach)	Burial Treatment Plan	Discusses treatment for burial site 50-30-08-1899
Bushnell et al. 2003*	Kapa'a to Keālia Bike and Pedestrian Path	Archaeological Inventory Survey	Identified five new sites (-2074 to -2078) and one newly designated feature for a known site (-789 Feature A1).

Source	Location	Nature of Study	Findings
O'Hare et al. 2003*	Keālia sub-surface testing	Burial Treatment Plan	Discusses treatment for burial site 50-30-08-2074
Drennan et al. 2006*	Phase I, a 450-acre portion of a 2,008 acre Keālia study	Archaeological Inventory Survey	Documents 15 sites with 21 features: 6 were traditional or transitional Hawaiian sites and the rest were related to plantation era or post-contact times
<b>Drennan and Dega 2007a*</b>	Phase II, 670-acre portion of a 2,008 acre Keālia study	Archaeological Inventory Survey	Documents 30 sites with 82 features: 4 were traditional or transitional Hawaiian sites and the rest were related to plantation era or post-contact times
<b>Drennan, Tome, Cordle &amp; Dega 2007*</b>	Phase III, a 386-acre portion of a 2,008 acre Keālia study	Archaeological Inventory Survey	Documents 19 sites with 93 features: 1 was a traditional/transitional Hawaiian site and the rest were related to plantation era or post-contact times
<b>Drennan and Dega 2007b*</b>	Phase IV, a 562-acre portion of a 2,008 acre Keālia study	Archaeological Inventory Survey	Documents 37 sites with 66 features: 2 were traditional Hawaiian sites and the rest were related to plantation era or post-contact times

\*Archaeological studies within one mile of the current project area; studies in bold include portions of the current project area

Table 16. Historic Properties near the Kumukumu project area

Site #50-30-08	Site Type/ Name (if any)	Location	Site Constraints	Reference
-789*	14 plantation era features which included roads, stone walls, bridges, a bunker, terraces, a jetty and a pier.	Located <i>makai</i> of Kūhiō Hwy. below the agricultural tablelands on the low ridge just north of Ahihi Point	No further work recommended, not recommended for preservation	Perzinski, McDermott & Hammatt 2000a:95
-790*	Two World War II defensive features; Feature A, a concrete foundation & Feature B, a probable fox hole	Located <i>makai</i> of Kūhiō Hwy. in the vicinity of Palikū Beach.	No further work recommended, not recommended for preservation	Perzinski, McDermott & Hammatt 2000a:95
-884	Burial	Kapa'a Ahupua'a	Preservation	SHPD communication

Site #50-30-08	Site Type/ Name (if any)	Location	Site Constraints	Reference
-1100 to -1136*	Historic or Historic Plantation Era sites, including agriculture, water control, and animal husbandry; -1119 and -1136 include possible pre-contact components	Keālia Ahupua'a, <b>Site -1115 &amp; -1116</b> (concrete culverts), <b>Site -1120</b> (earthen ditch, historic petroglyph); <b>Site -1124</b> (clearing mound) & <b>Site -1125</b> (bridge and plantation road) are within or along edge of current project area	No further work, except site -1120 & site -1136 (preservation of historic and traditional petroglyphs)	Drennan and Dega 2007b (Phase IV)
-1851	Burials, historic artifacts and traditional Hawaiian midden	Bend of the Kapa'a River, just inland of Kūhiō Hwy	Consultation and monitoring in vicinity indicated	Folk & Hammatt 1991:2, Jourdan and Collins 1996
-1899*	Burials	Located along edge of high water, 400 m <i>makai</i> of Kūhiō Hwy at Palikū Beach (Donkey Beach) just N. of Palikū Point	65 m by 50 m, long axis along coast, seaward of former railroad; to be preserved, consultation and monitoring in vicinity needed	Komori 1993; Perzinski, McDermott & Hammatt 2000a,b
-2074*	Burial and cultural layer	Near Keālia landing, south of current project area near coast	Recommends data recovery and preservation	Bushnell et al. 2003, O'Hare et al. 2003
-2075	Highway bridge foundation	Near Keālia and Kapa'a boundary	Recommends no further work	Bushnell et al. 2003
-2076	Petroglyph	Kapa'a Ahupua'a	Recommends preservation	Bushnell et al. 2003
-2077	Concrete steps	Kapa'a Ahupua'a	Recommends no further work	Bushnell et al. 2003
-2078	Railway alignment	Runs along coast between Keālia and Kapa'a	Suggests documentation by HAER	Bushnell et al. 2003

Site #50-30-08	Site Type/ Name (if any)	Location	Site Constraints	Reference
-3958 to -3959*	Historic/Pre-contact habitation, human burial, and sugar production	Keālia Ahupua'a	Preservation and burial treatment plan	Drennan and Dega 2007a (Phase II)
-7000 to -7027*	Historic or Historic Plantation Era sites, including habitation water control, and historic burials; Sites -7000 & -7001 date to pre-contact period agriculture	Keālia Ahupua'a, <b>Site -7003</b> is within the current project area (a historic earthen tunnel for water control)	No further work, except site -7027 (railroad berm is good example of site type)	Drennan and Dega 2007a (Phase II)
-7028 to -7036*	Historic or Historic Plantation Era sites, including agriculture, water control, and transportation; Site -7040 includes human remains that date to pre-contact or transitional period	Keālia Ahupua'a; <b>Site -7031</b> is within the current project area (a terrace/mound and trash deposits associated w/ Amberry Camp)	No further work, except site -7028 (historic cemetery), site -7040 (burials) and site -7043 (Spalding monument)	Drennan et al. 2007 (Phase III)

\* Historic properties within one mile of the current project area; sites within project area are highlighted in bold (note that Phase I SCS sites not included in this table)

area, SCS identified a total of seven sites, all dating to the post-contact period: Site -1115 & -1116 (concrete culverts), Site -1120 (an earthen ditch and historic petroglyph), Site -1124 (a clearing mound), Site -1125 (a bridge and plantation road), Site -7003 (a historic earthen tunnel for water control), and Site -7031 (a terrace/mound and trash deposits associated with the Amberry plantation camp).

In sum, sites such as traditional Hawaiian habitation, burials and agricultural features have been noted along the coast and in valley areas where plantation era cultivation did not occur. However, the lands just *mauka* of the highway, i.e. within the current project area, were heavily utilized in the plantation era. Large area surveys of inland Keālia have documented extensive commercial agricultural landscape alterations, and it is clear that a portion of the current project area was impacted by historic agriculture, given the presence of the historic Amberry plantation camp and the findings of the SCS (2007) inventory survey. The current project area, located inland of the coast, is unlikely to have burials or other pre-contact sites within it, based on the soil types and agricultural disturbance. However, historic plantation era sites have been located within the project area bounds, and will likely be the primary concern for future development.

## 10.4 Assessment

### 10.4.1 Historic Properties within the Kumukumu project area

There are seven known archaeological sites within the proposed Kumukumu location or immediately along its borders. Nearly all archaeological sites within the current project area or within close proximity to the project area were located by SCS (2007, Phase II-IV). Of the seven historic properties within or along the edge of the project area, Site -1120 is the only site that was recommended by SCS for further work (see Table 16 above). Feature 1 of Site -1120 is an earthen ditch, and requires no further work, but Feature 2, a historic petroglyph, is recommended for preservation. While Feature 2 of Site -1120 is very near the border of the Kumukumu project area, to the best of our knowledge the preservation site is not within Kumukumu project area bounds. Thus, all features recorded during the SCS (2007) inventory survey that are within the Kumukumu project area have yielded sufficient archaeological information, and no further work is necessary to mitigate future impacts on those properties, according to the SCS reports.

### 10.4.2 Historic Properties within one mile of the Kumukumu project area

Several known historic properties are located within one mile of the project area (see Figure 78). These include Site -789 (a historic road), Site -790 (military infrastructure dating to World War II), and Sites -1899 and -1851 (cultural layers and associated burials). All of these sites are in the *makai* portion of the *ahupua'a*, on the *makai* side of the belt road from the current project area. It is unlikely that similar sites will be located within the Kumukumu parcel. In addition to these *makai* historic properties, nearly all of the approximately 100 historic properties recorded during the SCS (2007, Phase I-IV) inventory survey are within one mile of the current project area. The vast majority of these sites are historic or plantation era sites, with a small number of pre-contact sites and a small number of traditional Hawaiian and historic burials.

### 10.4.3 Summary

Unlike the other project areas addressed in this literature review, the Kumukumu project area has undergone a recent archaeological inventory. Therefore our certainty of what historic properties exist within the project area is greatly increased. The seven historic properties that are located within the project area have been sufficiently addressed through the archaeological inventory survey performed by SCS, and no further work is required to mitigate impacts for these sites.

In sum, previous archaeological work in the surrounding area has revealed pre-contact and historic sites near the project area, as well as several burials. However, the Kumukumu location has been heavily impacted by historic agricultural activity, and the likelihood of either surface or subsurface pre-contact archaeological findings is minimal. Historic sites related to the plantation era (i.e., the remains of the Amberry plantation camp) have been documented within and in the immediate vicinity of the project area. Site -7027 and -7028 are both preserve sites located near the project area and should be considered in terms of the project area APE. Other mitigation measures may include a monitoring plan to mitigate for possible sub-surface features.

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## Section 11 Summary

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### 11.1 Summary

The following summary discusses the possible adverse impacts that the development of individual parcels may have to known historic properties, based upon the historical and archaeological background research compiled within this report. All properties will require a archaeological inventory survey prior to development, except for the Kumukumu location which has undergone a recent assessment by SCS. The project locations are grouped according their suggested level of possible adverse impacts on cultural and/or historic resources:

#### **Pu'u o Pāpa'i**

No additional mitigation measures will likely be necessary. There are no recorded sites within the project area or within one mile of the project area. It is concluded that the development of the project will have no direct effect on known historic properties, and that the probability of encountering previously undocumented cultural resources during an inventory survey is exceedingly low.

#### **Kekaha-Mauka**

Sub-surface testing and/or a monitoring plan for a small portion of the project area is recommended. There are no recorded sites within the project area or within 0.5 miles of the project area, and although there are a few archaeological sites within one mile these are not expected to be adversely impacted by development of the parcel. There is an area of the soil type Jaucus sand within the western and *makai* portions of the project area. This soil type tends to have a higher number of archaeological finds and should be subject to archaeological monitoring during construction. Overall, however, given the small number of sites found in the surrounding parcels (several of which have undergone archaeological inventory surveys) it is unlikely that sub-surface archaeological remains are present within the project area.

#### **Kālepa, Kōloa, Ma'alo & Umi**

There are no known historic properties within the project area. While there are sites within one mile, nearly all of these sites are located more than a half-mile outside of the project area, and are located in different environmental zones than the project area (i.e., along streams or near shore). Therefore, development of the parcel is unlikely to have adverse effects on nearby historic properties, and no additional mitigation measures are currently recommended for those sites. There is some likelihood of historic features (such as those related to agriculture) being present in the project area, and mitigation should focus on the identification of any possible surface sites within the project area bounds. Sub-surface archaeological features are not likely to be present.

#### **Kīpū**

There are no known historic properties within the project area. While there are sites within one mile, most are located in a different environmental zone (i.e., along a river tributary).

Therefore, development of the parcel is unlikely to have adverse effects on most nearby historic properties. However, one site (-3010) is within a quarter mile of the project area and is referred to as an “impressive site” by Neller and Palama (1973). An assessment of possible adverse effects to this site prior to development is recommended. There is some likelihood of historic features (such as those related to agriculture) being present in the project area, and mitigation should focus on the identification of any possible surface sites within the project area bounds in addition to possible impacts on Site -3010. Sub-surface archaeological features are not likely to be present.

### **Kumukumu**

There are seven known historic properties within the Kumukumu project area, all recorded by a recent inventory survey by SCS (2007). All of the sites identified within the project bounds date to the historic or plantation era, and SCS has determined that all of these sites yielded sufficient archaeological information during the archaeological inventory survey, with no further work necessary to mitigate future impacts on those properties. Site -7027, -7028 & -1120 Feature 2 are preservation sites recorded by SCS located near the project area, and may need to be considered in terms of the project area APE if the parcel is developed. Other mitigation measures may include a monitoring plan to mitigate for possible sub-surface features.

## **11.2 Conclusions**

The literature review of the eight proposed parcels found that the majority of areas being considered for the Kaua'i Municipal Solid Waste Landfill have been heavily impacted historically and in modern times by agricultural and animal husbandry activity. This is an expected pattern given the widespread sugarcane industry and cattle ranching on Kaua'i, which took advantage of the same fairly level, slightly inland areas that are being considered for the landfill location. Prior to the massive landscape changes that took place in the historic era on Kaua'i, typical utilization of the locations likely involved terracing for agriculture and general habitation activities. For most locations, any remaining evidence of these pre-contact activities has likely been destroyed by sugarcane farming and related industries.

Based on the findings of this literature review, most of the properties being considered as a location for a Kaua'i Municipal Solid Waste Landfill are expected to have little or no impact on known historic properties. Of the eight possible locations, there is only one (Kumukumu) that has known historic properties within the bounds of the project area. While this is complicated by the fact that almost none of the locations (except Kumukumu) have had previous inventory surveys within their bounds, the likelihood of finding surface or sub-surface remains within the parcels is rather low. Only one parcel (Kekaha-Mauka) has a soil type within its bounds that is more likely to reveal sub-surface archaeological concerns.

While there are historic properties within the vicinity of several of the parcels, these sites are nearly always in different environmental settings than their respective parcels (such as along a shoreline or near a stream/river). It has been determined that development of these locations as a landfill will not adversely affect the known historic properties for several of the parcels. For the Kīpū and Kumukumu parcels, an assessment of possible adverse impacts on nearby sites is recommended.

Recommended mitigation measures for the development of the parcels includes a surface archaeological inventory survey in an attempt to locate any archaeological remnants. The probability of any significant finds is, however, quite low for all of the parcels. As mentioned, one of the parcels – Kekaha-Mauka – would possibly require some sub-surface testing prior to construction due to the presence of Jaucus sand within a portion of the project area. All other project areas have an exceedingly low probability of containing sub-surface archaeological remains. In addition to surface survey of the property, two parcels (Kīpū and Kumukumu) would likely require additional consideration of a known historic property near the project area (i.e., within the project area APE). Based on these findings, mitigation measures for most of the parcels being considered should focus on the identification of any possible surface sites within the project area bounds.

## County of Kaua'i Landfill Site Evaluation Data Sheets – Alternative Landfill Site Kekaha-Mauka, Kekaha Ahupua'a

### *Archaeological and/or historical significance*

Sites that have archeological and/or historical significance, or are near areas of significance may be more costly to develop.

The “site” is the landfill property (Kekaha-Mauka, Kekaha Ahupua'a).

Archaeological and historical significance is determined by the listing of the site by the State Historic Preservation Division, Department of Land and Natural Resources.

Point Value	Measure
1	Known area(s) of significant archeological and/or historical importance have been listed in areas within 0.25 miles of the site
2	Known area(s) of significant archeological and/or historical importance have been listed in areas between 0.25 and 0.5 miles of the site
3	Known area(s) of significant archeological and/or historical importance have been listed in areas greater than 0.5 miles of the site

**Data Source:** See Esh et al. 2008: Section 3.

**How the point value of the criterion was determined:** No known sites are within the proposed landfill area or within 0.5 mile. Sites are present at approximately one mile (see Esh et al. 2008: Figure 12), thus yielding an assigned point value of 3.

**Complications obtaining the data:** The Kekaha-Mauka, Kekaha Ahupua'a project area has not been reviewed in a prior archaeological inventory survey. Nevertheless a thorough background study has concluded “there is a low probability of finding highly significant sites.” (Esh et al. 2008:27)

**Complications calculating the point value:** Straight-forward with the caveat that no portion of the Kekaha-Mauka, Kekaha Ahupua'a project area has been previously studied (prior to the Esh et al. 2008 study).

1. Areas of known archeological and/or historical significance have been listed as being located on the site property: Yes or No **No**
2. Areas of known archeological and/or historical significance have been listed as being located on property within a quarter mile of the site: Yes or No **No**
3. Closest areas of archeological and/or historical significance to site boundary: **Approximately 1 mile. No known sites are within the project area.**

Point Value: 3

## County of Kaua'i Landfill Site Evaluation Data Sheets – Alternative Landfill Site Pu'u o Pāpa'i, Makaweli Ahupua'a

### *Archaeological and/or historical significance*

Sites that have archeological and/or historical significance, or are near areas of significance may be more costly to develop.

The “site” is the landfill property (Pu'u o Pāpa'i, Makaweli Ahupua'a).

Archeological and historical significance is determined by the listing of the site by the State Historic Preservation Division, Department of Land and Natural Resources.

Point Value	Measure
1	Known area(s) of significant archeological and/or historical importance have been listed in areas within 0.25 miles of the site
2	Known area(s) of significant archeological and/or historical importance have been listed in areas between 0.25 and 0.5 miles of the site
3	Known area(s) of significant archeological and/or historical importance have been listed in areas greater than 0.5 miles of the site

**Data Source:** See Esh et al. 2008: Section 4.

**How the point value of the criterion was determined:** No known sites are within the proposed landfill area or within 0.5 mile. Sites are present just beyond one mile (see Esh et al. 2008: Figure 20), thus yielding an assigned point value of 3.

**Complications obtaining the data:** The Pu'u o Pāpa'i, Makaweli Ahupua'a project area has not been reviewed in a prior archaeological inventory survey. Nevertheless a thorough background study has concluded “there is a low probability of finding highly significant sites.” (Esh et al. 2008:46)

**Complications calculating the point value:** Straight-forward with the caveat that no portion of the Pu'u o Pāpa'i, Makaweli Ahupua'a project area has been previously studied (prior to the Esh et al. 2008 study).

1. Areas of known archeological and/or historical significance have been listed as being located on the site property: Yes or No **No**
2. Areas of known archeological and/or historical significance have been listed as being located on property within a quarter mile of the site: Yes or No **No**
3. Closest areas of archeological and/or historical significance to site boundary: **Greater than 1 mile. No known sites are within the project area.**

Point Value: 3

## County of Kaua'i Landfill Site Evaluation Data Sheets – Alternative Landfill Site Umi, Wahiawa Ahupua'a

### *Archaeological and/or historical significance*

Sites that have archeological and/or historical significance, or are near areas of significance may be more costly to develop.

The “site” is the landfill property (Umi, Wahiawa Ahupua'a).

Archeological and historical significance is determined by the listing of the site by the State Historic Preservation Division, Department of Land and Natural Resources.

Point Value	Measure
1	Known area(s) of significant archeological and/or historical importance have been listed in areas within 0.25 miles of the site
2	Known area(s) of significant archeological and/or historical importance have been listed in areas between 0.25 and 0.5 miles of the site
3	Known area(s) of significant archeological and/or historical importance have been listed in areas greater than 0.5 miles of the site

**Data Source:** See Esh et al. 2008: Section 5.

**How the point value of the criterion was determined:** No known sites are within the proposed landfill area or within 0.5 mile. Sites are present at just greater than 0.5 mile (see Esh et al. 2008: Figure 30), thus yielding an assigned point value of 3.

**Complications obtaining the data:** The Umi, Wahiawa Ahupua'a project area has not been reviewed in a prior archaeological inventory survey. Nevertheless a thorough background study has concluded “there is a low probability of finding highly significant sites.” (Esh et al. 2008:70)

**Complications calculating the point value:** Straight-forward with the caveat that no portion of the Umi, Wahiawa Ahupua'a project area has been previously studied (prior to the Esh et al. 2008 study).

1. Areas of known archeological and/or historical significance have been listed as being located on the site property: Yes or No **No**
2. Areas of known archeological and/or historical significance have been listed as being located on property within a quarter mile of the site: Yes or No **No**
3. Closest areas of archeological and/or historical significance to site boundary: **Just greater than 0.5 mile. No known sites are within the project area.**

Point Value: 3

## County of Kaua'i Landfill Site Evaluation Data Sheets – Alternative Landfill Site Kōloa, Pā'ā Ahupua'a

### *Archaeological and/or historical significance*

Sites that have archeological and/or historical significance, or are near areas of significance may be more costly to develop.

The “site” is the landfill property (Kōloa, Pā'ā Ahupua'a).

Archeological and historical significance is determined by the listing of the site by the State Historic Preservation Division, Department of Land and Natural Resources.

Point Value	Measure
1	Known area(s) of significant archeological and/or historical importance have been listed in areas within 0.25 miles of the site
2	Known area(s) of significant archeological and/or historical importance have been listed in areas between 0.25 and 0.5 miles of the site
3	Known area(s) of significant archeological and/or historical importance have been listed in areas greater than 0.5 miles of the site

**Data Source:** See Esh et al. 2008: Section 6.

**How the point value of the criterion was determined:** No known sites are within the proposed landfill area but one designated site (Bennett's Site 85) lies between 0.25 and 0.5 mile. (see Esh et al. 2008: Figure 38), thus yielding an assigned point value of 2.

**Complications obtaining the data:** The Kōloa, Pā'ā Ahupua'a project area has not been reviewed in a prior archaeological inventory survey. Nevertheless a thorough background study has concluded “there is low probability of finding sites within the project area.” (Esh et al. 2008:92)

**Complications calculating the point value:** Straight-forward with the caveat that no portion of the Kōloa, Pā'ā Ahupua'a project area has been previously studied (prior to the Esh et al. 2008 study).

1. Areas of known archeological and/or historical significance have been listed as being located on the site property: Yes or No **No**
2. Areas of known archeological and/or historical significance have been listed as being located on property within a quarter mile of the site: Yes or No **Yes**
3. Closest areas of archeological and/or historical significance to site boundary: **Approximately 0.4 miles. No known sites are within the project area.**

Point Value: 2

## County of Kaua'i Landfill Site Evaluation Data Sheets – Alternative Landfill Site Kīpū, Ha'ikū Ahupua'a

### *Archaeological and/or historical significance*

Sites that have archeological and/or historical significance, or are near areas of significance may be more costly to develop.

The “site” is the landfill property (Kīpū, Ha'ikū Ahupua'a).

Archeological and historical significance is determined by the listing of the site by the State Historic Preservation Division, Department of Land and Natural Resources.

Point Value	Measure
1	Known area(s) of significant archeological and/or historical importance have been listed in areas within 0.25 miles of the site
2	Known area(s) of significant archeological and/or historical importance have been listed in areas between 0.25 and 0.5 miles of the site
3	Known area(s) of significant archeological and/or historical importance have been listed in areas greater than 0.5 miles of the site

**Data Source:** See Esh et al. 2008: Section 7.

**How the point value of the criterion was determined:** Site -3010 lies within 0.25 of the landfill (see Esh et al. 2008: Figure 47), thus yielding an assigned point value of 1.

**Complications obtaining the data:** The Kīpū, Ha'ikū Ahupua'a project area has not been reviewed in a prior archaeological inventory survey. Nevertheless a thorough background study has concluded “there is a fairly low probability of there being historic properties in the area due to agricultural disturbance.” (Esh et al. 2008:110)

**Complications calculating the point value:** No portion of the Kīpū, Ha'ikū Ahupua'a project area has been previously studied (prior to the Esh et al. 2008 study). Neighboring sites are generally located in a different environmental zone (along the river) than the project area, and their presence does not necessarily increase the likelihood of archaeological sites being found within the Kīpū project area.

1. Areas of known archeological and/or historical significance have been listed as being located on the site property: Yes or No **No**
2. Areas of known archeological and/or historical significance have been listed as being located on property within a quarter mile of the site: Yes or No **Yes**
3. Closest areas of archeological and/or historical significance to site boundary: **Approximately 0.25 miles. No known sites are within the project area.**

Point Value: 1

## County of Kaua'i Landfill Site Evaluation Data Sheets – Alternative Landfill Site Kālepa, Hanamā'ulu Ahupua'a

### *Archaeological and/or historical significance*

Sites that have archeological and/or historical significance, or are near areas of significance may be more costly to develop.

The “site” is the landfill property (Kālepa, Hanamā'ulu Ahupua'a).

Archeological and historical significance is determined by the listing of the site by the State Historic Preservation Division, Department of Land and Natural Resources.

Point Value	Measure
1	Known area(s) of significant archeological and/or historical importance have been listed in areas within 0.25 miles of the site
2	Known area(s) of significant archeological and/or historical importance have been listed in areas between 0.25 and 0.5 miles of the site
3	Known area(s) of significant archeological and/or historical importance have been listed in areas greater than 0.5 miles of the site

**Data Source:** See Esh et al. 2008: Section 8.

**How the point value of the criterion was determined:** No known sites are within the proposed landfill area but sites (-746, -1826, -1827) lie between 0.25 and 0.5 mile. (see Esh et al. 2008: Figure 57), thus yielding an assigned point value of 2.

**Complications obtaining the data:** The Kālepa, Hanamā'ulu Ahupua'a project area has not been reviewed in a prior archaeological inventory survey. Nevertheless a thorough background study has concluded “there is very low probability of their being historic properties other than post-1878 plantation infrastructure” (Esh et al. 2008:134)

**Complications calculating the point value:** No portion of the Kālepa, Hanamā'ulu Ahupua'a project area has been previously studied (prior to the Esh et al. 2008 study). It is noted that sites are located in a different environmental zone (on top of the Kālepa ridge) than the project area, and their presence does not necessarily increase the likelihood of archaeological sites being found within the Kālepa project area.

1. Areas of known archeological and/or historical significance have been listed as being located on the site property: Yes or No **No**
2. Areas of known archeological and/or historical significance have been listed as being located on property within a quarter mile of the site: Yes or No **No**
3. Closest areas of archeological and/or historical significance to site boundary: **Approximately 0.4 miles. No known sites are within the project area.**

Point Value: 2

## County of Kaua'i Landfill Site Evaluation Data Sheets – Alternative Landfill Site Ma'alo, Wailua Ahupua'a

### *Archaeological and/or historical significance*

Sites that have archeological and/or historical significance, or are near areas of significance may be more costly to develop.

The “site” is the landfill property (Ma'alo, Wailua Ahupua'a).

Archeological and historical significance is determined by the listing of the site by the State Historic Preservation Division, Department of Land and Natural Resources.

Point Value	Measure
1	Known area(s) of significant archeological and/or historical importance have been listed in areas within 0.25 miles of the site
2	Known area(s) of significant archeological and/or historical importance have been listed in areas between 0.25 and 0.5 miles of the site
3	Known area(s) of significant archeological and/or historical importance have been listed in areas greater than 0.5 miles of the site

**Data Source:** See Esh et al. 2008: Section 9.

**How the point value of the criterion was determined:** No known sites are within the proposed landfill area or within 0.25 mile. Sites are present at between 0.25 to 0.5 mile (see Esh et al. 2008: Figure 69), thus yielding an assigned point value of 2.

**Complications obtaining the data:** The Ma'alo, Wailua Ahupua'a project area has not been reviewed in a prior archaeological inventory survey. Nevertheless a thorough background study has concluded “there is low probability of there being historic properties in the area.” (Esh et al. 2008:168)

**Complications calculating the point value:** No portion of the Ma'alo, Wailua Ahupua'a project area has been previously studied (prior to the Esh et al. 2008 study). While there are several historic properties within a half-mile of the project area, these are located in a different environmental zone – along the south fork of the Wailua River, rather than the flat agricultural land that comprises the Ma'alo project area.

1. Areas of known archeological and/or historical significance have been listed as being located on the site property: Yes or No **No**
2. Areas of known archeological and/or historical significance have been listed as being located on property within a quarter mile of the site: Yes or No **No**
3. Closest areas of archeological and/or historical significance to site boundary: **Between 0.25 and 0.5 mile. No sites are known within the project area.**

Point Value: 2

## County of Kaua'i Landfill Site Evaluation Data Sheets – Alternative Landfill Site Kumukumu, Keālia Ahupua'a

### *Archaeological and/or historical significance*

Sites that have archeological and/or historical significance, or are near areas of significance may be more costly to develop.

The “site” is the landfill property (Kumukumu, Keālia Ahupua'a).

Archeological and historical significance is determined by the listing of the site by the State Historic Preservation Division, Department of Land and Natural Resources.

Point Value	Measure
1	Known area(s) of significant archeological and/or historical importance have been listed in areas within 0.25 miles of the site
2	Known area(s) of significant archeological and/or historical importance have been listed in areas between 0.25 and 0.5 miles of the site
3	Known area(s) of significant archeological and/or historical importance have been listed in areas greater than 0.5 miles of the site

**Data Source:** See Esh et al. 2008: Section 10.

**How the point value of the criterion was determined:** Although seven sites are known within the proposed landfill area from a recent archaeological inventory survey (SCS 2007), there is no preservation concern and no further work is indicated (see Esh et al. 2008: Figure 78 and discussion on page 193), thus it appears most appropriate to assign a point value of 2.

**Complications obtaining the data:** The Kumukumu, Keālia Ahupua'a project area has been reviewed in a prior archaeological inventory survey (SCS 2007).

**Complications calculating the point value:** While there are seven historic properties within the project area, these are recommended for no further work.

1. Areas of known archeological and/or historical significance have been listed as being located on the site property: Yes or No **No (the 7 identified sites within the project area merit no further work)**
2. Areas of known archeological and/or historical significance have been listed as being located on property within a quarter mile of the site: Yes or No **Yes**
3. Closest areas of archeological and/or historical significance to site boundary: **Between 0.25 and 0.5 mile. No sites are known within the project area.**

Point Value: 2

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