# FINAL—Archaeological Monitoring Report for the Mauna Lahilahi Beach Park Rock Revetment Project, Waiʻanae Ahupuaʻa, Waiʻanae District, Island of Oʻahu, Hawaiʻi

**TMK: (1) 8-5-017:001 (por.), 002 (por.), 003 (por.), 004, 005 (por.), 006, and 007**

**Prepared For**:

City and County of Honolulu
Department of Design and Construction
650 South King St., 11th Floor
Honolulu, HI 96813

February 2023

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## MANAGEMENT SUMMARY

Archaeological monitoring was conducted for ground disturbing activity associated with the Mauna Lahilahi Beach Park Rock Revetment Project located at TMK: (1) 8-5-017:001 (por.), 002 (por.), 003 (por.), 004, 005 (por.), 006, and 007 in Waiʻanae Ahupuaʻa, Waiʻanae District, on the island of Oʻahu. Archaeological monitoring was conducted from July 24, 2020 to October 5, 2020, with a total of 11 days of monitoring (71.5 person hours) during that time. The archaeological monitor was Robin Kapoi, BA. Windy McElroy, PhD served as principal investigator, overseeing all aspects of the project. There were no findings during monitoring and stratigraphy consisted of natural beach sand and native soil. Even though no archaeological remains were present on the surface and no subsurface evidence of them were found during this project, they may be encountered in the vicinity. Therefore archaeological monitoring is recommended for any future work in the area.

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# INTRODUCTION

At the request of Kiewit Infrastructure West Co., on behalf of the City and County of Honolulu Department of Design and Construction, Keala Pono Archaeological Consulting conducted archaeological monitoring for the Mauna Lahilahi Beach Park Rock Revetment Project in Waiʻanae Ahupuaʻa, Waiʻanae District, on the island of Oʻahu, Hawaiʻi. The primary focus of the monitoring was on the identification and appropriate treatment of historic properties including subsurface cultural layers and human burials that might be affected by construction.

Archaeological monitoring was conducted in accordance with an archaeological monitoring plan (Vernon 2014) reviewed and accepted by the Hawaiʻi State Historic Preservation Division (SHPD). Pre-construction protection measures stipulated in the monitoring plan were carried out and consisted of the installation of orange temporary construction fencing with signage around known cultural properties including subsurface cultural deposits and human remains. Barricades for the 20 ft. wide buffer zone was installed by Kiewit Infrastructure West Co. and began at the northern construction access corridor and extended from the existing parking area toward the southern access corridor along the sand embankment, and ended on the west side of the rock revetment area. Coconut trees within the buffer zone were also wrapped in orange construction fencing. This report meets the requirements and standards of state historic preservation law, including Chapter 6E of the Hawaiʻi Revised Statutes, and *Rules Governing Standards for Archaeological Monitoring Studies and Reports* (Hawaiʻi Administrative Rules §13–279).

The report begins with a description of the project area and a historical overview of land use and archaeology in the area. The next section presents methods used in the fieldwork, followed by the results of the archaeological monitoring. Project results are summarized and recommendations are made in the final section. Hawaiian words and technical terms are defined in a glossary at the end of the document.

## Project Location and Description

The project area includes the small beach cove fronting the Makaha Surfside Apartments, with Mauna Lahilahi Beach Park to the west and Waiʻanae High School to the East and lies within TMK: (1) 8-5-017:001 (por.), 002 (por.), 003 (por.), 004, 005 (por.), 006, and 007 (Figures 1 and 2). This is located in Waiʻanae Ahupuaʻa, Waiʻanae District, on the island of Oʻahu. Table 1 lists the seven TMK parcels, along with their acreage and landowners. The seven parcels cover 5.39 acres, and the project area, as specified in the AMP, covers 3.915 acres (Vernon 2014). While monitoring activities covered a small portion of the 3.915-acre project area, the archaeological monitoring plan called for the monitoring of all ground disturbing activities requiring machinery operation within the "Mauna Lahilahi Beach Park located west of the Makaha Surfside Apartments and north of Waianae High School on Farrington Hwy." (Vernon 2014). This consisted of an area of approximately 0.64 acre of the state-owned 1.69-acre property, Parcel 005 (see Table 1).

Descriptions of the project are provided in the archaeological monitoring plan for the project:

> The goal of the proposed project is to minimize property damage caused by waves that enter the cove and overtop the embankment…To achieve this goal, the project work will entail: 1) removal of the current sand bag revetment and 2) constructing the rock revetment…The rock revetment will extend seaward from the shoreline, from the northwest corner of the cove to a point beyond the southern gate at Makaha Surfside Apartments. (Vernon 2014)

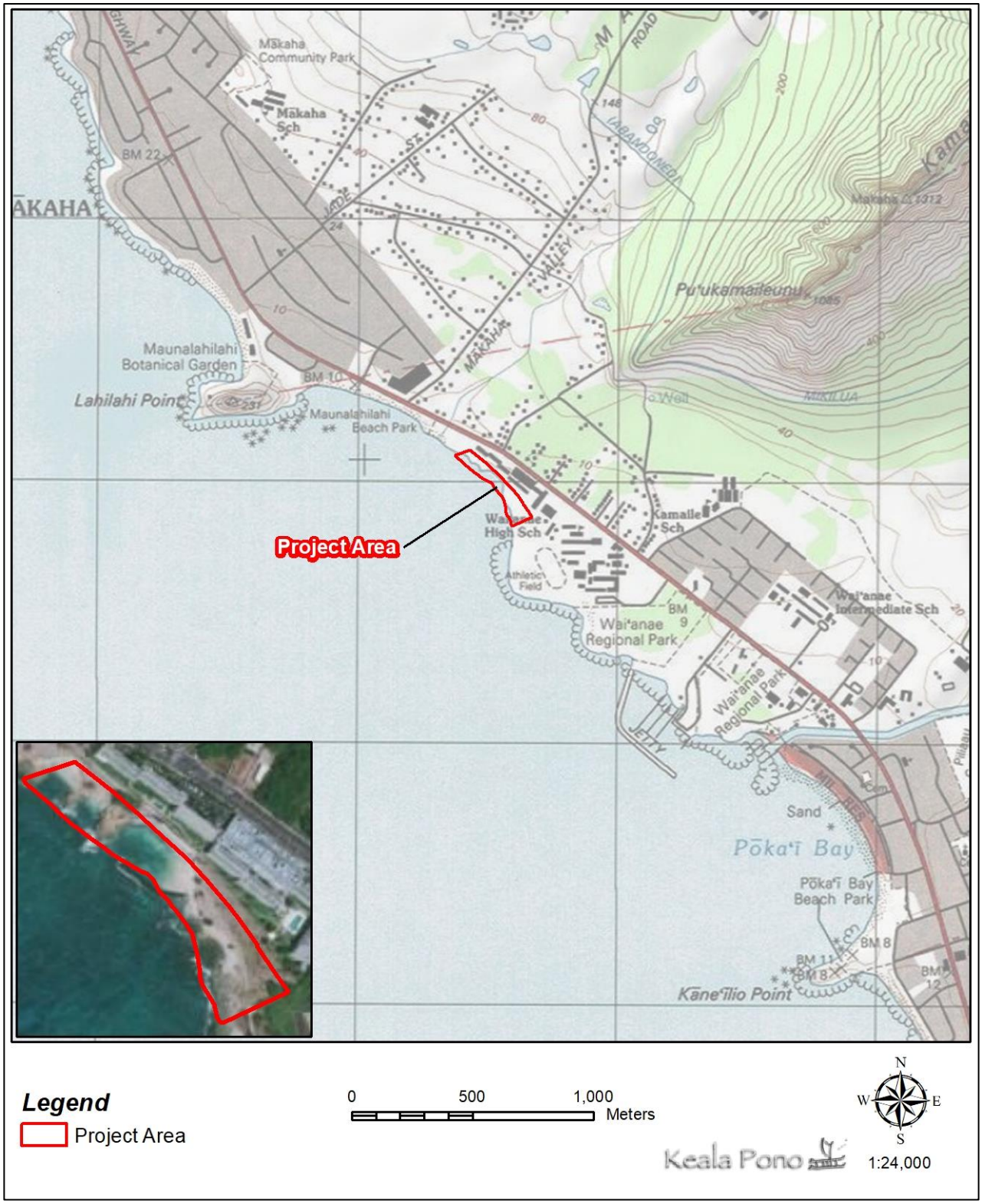



**Figure 1. Project area on a 7.5 minute Wai‘anae quadrangle map (USGS 2017).**

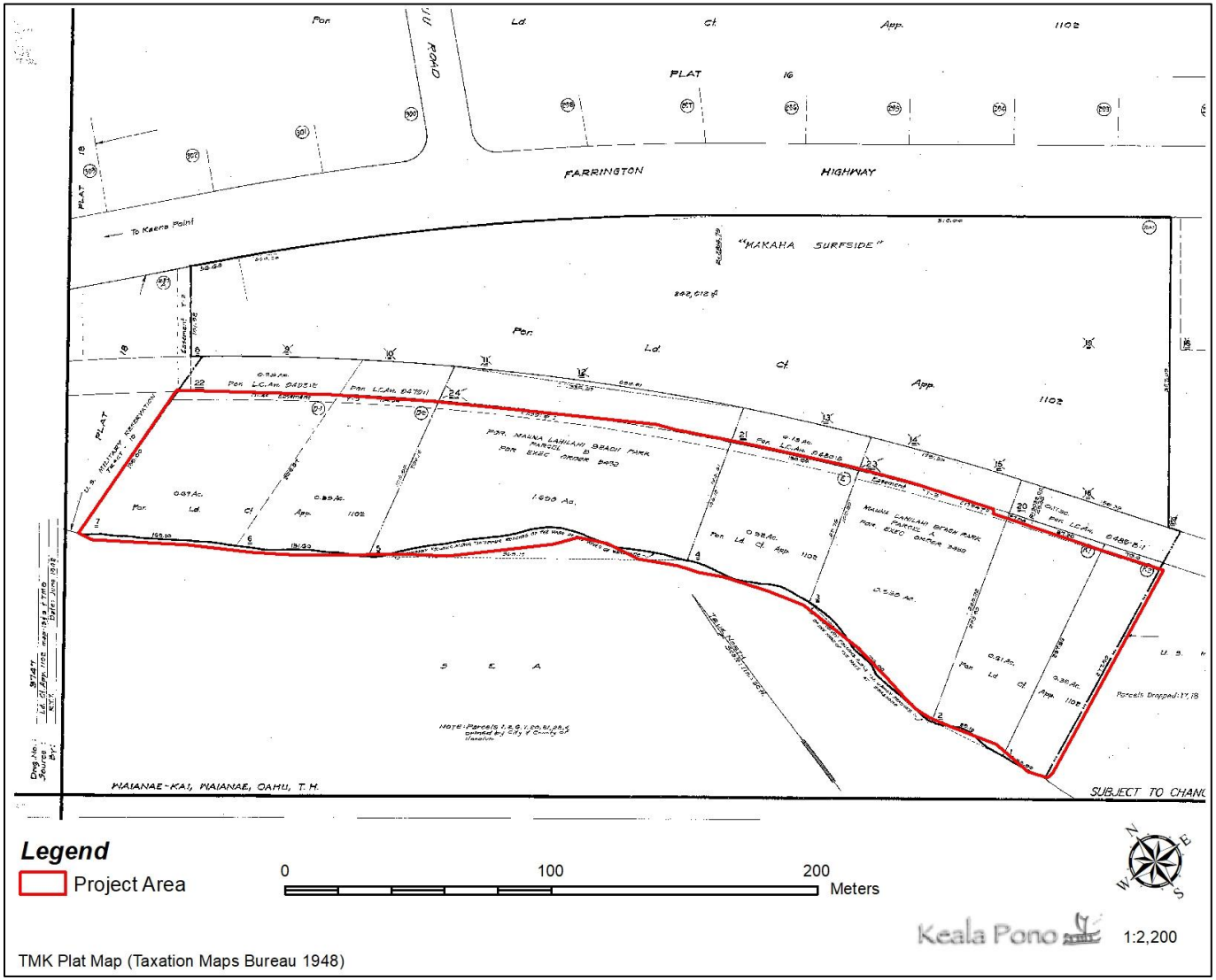



**Figure 2. Project area on TMK plat (1) 8-5-017 (State of Hawai‘i 1948).**

**Table 1. Project TMK Parcel Data**

| TMK | Acreage | Land Owner |
|---|---|---|
| (1) 8-5-017:001 | 0.39 | City & County of Honolulu |
| (1) 8-5-017:002 | 0.61 | City & County of Honolulu |
| (1) 8-5-017:003 | 0.96 | State of Hawai‘i |
| (1) 8-5-017:004 | 0.52 | City & County of Honolulu |
| (1) 8-5-017:005 | 1.69 | State of Hawai‘i |
| (1) 8-5-017:006 | 0.55 | City & County of Honolulu |
| (1) 8-5-017:007 | 0.67 | City & County of Honolulu |

A SHPD letter dated May 8, 2018 (Log No. 2018.02547, Doc No. 1905GC02) indicated that the area is known to contain historic properties including subsurface intact cultural layers and human burials located in different areas of the project that could be affected (Appendix A). SHPD determined that "on-site archaeological monitoring of all machinery-related ground disturbing activities" would be required. Therefore, in consultation with SHPD, archaeological monitoring was only conducted within a 0.64-acre portion of the 1.69-acre state property at the small beach cove area fronting the Makaha Surfside Apartments of the construction project, where ground disturbance took place.

**Physical Environment**

The project lands are on the Wai‘anae Valley coastline east of the Mauna Lahilahi peninsula. There is emerged fossil limestone reef rock formed by uplifted coral reefs in much of this coastal region. According to Foote et al. (1972:28, 29, 38, 95), the predominant soils on the property are classified as beaches (BS) and coral outcrop (CR) (Figure 3). There is also a very small area in the northeast inland portion of the project area of Hanalei silty clay, 0–2% slopes (HnA) and Mokuleia clay (Mtb). These soils are described as follows (Foote et al. 1972:28, 29, 38, 95):

> Beaches (BS)
>
> Beaches (BS) occur as sandy, gravelly, or cobbly areas on all the islands in the survey area. They are washed and rewashed by the ocean waves. The beaches consist mainly of light-colored sands derived from coral and seashells. A few of the beaches, however, are dark colored because their sands are from basalt and andesite. Beaches have no value for farming. Where accessible and free of cobblestones and stones, they are highly suitable for recreational uses and resort development.
>
> Coral Outcrop (CR)
>
> Coral Outcrop (CR) consists of coral or cemented calcareous sand on the island of Oahu. The coral reefs formed in shallow ocean water during the time the ocean stand was at a higher level. Small areas of coral outcrop are exposed on the ocean shore, on the coastal plains, and at the foot of the uplands…This land type is used for military installations, quarries, and urban development. Vegetation is sparse.
>
> Hanalei silty clay, 0–2% slopes (HnA)


**Figure 3. Soils in the vicinity of the project area.**

> This soil is on stream bottoms and flood plains. Permeability is moderate. Runoff is very slow, and the erosion hazard is no more than slight. The available moisture capacity is about 2.1 inches per foot of soil. Roots penetrate to the water table. Flooding is a hazard…This soil is used for taro, pasture, and sugarcane.
>
> Mokuleia clay (Mtb)
>
> This soil has a profile like that of Mokuleia clay loam, except for the texture of the surface layer. It is nearly level. Permeability is slow in the surface layer. Workability is difficult because of the sticky, plastic clay. This soil is used for sugarcane and pasture.

Other soils in the vicinity of the project area include Lualualei clay, 0–2% slopes (LuA); Lualualei extremely stony clay, 3–35% slopes (LPE), and Waialua silty clay, 0–3% slopes (WkA) (Foote et al. 1972). The Lualualei series is predominantly used for sugarcane, truck crops, pasture, wildlife habitat, military installations, and urban development, while the Waialua series is used for sugarcane cultivation, truck crops, orchards, and pasture. There is also rock land (rRK) and stony steep land (rSY) along the top of the valley ridge (Foote et al. 1972).

The project area lies in a belt of warm, dry northeasterly trade winds which persist throughout much of the year. Because of the Waiʻanae Mountain Range and the coast, the region is also semi-arid (Foote et al. 1972), and rainfall ranges from 0.4–3.5 in. (1–9 cm) per year (Giambelluca et al. 2013). The driest months are April to September, with the least rainfall in June. October to March receive the most rainfall, with January and December averaging roughly 3.3–3.5 in. (8.5–9 cm) per year (Giambelluca et al. 2013).

Waiʻanae Valley is drained by Kaupuni Stream and its ten tributaries, with a total watershed of 9.2 sq. mi. (23.9 $km^2$). The project area is located closest to ʻEku Stream, however the Kaupuni Stream is not far away to the east. Most streams in leeward Oʻahu do not flow year round, however historic records indicate that Kaupuni Stream was an exception. Both ʻEku and Kaupuni Stream flow out into the ocean, at Mauna Lahilahi and Pōkaʻī Bay, respectively.

The project area is flat with grass and coconut trees. There are large portions of the study area with no vegetation as it is consists of beach sand. To gain access to some areas, a number of coconut, or niu (*Cocos nucifera*) trees were cut to ground level, in consultation with SHPD. Invasive grasses are the dominant vegetation.

## BACKGROUND

This section of the report presents background information as a means to provide a context through which one can examine the cultural and historical significance of the project lands. In the attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., moʻolelo, ʻōlelo noʻeau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawaiʻi State Library, the University of Hawaiʻi at Mānoa libraries, the SHPD library, and online on the Waihona ʻAina database and the State of Hawaiʻi Department of Accounting and General Services (DAGS) website. Historical maps, archaeological reports, Māhele data, and historical reference books were among the materials examined.

Waiʻanae (or more accurately Waiʻanae Kai) is one of nine ahupuaʻa identified for the Waiʻanae Moku, situated in western Oʻahu. As the largest, most centrally located of the ahupuaʻa and one that takes its name from the moku, Waiʻanae—both the ahupuaʻa and moku—played an important role in the history of leeward Oʻahu. The ahupuaʻa is bounded by Mākaha and Lualualei Ahupuaʻa to the northwest and southeast, respectively. The boundaries of Waiʻanae originally extended across the ridge tops of the Waiʻanae Mountains, and to the east and north it reached the ridgeline of the Koʻolau Mountains. It would have been bordered by Kamananui Ahupuaʻa in Waialua and Waipiʻo and Waikele Ahupuaʻa in the moku of ʻEwa. This upland region was known as Waiʻanae Uka. The northern boundary is now the ridgeline of the Waiʻanae Mountains.

When speaking of land use terms and concepts regarding Oʻahu, it is important to note that some of Oʻahu's ancient traditions are unique and have continued to survive. Kupuna Glen Kila shares, "In Waiʻanae, we do not use the term [ahupuaʻa], at that time before Kamehameha, we used the term ʻili. ʻIli was an ahupuaʻa in our vocabulary" (McElroy et al. 2013:102). Furthermore, Kupuna Kila explains that prior to the ahupuaʻa system coming to the Oʻahu kingdom, there was a traditional Oʻahu resource management system called "kaʻananiau" (McElroy et al. 2013) which can be loosely translated as "managing the beauty of the environment over time."

### Place Names

One often-overlooked source of history is the information embedded in the Hawaiian landscape. Hawaiian place names "usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated…The place names provide a living and largely intelligible history" (Pukui et al. 1974:xii).

The name of the Waiʻanae district and ahupuaʻa is translated as "mullet water" (Pukui et al. 1974:220), referring to the area's richness in mullet, a prized eating fish. The district might have been named for a large fishpond called Puehu, located on the northwest side of Keaupuni Stream (Handy et al. 1991:468). Pōkaʻī Bay is named for a chief from Kahiki who planted the coconut grove along the banks of Keaupuni Stream (Thrum in Sterling and Sterling and Summers 1978). Pāhoa includes three sections of land, possibly an ʻili kūpono; one section is located near the coast on Pōkaʻī Bay. A second plot of land identified with Pāhoa includes the section of land adjacent to the Waiʻanae Elementary School. The term translates as "shark dagger or stone" (Pukui et al. 1974:301). This may be in reference to the location where ʻOlopana attempted to slay Kamapuaʻa (see Moʻolelo section).

Many place names for Waiʻanae and the vicinity of the current project area are listed in *Place Names of Hawaii* along with their meanings and/or other comments about the specific locales:

> Kamaile. Heiau, pain, and spring, Kaʻena qd., Oʻahu. *Lit*., the maile vine. (Pukui et al. 1974:80)

> Laukīnui. Beach, Mākaha, Oʻahu, now called Lahilahi Beach. *Lit*., large ti leaf. (Pukui et al. 1974:130)
>
> Mauna Lahilahi. Mountain and beach park west of Waiʻanae town, Oʻahu. *Lit*., thin mountain. (Pukui et al. 1974:149)
>
> Waiʻanae. Quadrangle, mountain range, land division, town, valley, school, district, and homesteads., Oʻahu. Lizard goddess named Pūhāwai (water hollow) once lived inland at a place called Pūhā; she stole a woman's husband; the wind god, Makani ke oe, restored him to her. *Lit*., mullet water. (Pukui et al. 1974:220)
>
> Waiʻanae Kai. Land division and forest reserve, Kaʻena qd., Oʻahu. *Lit*., seaward Waiʻanae. (Pukui et al. 1974:220)

The ridge and the mountain tops that surround Waiʻanae were also named. These include the following: Kamaileʻunu, Kepauala, Kawiwi, Kaʻala, Kauaʻōpuʻu, Kuwale, Pāheʻeheʻe Mauka, and Pāheʻeheʻe Makai. Mt. Kaʻala is the highest mountain peak of Oʻahu and sits at the head of Waiʻanae. It is mentioned in numerous chants and prayers, in part because it was visible from a distance. It is associated with Kāne, a deity in the pantheon of Hawaiian gods. Place names that define the coastal boundaries of Waiʻanae are Kāneʻīlio on the south, and Laukīnui (now Lahilahi) to the north. Several of the ridge and mountain places are noted in oral traditions and other Hawaiian sources.

**Traditional Land Use**

Waiʻanae was one of three dry or leeward moku on the Island of Oʻahu (Handy et al. 1991). Although Handy (1940:156) identifies its staple crop as sweet potato, or ʻuala (*Ipomoea batatas*), he is likely referring to one of the other ahupuaʻa (possibly Mākaha) within the moku of Waiʻanae. In Waiʻanae Ahupuaʻa there were a number of relatively large loʻi and house complexes along the streams that drained the valley beginning inland from the coastline and extending more than 2 km (1.2 mi.) up the valley. This is supported by descriptions of an "extensive system of terraces along its various streams…" (Handy 1940:84). Handy (1940) notes at least 14 different names for these complexes, probably referring to their associated ʻili ʻāina. Kalo, or taro (*Colacasia esculenta*), would have been the primary crop in these loʻi. The ʻili of Kamaile in which the project area is located was almost 40 ha (98 ac.) in size and much of it would have been devoted to irrigated agriculture. Kekoʻi Spring is located at the base of Kamaileʻunu Ridge, not far from the project area. This spring created a large marshland area of roughly 56 ha located between the spring and the coastal trail (Cordy 2002b:53). These loʻi fields were long, narrow strips called moʻo that stretched from the ridge to the shore at Mauna Lahilahi.

It is suggested by Cordy (2012) that the large areas of loʻi in Waiʻanae Ahupuaʻa also included dryland terraces, which is evidence of the substantial conversion of lands in Waiʻanae for agricultural purposes. Smaller loʻi were likely located farther inland where streams diverged and the land became more dissected at least to an elevation of 275 m (900 ft.) above sea level (Holt et al. 2002). Handy (1940:75) also includes Waiʻanae Uka, the section of the ahupuaʻa extending from the Waiʻanae to the Koʻolau Mountains as a location where terraces were present. Clearly, Waiʻanae was a major area for the production of kalo and other cultivated plants, the largest in Waiʻanae Moku (Green 1980) and similar to the valley ahupuaʻa on the windward side of Oʻahu.

Much of the settlement of Waiʻanae would have been concentrated in the makai or lower section of the valley. Not only do the numerous irrigated agricultural complexes within this zone suggest such a pattern, but historical maps of Waiʻanae show house sites scattered in or adjacent to loʻi. Houses would have been clustered into coastal villages. This is supported by Vancouver's description of the

Wai‘anae area in March 1793 on his second exploration voyage to Hawai‘i. His accounts describe a village near the project area at Mauna Lahilahi, with only scattered huts and a coconut grove in other parts of the leeward coast (Handy et al. 1991:275, 468).

Kamakau offers a poetic description of Wai‘anae that mentions its reputation for poi and fish:

> …Wai‘anae of the gentle Kaiālulu wind, the sweet waters of ‘Eku, the thick poi of Pāhoa, the stringy poi of Lehano and Kūāiwa, the rich poi of Kamaile, and the aku fish “tidbits” of Wai‘anae —in Wai‘anae, land beloved of the sun. (1991:106)

Lastly, Wai‘anae is the location of a pu‘uhonua or place of refuge and safety. It was reported to be a stronghold used during a time of war and was situated at a place named Kawiwi, nearly 915 m (3,000 ft.) above sea level, along the ridgeline that serves as a boundary between Mākaha and Wai‘anae (Thrum 1909:152). A major battle, involving a beleaguered O‘ahu chief, took place at this location during the time of Kahekili, a paramount chief from Maui.

### Mo‘olelo of Wai‘anae

There are many accounts from oral traditions that mention the location of Wai‘anae without much further detail. Several of these correlate named individuals with Wai‘anae—both the ahupua‘a and moku. Cordy (2002b) provides an overview of the oral traditions and named individuals associated with the moku of Wai‘anae, with much of the emphasis on Wai‘anae Ahupua‘a. These accounts range over a considerable time period, beginning with ‘Olopana who may have lived and served as a chief nearly 20 generations (Cachola-Abad 2000) before the advent of Kamehameha I. Kūali‘i, who was a notable O‘ahu chief is associated with Wai‘anae during his lifetime about five generations before Kamehameha. Here we describe the accounts linked to four chiefs: 1. The death of the ali‘i ‘Olopana at the hands of Kamapua‘a; 2. The life of the ali‘i Helemano, 3. The rise to power of the ali‘i Kawelo, and 4. The life of Kūali‘i, one of the most important ali‘i in O‘ahu’s history.

#### *‘Olopana*

The first ali‘i associated with Wai‘anae is ‘Olopana, one of the first paramount chiefs of the Ko‘olau Moku on the windward side of O‘ahu, and whose efforts to sacrifice Kamapua‘a in Wai‘anae are summarized here (from Fornander 1918–1919:314–326).

‘Olopana was an early paramount chief of O‘ahu whose history is linked to Kamapua‘a, a demigod who could appear either has a human or a pig. Kamapua‘a was known for his appetite, particularly for chickens. ‘Olopana summoned his priest from Kaua‘i to Wai‘anae to assist him in dealing with the trepidations of Kamapua‘a. The kahuna, Malae, warned ‘Olopana that he would not be able to kill Kamapua‘a outright. Instead he suggested ‘Olopana offer him various plants and animals to make him weak and vulnerable. After presenting this offering to Kamapua‘a, ‘Olopana’s men bound and dragged him to Pāhoa, a section near the coast of Wai‘anae Ahupua‘a. There Kamapua‘a was tightly bound, placed on a heiau and prepared for sacrifice (including making several cuts into his skin). The heiau is thought to have been Kane Heiau, not far from the project area. At this same time a second priest, who was also opposed to ‘Olopana heard of these plans and prepared to intervene to save Kamapua‘a. (Fornander 1918–1919). Subsequently, ‘Olopana was killed by Kamapua‘a, along with his followers on O‘ahu.

#### *Kawelo*

Linked by association with Kākuhihewa (a paramount chief of O‘ahu who ruled at about the same time as ‘Umi on Hawai‘i Island), when Kawelo was born on Kaua‘i it was foretold that he would be

a great soldier and eventually a leader. Early in his life his family moved from Kauaʻi to Oʻahu where he met ʻAikanaka, an aliʻi who later would vie to become the chief of Kauaʻi. Kawelo bested one of the soldiers of Kākuhihewa in his youth and went on to become proficient in fighting and warfare. When his family was forced off their lands in Kauaʻi by ʻAikanaka, Kawelo promised his support to those opposing him. Prior to traveling to Kauaʻi, however, he and his followers landed in Waiʻanae where they built a heiau (Fornander 1918–1919:28). Here Kawelo prayed for success to his god Kane-i-ka-pualena and to the idol of the god Ka-lani-hehu that had been sent from Kauaʻi. Kawelo traveled with his warriors to Kauaʻi and in a number of battles defeated the soldiers of ʻAikanaka and eventually bested ʻAikanaka, who had gathered his followers for a final stand against this warrior-chief. After defeating ʻAikanaka Kawelo then assumed the role of paramount chief of all of Kauaʻi (Cachola-Abad 2000). Once victorious on Kauaʻi, Kawelo distributed its lands to his ranking warriors.

***Halemano***

The story of Halemano shares some of same elements as both ʻOlopana and Kūaliʻi although in this case his history is bound up with his wife, Kamalalawalu, who betrays him, not once but twice. In one of the final accounts of Halemano he has been summoned to a game of kilu by a Kohala chief (in whose district he was living at the time). This game involves skill in hitting a target and between turns the chiefs recited chants. On the third and fourth rounds of this game Halemano, who has seen his wife watching his performance, chants the following that includes naming the main bay and the mountains of Waiʻanae:

> My lover from the Kalihi rain, where the clothes are bundled up,
> Where in the back is the only sheltered spot;
> It is being pressed by the Waahila (rain),
> The rain of my land where women are led away secretly.
> Search is made to the top of Kaala**,**
> The lower end of Pokai is plainly seen.
> Love looks in from Honouliuli,
> The dew comes creeping, it is like the wind of Lihue,
> Like a false gleaming of the sun at Kaena,
> For it is being destroyed by the Unulau wind from below,
> Causing coldness within, made so by love of thee,
> For I love thee, my companion of that parched plain. (Fornander 1916–1917:252)

Halemano wins this game in the 15th round and his former wife steps up to claim him once more. But she is rejected because Halemano has a new wife. Afterwards he and his new wife return to Oʻahu where he eventually meets his first wife, Kamalalawalu again. Once more their union could not endure and she went to live with a chief in Waiāhole. In the meantime, the chief from Hilo learned of Kamalalawaluʻs presence and he had previously been promised her hand. He and his warriors traveled to Oʻahu, defeated the Waiāhole chief, and returned to Hawaiʻi Island with Kamalalawalu.

***Kūaliʻi***

Kūaliʻi is identified as an "usurper" king by Beckwith (1940), one who by dint of his strength and courage vanquished his foes and became one of the most recognized chiefs in Hawaiian history. His history is recounted in Fornander (1916–1917:364–402). Born in Kailua on Oʻahu, Kūaliʻi, was recognized for his strength at an early age, and in his training was encouraged to challenge chiefs who were oppressive. Cachola-Abad (2001) places him in the 20th generation of paramount chiefs on Oʻahu; Kirch (2011) suggests he ruled in the late 17th century. He does so by a variety of means: usurping their roles in rituals performed at heiau, winning battles, marrying a high ranked chiefess,

and taking on critical allies. He was said to win battles even when outnumbered and first was elevated as a paramount chief of the Kona Moku of Oʻahu, whereupon he became proficient in warfare and conquest. He traveled to Kauaʻi where again with few warriors he defeated a larger force and subdued all or part of the island. He also served as an ally to help win Molokaʻi and Lānaʻi, and aided a chief in Maui. He then went to Hawaiʻi and routed a chief named Haʻalilo, but returned to Oʻahu to repel a revolt of the Waiʻanae chiefs at Kalena.

Kūaliʻi also composed a mele to himself and this was sung at one of his battles by his son. Among the more than 600 verses is this one that mentions several locations in Waiʻanae Ahupuaʻa:

Hawaii of high mountains;
Towering unto heaven is Kauiki;
Down at the base of the islands
Where the sea holds it fast.
Kauiki the mountain,
Like the sea-gull flapping its wings when about to fall
Kauai,
Great Kauai inherited from ancestors
Sitting the calm of **Waianae**
Kaena is a point
Kahuku is hala-wreathed
Covered with dew is the back of Kaala
There below doth Waialua sit,
That is Waialua

This verse identified Kamaile, both an ʻili of Waiʻanae and the location of a major heiau.

The koaie of Kauai;
The sea grass has been stripped by Ku—
The waving [grass] of **Kamaile**;
The towering surf of Mahiwa,
Which dammed up the water of Halapo

And these verses recognize Kaʻala and Kawiwi, two prominent landmarks of Waiʻanae.

The moss that hangs on wood,
The red crab on the top of **Kaala**
Not like unto these are thou, Ku
Not like the kukui
The rough-barked kukui

The fragrant poholua tree,
Nor the maile that grows on Maoi,
Nor the kaluhea of **Kawiwi**
Not like these are thou, Ku.
Not like the kawuu
Is the kalia standing in the open (Fornander 1916–1917:364–402, emphasis ours)

The mele valorizes Kūaliʻi, linking him not only to numerous places on Oʻahu and elsewhere in Hawaiʻi but also Tahiti (or Kahiki). The prominent role that Waiʻanae place names play in this mele are a sign of the region's visible importance to Kūaliʻi's political ambitions.

### *ʻŌlelo Noʻeau*

Waiʻanae, both the moku and ahupuaʻa, are mentioned in Hawaiian proverbs (Pukui 1983). They provide further insight to traditional beliefs and practices of these lands:

> E nui ke aho, e kuʻu keiki, a moe i ke kai, no ke kai la hoʻi ka ʻāina.
>
> *Take a deep breath, my son, and lay yourself in the sea, for then the land shall belong to the sea.*
>
> Uttered by the priest Kaʻopulupulu at Waiʻanae. Weary with the cruelty and injustice of Kahāhana, chief of Oʻahu, Kaʻopulupulu walked with his son to Waiʻanae, where he told his son to throw himself into the sea. The boy obeyed, and there he died. Kaʻopulupulu was later slain and taken to Waikīkī where he was laid on the sacrificial altar at Helumoa. (Pukui 1983:44)

> Ka malu niu o Pōkāʻi.
>
> *The coco-palm shade of Pōkāʻi.*
>
> Refers to Waiʻanae, on Oʻahu. At Pōkāʻi was the largest and best-known coconut grove on Oʻahu, famed in chants and songs.(Pukui 1983:160)

> Kapakahi ka lāma Waiʻanae.
>
> *Lopsided is the sun at Waiʻanae.*
>
> Used to refer to anything lopsided, crooked, or not right. First uttered by Hiʻiaka in a rebuke to Lohiʻau and Wahineʻōmaʻo for talking when she warned them not to. (Pukui 1983:164)

> Malolo kai e! Malolo kai e!
>
> *Tide is not high! Tide is not high!*
>
> Said of threatening disaster. Robbers once lived at a place in Waiʻanae now known as Malolo-kai. Their spies watched for travelers to kill and rob. When there were only a few that could be easily overcome, the spies cried, "Low tide!" Which meant disaster for the travelers. But if there were too many to attack, the cry was "High tide!" (Pukui 1983 232–233)

> Ola o Waianae i ka makani Kaiāulu
>
> *Waiʻanae is made comfortable by the Kaiāulu breeze.*
>
> Chanted by Hiʻiaka at Kaʻena, Oʻahu, after her return from Kauaʻi. (Pukui 1983:273)

The Kaiāulu has been described as a "pleasant, gentle trade wind" (Nakuina 2005:123).

### Historic Events and Land Use

The history of Waiʻanae is closely tied to the larger history of its moku and the Island of Oʻahu. Political dynamics among aliʻi on Oʻahu had been mostly confined to the island with occasional incursions from the chiefs of other islands. For the most part, the kingdom of Oʻahu had developed into a peaceful and prosperous kingdom. In 1783 this changed with invasion of Oʻahu by Kahekili, the paramount chief of Maui. At the time of Kahekili's attack, Kahahana was the ruler of the Oʻahu kingdom and would be the last sovereign to rule over an independent Oʻahu. When Kahekili invaded, not only did he take the island but Kahekili killed virtually all of Oʻahu's royal heirs and descendants of the Nanaulu line of chiefs. By 1795, Kamehameha I from Hawaiʻi Island had taken over Maui's rule of Oʻahu by ousting Kalanikūpule, the son of Kahekili and with that unified all of the main Hawaiian Islands, save Kauaʻi. On the leeward side of Oʻahu, control of Waiʻanae was passed to a series of Kamehameha's retainers and family. Kamehameha's ally, Boki was named governor of

Oʻahu in 1816 and after Kamehameha's death was the unrivaled leader of the Island. Boki was granted Waiʻanae Ahupuaʻa at this time, while the moku of Waiʻanae was controlled by the Crown.

### Māhele Records

The change in the traditional land tenure system in Hawaiʻi began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Great Māhele took place during the first few months of 1848 when Kamehameha III and more than 240 of his chiefs worked out their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained roughly a million acres as his own as Crown Lands, while approximately a million and a half acres were designated as Government Lands. The Konohiki Awards amounted to about a million and a half acres, however title was not awarded until the konohiki presented the claim before the Land Commission.

In the fall of 1850 legislation was passed allowing citizens to present claims before the Land Commission for parcels that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. This testimony is recorded in 50 volumes that have since been rendered on microfilm. Ultimately between 9,000 and 11,000 kuleana land claims were awarded to kamaʻāina totaling only about 30,000 acres and recorded in ten large volumes. In the ʻili of Kamaile, 34 claims were made for moʻo (narrow strips of land) used for loʻi (Cordy 2002b:53).

During the 1848 Māhele the entire Waiʻanae District, aside from Mākaha, was first designated as Crown Land. In the original government act that established fee simple land ownership all of Waiʻanae Ahupuaʻa is identified as part of the Crown Lands (Kingdom of Hawaiʻi 1846:26). A chief from Waiʻanae known as Pāhoa was given half of the ʻili of Kalena in Waiʻanae Uka but this was later rescinded. Later there were a large number of (more than 160) successful Land Commission Awards (LCAs) in Waiʻanae Ahupuaʻa (Commissioner of Public Lands 1929:845–852). These awards are associated with (and assigned to) one of the more than 15 ʻili ʻāina that have been identified in the ahupuaʻa: Ana, Kaʻakoa, Kaʻapi, Kahaniki, Kahoʻolanakio, Kamaile, Keaunui, Keekee, Kuaiwa, Kumaipo, Lehanoiki, Lehanonui, Leleakoae, Pāhoa, and Puea.

The project area sits on or is adjacent to four LCAs (Figure 4). These are LCA 9479 awarded to Kahinu, 9480:5 claimed by Ohule, 9489:B-1 by Holi, and 9493:2 awarded to Kuheleloa. Though no use for these lots were recorded in Māhele documents, their location and shape suggest they were house lots (Vernon 2014). A fifth LCA, 9493:3 also awarded to Kuheleloa is located west of this cluster still along Mauna Lahilahi Beach. Several of these land testimonies reference nearby kōʻele, small portions of land that are farmed by tenants for an aliʻi (Pukui and Elbert 1986:158).

### Post-Māhele History

After the Māhele, large tracts of land in the upper valley were leased or purchased as grants for ranching, initiating a series of landscape changes in the region. The Waianae Sugar Plantation was founded in 1878 by H.A. Widemann; its cultivated lands encompassed much of makai Waiʻanae both east and west of Keaupuni Stream. Ranching occurred in the uplands as L.L. McCandless acquired several large leases on the east side of the valley. With this the Waiʻanae community grew substantially. By 1884, Waiʻanae was listed in the Hawaiian Directory as one of the largest settlements on Oʻahu, second only to Honolulu.

During the 1890s the Oahu Railway and Land Co. (OR&L) railroad was constructed to bring crops and animals from the Leeward Coast to Pearl Harbor. This railway would eventually run through all

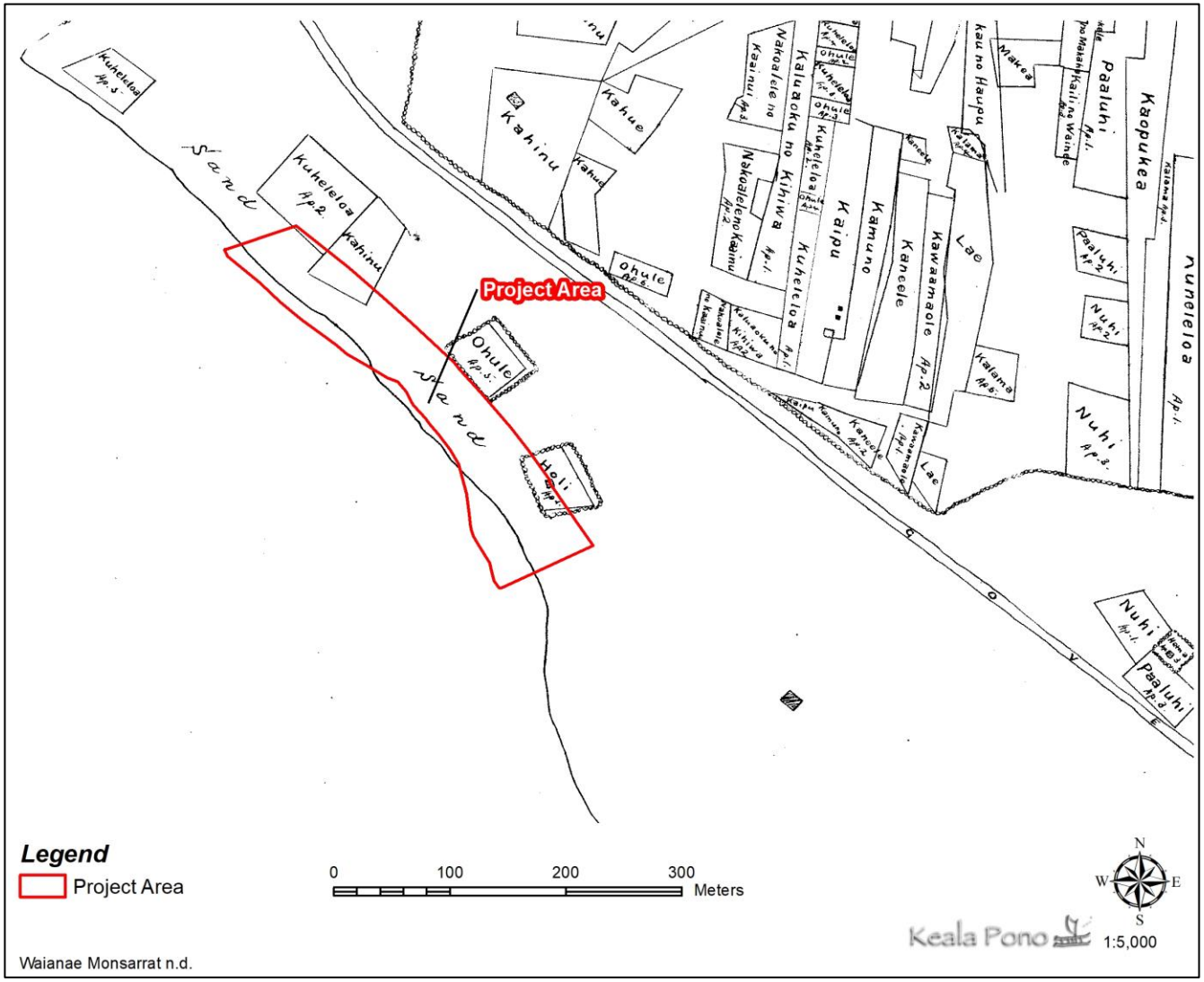



**Figure 4. Portion of a map of Wai‘anae depicting the location of Land Commission Awards near the project area (Monsarrat n.d.).**

of the Waiʻanae District and around Kaʻena Point to Kahuku. Vestiges of the old rail line can still be seen along Farrington Highway. Two sections of this railway extended into Waiʻanae Valley to transport sugarcane harvested on Waianae Company lands. A segment of this railroad has been documented running parallel to the project area's northern boundary (Site 9714).

Sugarcane production and military activity dominated the first half of the 20th century on the Leeward Coast. Much of Pōkaʻī Bay was acquired by the military through an Executive Order as a staging area for its troops. World War II was devastating for the Waianae Sugar Plantation as high paying defense jobs created a labor shortage. All sugarcane production in the Waiʻanae District was eliminated at this time due to labor shortages, water shortages, military procurement of land, and other more productive agricultural regions taking over. The OR&L railway was officially abandoned in 1946.

**Historic Maps**

One of the earliest maps for Waiʻanae was drawn ca. 1870 for Coastal Waiʻanae (Figure 5). Within the project area, two rock walls, one with a house in the center, are shown in the approximate location of LCAs that are depicted on other maps. The ʻili of Kamaile is labeled as having "62 L.C. Awards" in total. A coconut grove and Kekoʻi Spring are located at the base of Kamaileʻunu Ridge. A main road runs along the coastline, while a few smaller roads provide access to the valley interior. Puʻu Kahea Heiau, a possible heiau labeled with a "?", and two unnamed heiau are also shown. The project area is labeled as "sand," while the area to the east is "coral."

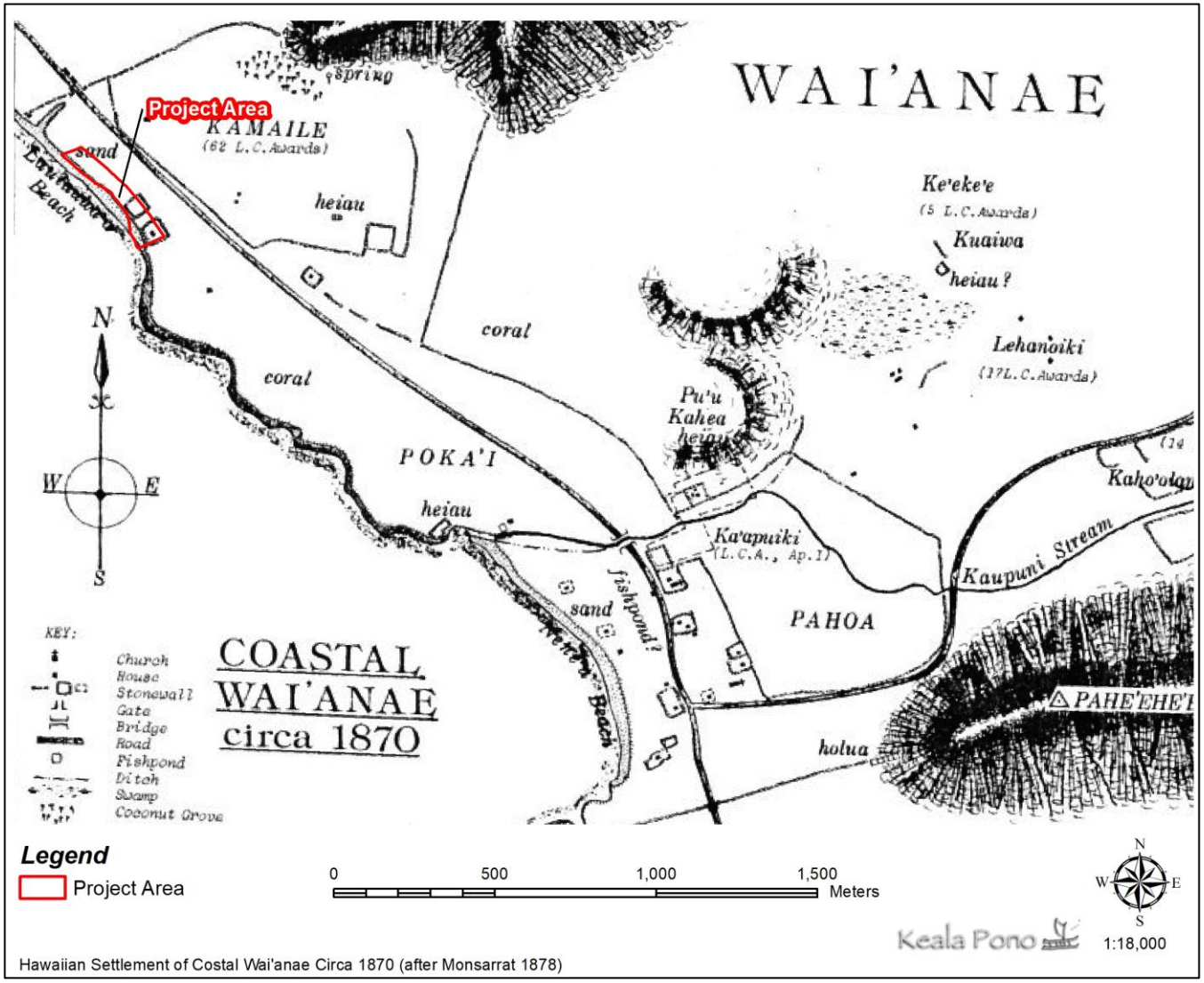
A Hawaiian Government Survey map of the island of Oʻahu was produced in 1881, but does not offer much detail for the Kamaile region (Figure 6). It depicts the height of Mauna Lahilahi Point (234 ft.) and Kamaileʻunu Ridge (1080 ft.) as well as the main coastal road.

An 1884 map of the Waiʻanae Coast from Mauna Lahilahi Point to Pōkaʻī Bay lists the depth of the ocean offshore (Figure 7). A coconut grove is illustrated inland from the project area. This is the first map to depict the railway, which runs just mauka of the study area. Two structures with walls are shown along the railway, one of which is located within the project area on the eastern end. Two fishponds and a paddock are shown at Pōkaʻī Bay. The "Main Road Along the Coast" runs parallel to the railroad before crossing its path north of the project area.

A Hawaiʻi Territory Survey map of Oʻahu was completed in 1902 and documents land use on the island (Figure 8). The entirety of the Kamaile region is labeled as the Waiʻanae Plantation, though it is also shaded green to represent public lands. The entire makai portion of the valley is sugar plantations (red outline), while the inland area is grazing land (yellow outline). Once again, the railroad and main highway are both following the coastline. Farther south near Pōkaʻī Bay, a single school is established (blue dot).

In 1909, a map by Monsarrat identifies the fisheries off the coast of northwest Oʻahu (Figure 9). Directly offshore from the project area is the Waiʻanae Fishery owned by the Government. To the north is the Mākaha Fishery owned by Holt Estate, while the large Lualualei Fishery, also owned by the Government, borders the Waiʻanae Fishery to the south. Pōkaʻī Bay is designated as a safe harbor for anchoring ships. The railroad is not shown on this map, although the "Govt Road" is depicted.

A second Hawaiʻi Territory Survey map by Wall is from 1925 (Figure 10). There are few new developments near the project area. This map does show Grant 5009 to J.M. Dowsett in Kamaile, though it is unclear of the extent of the lands under this grant. To the east, past Pōkaʻī Bay, are land grants given to the Mākaha Coffee Co. (Grant 5263) and W.E. Brown (Grant 5006).



Hawaiian Settlement of Costal Wai'anae Circa 1870 (after Monsarrat 1878)

**Figure 5. Portion of a map depicting the Waiʻanae Coast ca. 1870 (Green 1980 after Monsarrat 1878).**

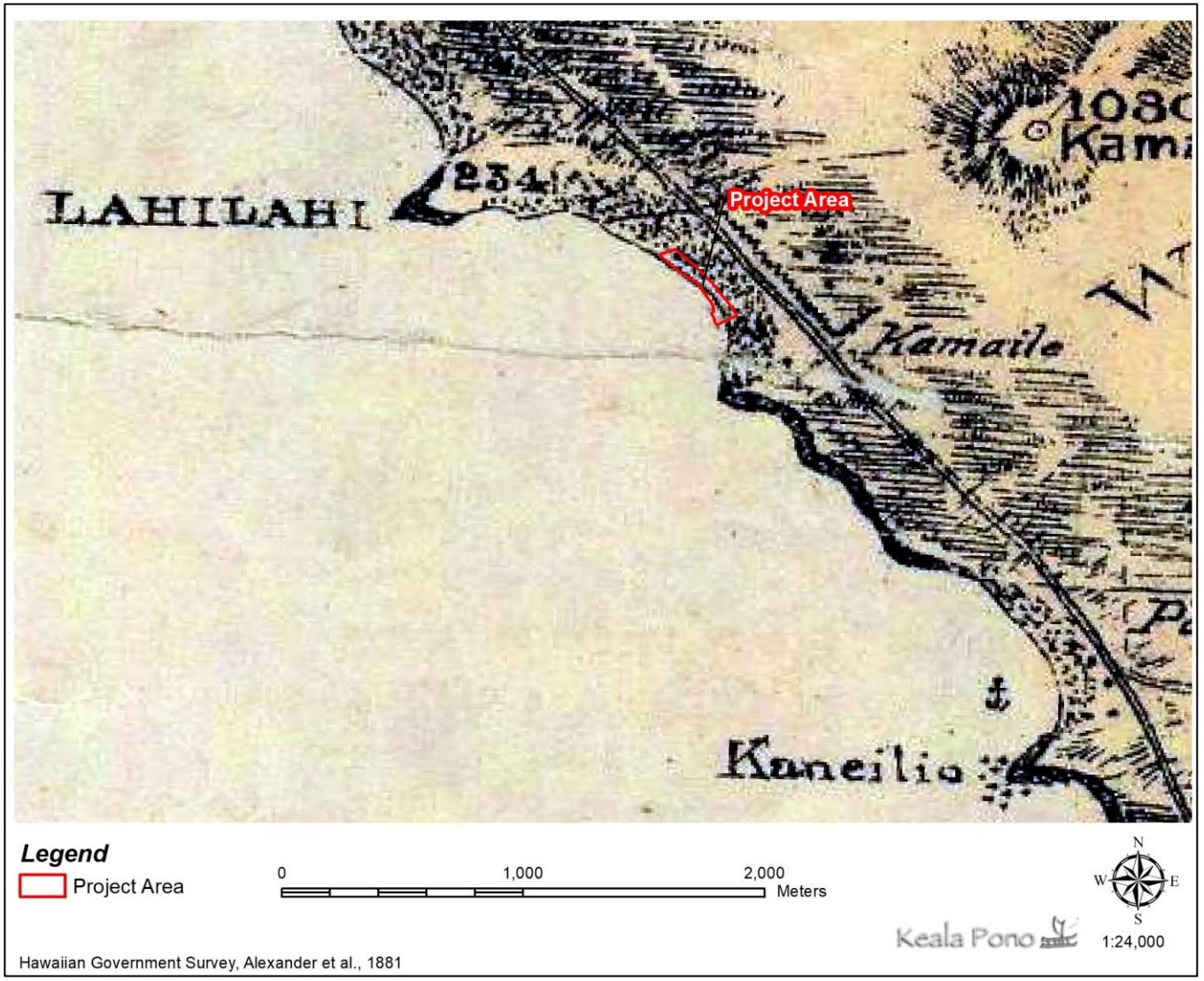



**Figure 6. Portion of an Oʻahu Hawaiian Government Survey map (Alexander et al. 1881).**

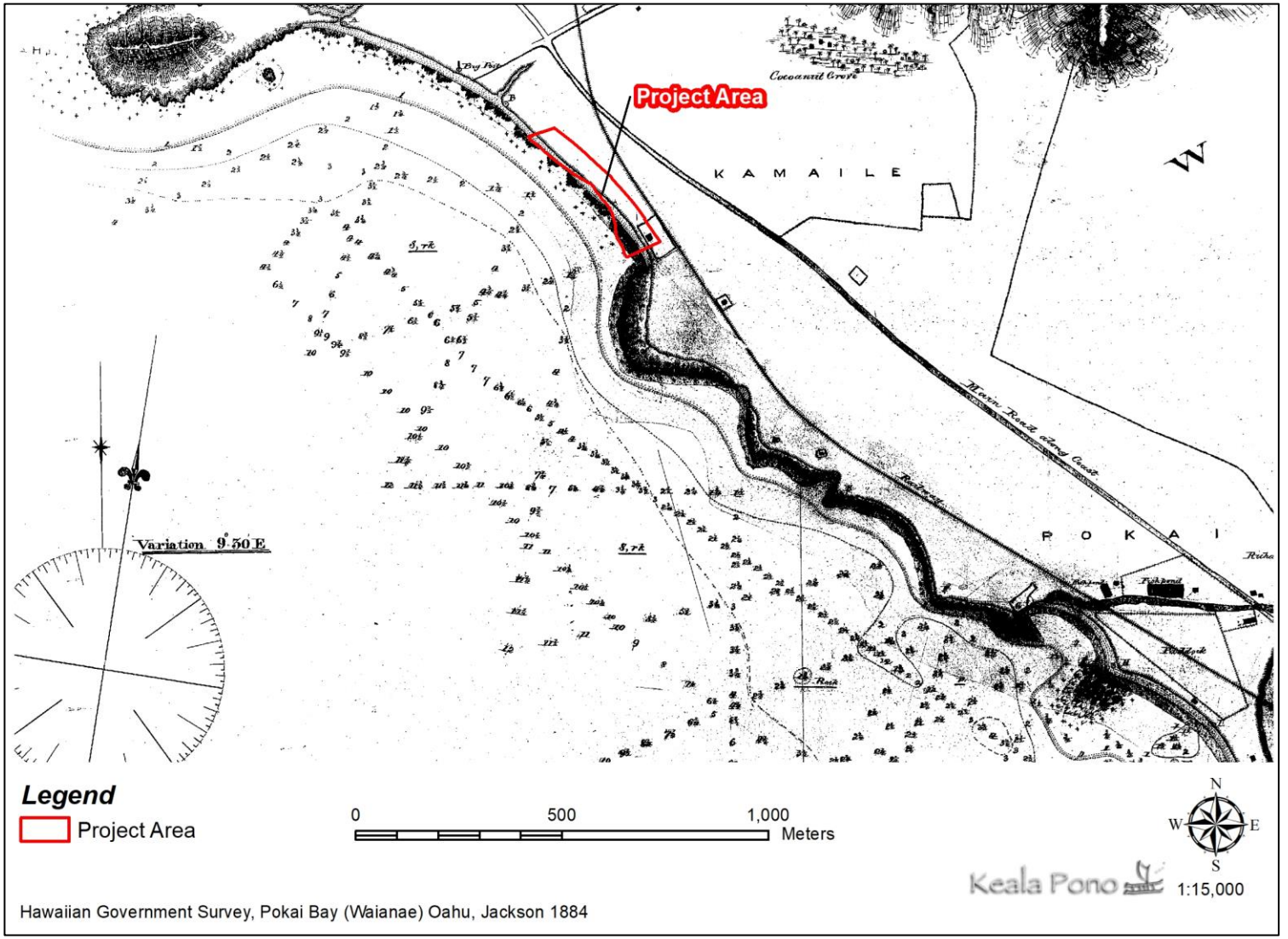



**Figure 7. Portion of a map depicting Kamaile and Pōkaʻī Bay (Jackson 1884).**

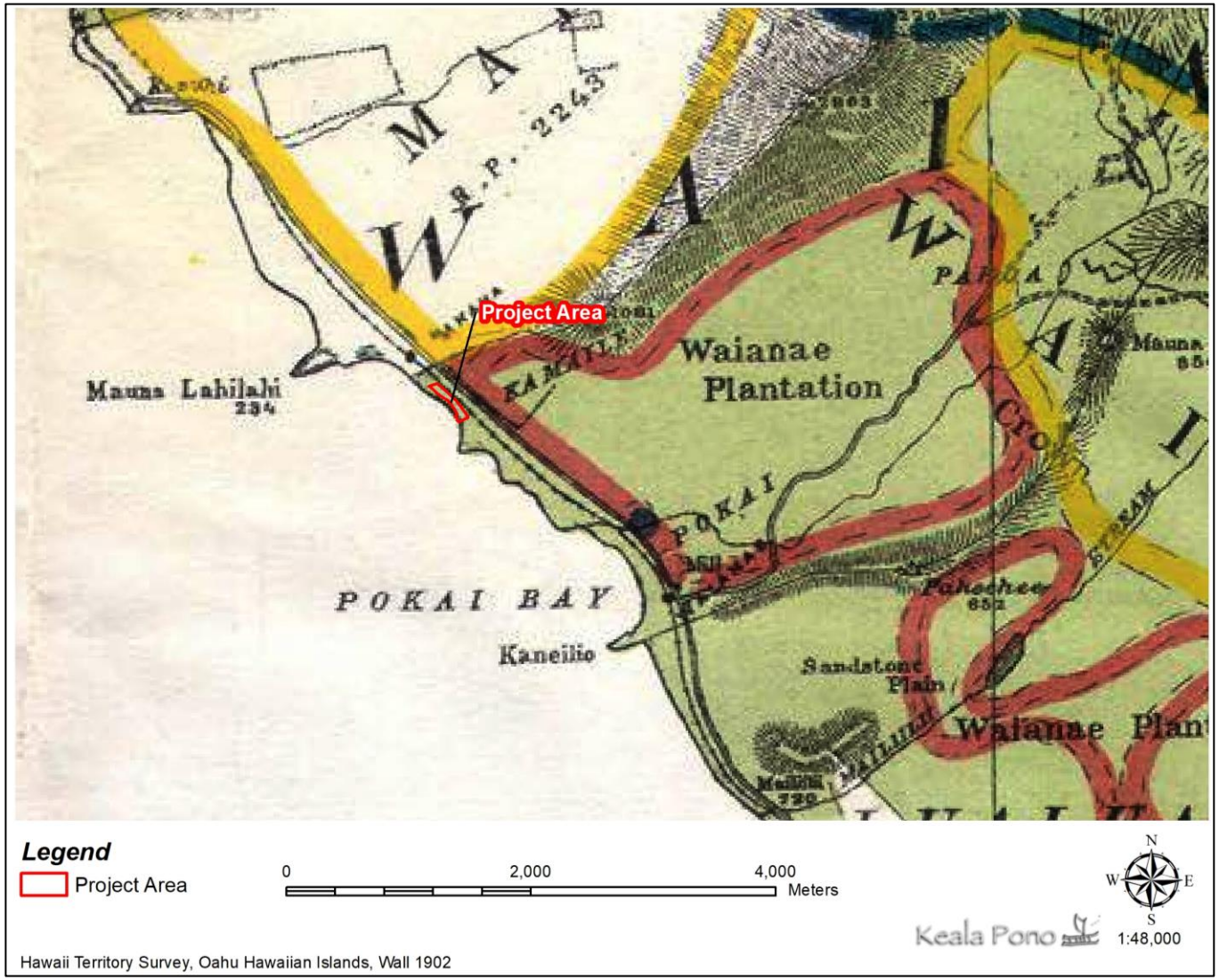



**Figure 8. Portion of a map of O‘ahu showing land use (Wall 1902).**

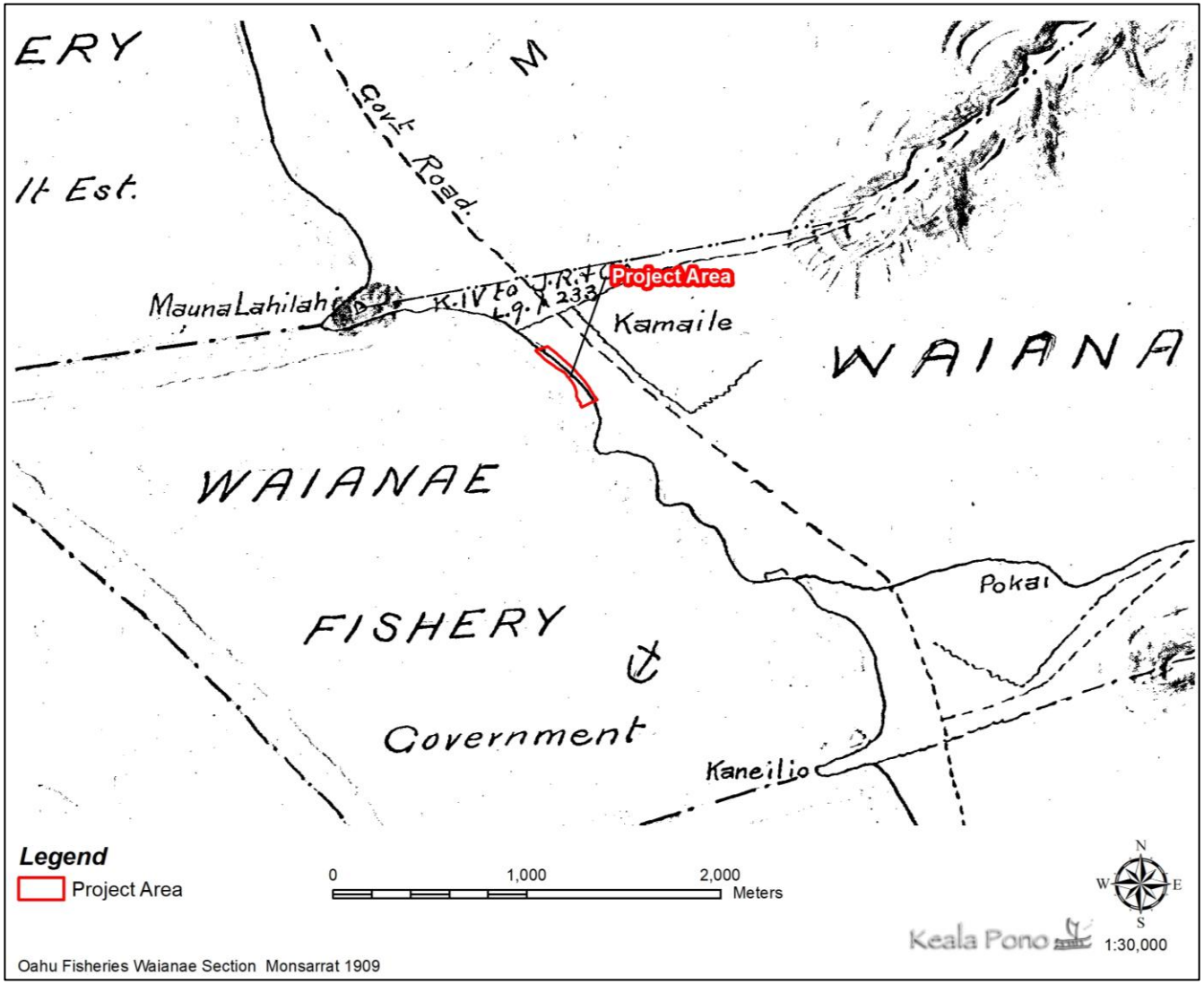



**Figure 9. Portion of a map of Waiʻanae District fisheries (Monsarrat 1909).**

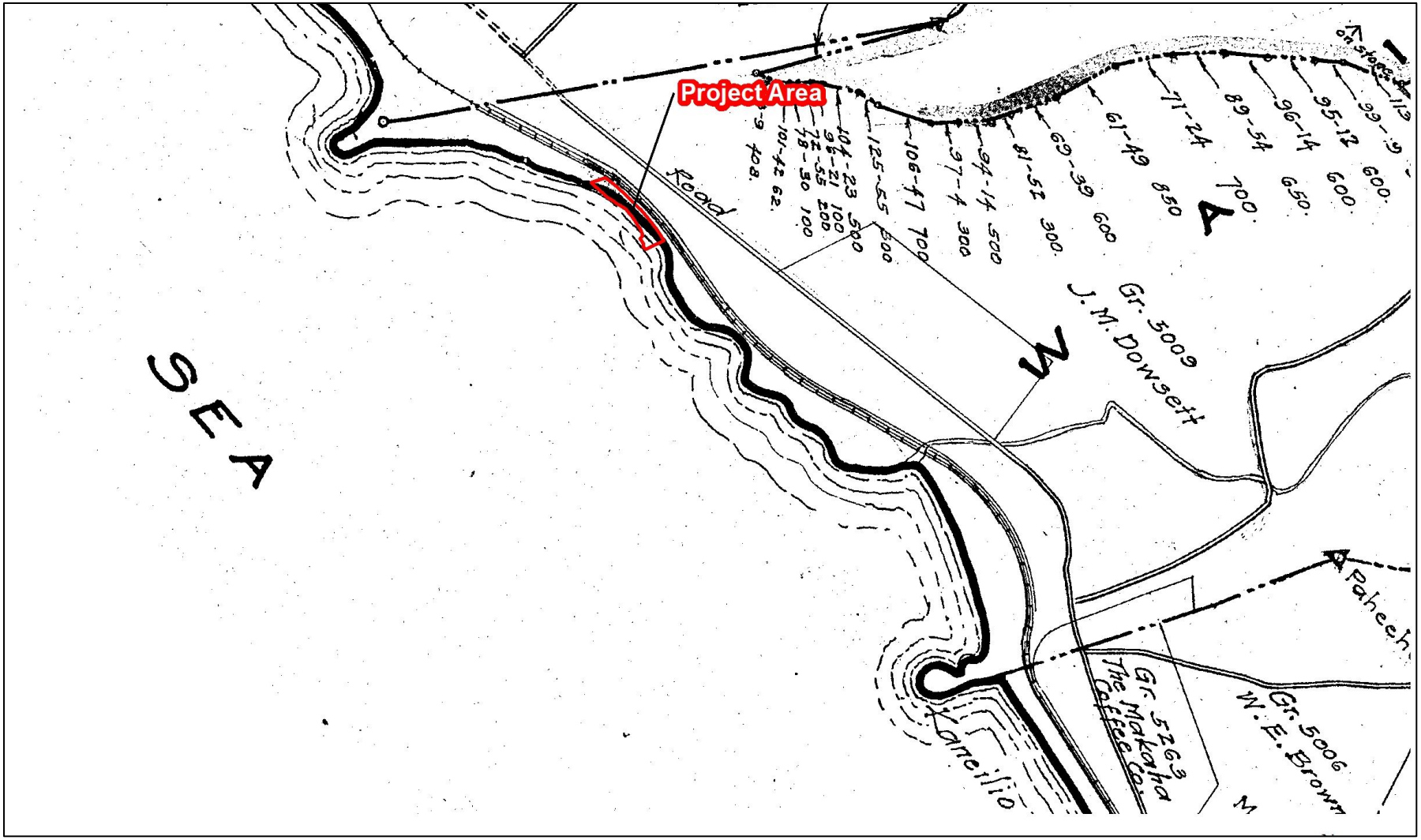



**Figure 10. Historic map of northwest Oʻahu fisheries (Wall 1925).**

### Mauna Lahilahi Beach Park

Mauna Lahilahi Beach Park, where the project area is located, was established around 1970. The land is owned by the City and County of Honolulu and the park is operated by the City's Department of Parks and Recreation. The 9-ac. beach park is named after Mauna Lahilahi Point located at the northernmost end of the beach. The beach has seen heavy erosion over the years with parts of the park having no land access and cut off from each other (Figure 11). The current project hopes to limit this erosion. Three small, sheltered coves are located on the eastern end of the beach park.

The only structure at the beach park is a public restroom. Monitored construction for the current project took place in front of the Mākaha Surfside Apartment building, which was established in 1967 (Vernon 2014). To the east of the apartments is Waiʻanae High School. The school was originally constructed in 1957 (Vernon 2014).


**Figure 11. Sandbags at the Mauna Lahilahi Beach park project area. The Mākaha Surfside Apartments are in the background.**

### Previous Archaeology

Numerous archaeological studies have been conducted in and around Mauna Lahilahi Beach Park. The following discussion provides information on archaeological investigations that have been carried out in the vicinity of the project area, based on reports found in the SHPD library in Kapolei, Hawaiʻi (Figure 12 and Table 2). Previously documented archaeological sites are shown in Figure 13 and Table 3. Projects are presented chronologically, and State Inventory of Historic Places (SIHP) numbers are prefaced by 50-80-07.

One of the earliest island-wide archaeological studies was conducted in the 1930s by J.G. McAllister (1933). In his study of Oʻahu, he recorded numerous sites located in Waiʻanae including nine heiau. The sites closest to the project area are Site 160, Kane Heiau and Site 161, Kamaile Heiau. Kamaile Heiau is relatively well preserved on the ridgeline and ahupuaʻa boundary separating Waiʻanae and Mākaha. Kamaile Heiau and possibly Kane Heiau (where Kamapuaʻa was said to be held) were likely of the luakini class. McAllister describes the two heiau as follows (McAllister 1933:114–115):

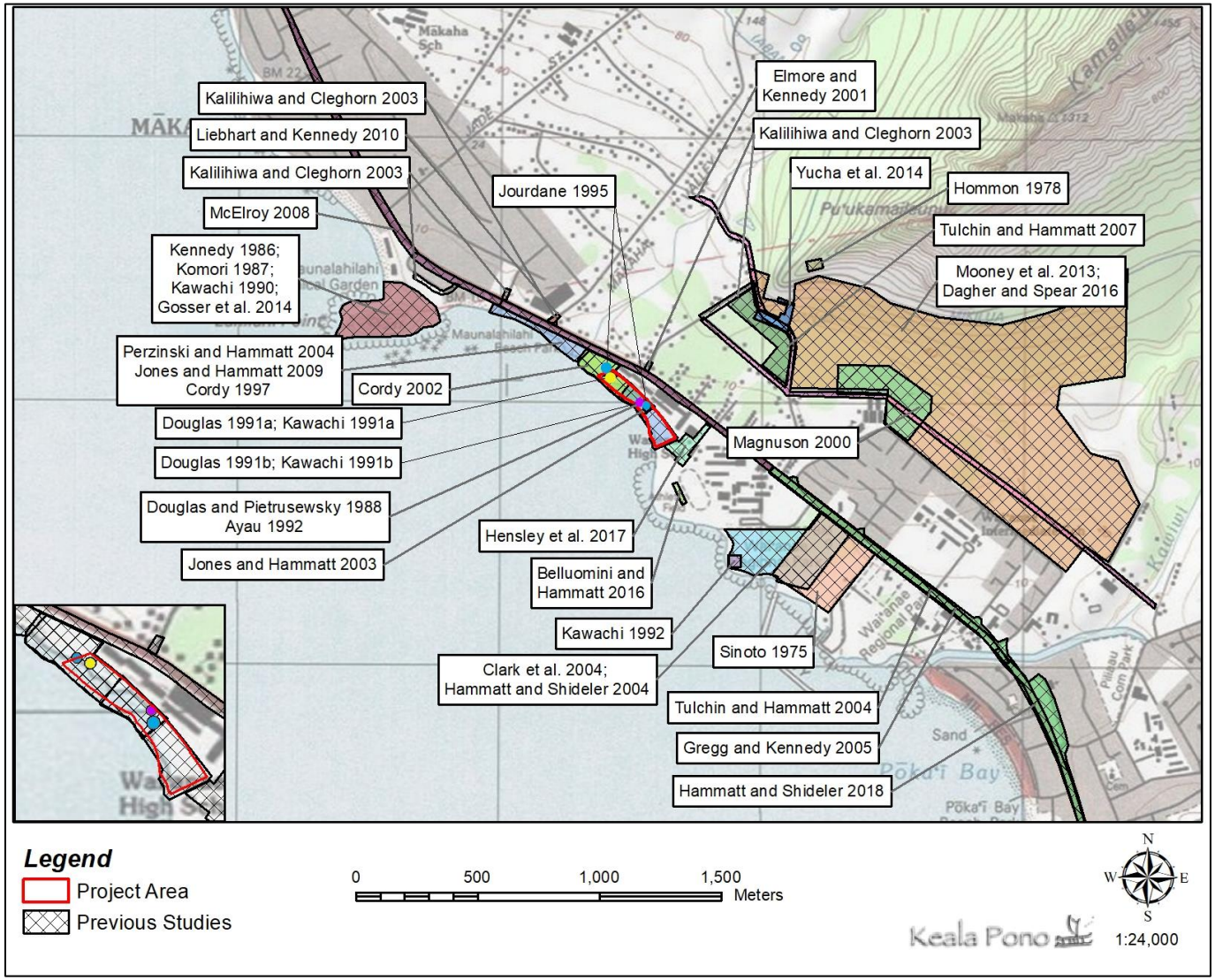



**Figure 12. Previous archaeological projects in Wai‘anae.**

**Table 2. Previous Archaeology in Wai‘anae Ahupua‘a**

| Author and Year | Location | Work Completed | Findings |
|---|---|---|---|
| McAllister 1933 | Island-wide | Archaeological Survey | Listed 9 site locations in Wai‘anae Ahupua‘a. Kamaile Heiau (Site 161) and Kane Heiau (Site 160) are the closest to the project area. |
| Sinoto 1975 | Wai‘anae Regional Park | Archaeological Reconnaissance | Identified 5 dry-laid masonry structures or features, including 3 enclosures, an L-shaped wall, and a wall now listed under SIHP 3967, Wai‘anae Regional Park. |
| Hommon 1978 | Kamaile Heiau | Survey and Mapping | Mapped the heiau (Site 161) and described a habitation cave and terraces below. |
| Kennedy 1986; Komori 1987 | Mauna Lahilahi Point | Archaeological Investigations, Survey, and Testing | Recorded 5 sites that are now all listed under SIHP 3704. An additional 11 sites were later identified and added to SIHP 3704. Features include enclosures, platforms, petroglyphs, a rockshelter, and others. |
| Douglas and Pietrusewsky 1988 | Makaha Beach Surfside Apartments | Burial Report | Documented a human burial of a single individual (SIHP 4064). The remains were reinterred at the Badayos family reinterment area at Mauna Lahilahi Beach Park. |
| Kawachi 1990 | Mauna Lahilahi Point | Burial Report | Identified two human burials and associated grave goods listed under the previously identified SIHP 3704. |
| Douglas 1991a; Kawachi 1991a | Makaha Beach Surfside Apartments | Burial Report | Documented a human burial of one sub-adult individual and an adult male exposed on the beach within a cultural layer (SIHP 4064). The human remains were reinterred at the Badayos family area at Mauna Lahilahi Beach Park. |
| Douglas 1991b; Kawachi 1991b | Makaha Beach Surfside Apartments | Burial Report | Documented a human burial with two individuals (one male and one female) discovered by the SHPD in 1979 (SIHP 4064). |
| Ayau 1992 | Makaha Beach Surfside Apartments | Burial Report | Identified a human burial, thought to be of one individual (SIHP 4064). The remains were reinterred at the Makua Sinkhole Complex (Po‘ohuna). |
| Kawachi 1992 | Wai‘anae Regional Park | Burial Report | Documented a human burial added to SIHP 3967 and a habitation/agricultural complex comprised of five sites (SIHP 4822–4826). |
| Jourdane 1995 | Mauna Lahilahi Beach Park | Burial Report | Recorded two human burials that were found exposed on the beach west of the apartment complex (SIHP 6592 and 4064). The burials were reinterred at the Badayos family area at Mauna Lahilahi Beach park. |

**Table 2. (Continued)**

| Author and Year | Location | Work Completed | Findings |
|---|---|---|---|
| Cordy 1997 | Mauna Lahilahi Beach Park | Burial Report | Recorded two human burials exposed on the beach on the west side of the apartment complex (SIHP 6592). One was destroyed by erosion and the other was left in situ. |
| Magnuson 2000 | Mauka of Kamaile Academy | Archaeological Reconnaissance | No findings. |
| Elmore and Kennedy 2001 | Roads along the Waiʻanae Coast | Archaeological Inventory Survey | Identified a habitation and burial site (SIHP 5949) that may be part of the Waiʻanae Complex. A complex of historic sugar plantation features was also found (SIHP 5950). |
| Cordy 2002 | Mauna Lahilahi Beach Park | Archaeological Investigations | Recorded 15 features as part of SIHP 4064. These consist of two burial pits, four fire pits, five pits of unknown function, two paved foundations, and two historic trash pits. |
| Kalilihiwa and Cleghorn 2003 | Various streets in Mākaha | Monitoring | Identified 3 sites with 5 features. Only SIHP 3325, a portion of the Mikilua Flume is located near the project area. All sites including the flume remnant were deemed not significant. |
| Jones and Hammatt 2003 | Mauna Lahilahi Beach Park | Monitoring | No findings. |
| Clark et al. 2004; Hammatt and Shideler 2004 | Waiʻanae Regional Park | Archaeological Inventory Survey | Documented 3 previously identified sites and 4 new sites all listed under the Waiʻanae Regional Park (SIHP 3967). |
| Perzinski and Hammatt 2004 | Mauna Lahilahi Beach Park | Archaeological Inventory Survey | Recorded the burial of one individual, which was left in situ (SIHP 4064) and a possible crypt with no burial. Also found a remnant of the previously identified OR&L railroad alignment (SIHP 9714) as well as 2 new sites, SIHP 6634, an intact cultural layer, and SIHP 6635, a historic rock alignment. |
| Tulchin and Hammatt 2004 | Farrington Highway | Monitoring | No findings. |
| Gregg and Kennedy 2005 | Farrington Highway | Monitoring | No findings. |
| Tulchin and Hammatt 2007 | East Maiuʻu Rd. and Mahinaʻau Rd. | Archaeological Inventory Survey | Documented a rock and mortar L-shaped foundation remnant (SIHP 6858) associated with historic sugarcane plantation activities. |
| McElroy 2008 | Farrington Highway | Monitoring | No findings. |

**Table 2. (Continued)**

| Author and Year | Location | Work Completed | Findings |
|---|---|---|---|
| Jones and Hammatt 2009 | Mauna Lahilahi Beach Park | Monitoring | Recorded 2 human burials (SIHP 6704 and 6705), both of which were left in situ. |
| Liebhart and Kennedy 2010 | Multiple areas off of Farrington Hwy | Archaeological Inventory Survey | No findings. |
| Mooney et al. 2013; Dagher and Spear 2016 | Waiʻanae Solar Farm | Archaeological Inventory Survey | Identified many new features that were split into 4 sites: SIHP 7760, a historic dairy; SIHP 5950, Kamaile Camp; SIHP 3325, Mikilua Flume, and SIHP 1181, the Waiʻanae Complex. |
| Yucha et al. 2014 | Kamaile Plantation Wells | Archaeological Inventory Survey | Documented 3 previously identified sites, the Waiʻanae Complex (SIHP 1181), a traditional Hawaiian habitation and ceremonial complex that contains Kamaile Heiau (Site 161); a rock platform and disturbed human remains (SIHP 5949); and historic sugarcane plantation features (SIHP 5950). |
| Gosser et al. 2014 | Mauna Lahilahi Point | Data Recovery | Inadvertently identified human burials of at least three individuals (SIHP 3704). All remains were reinterred. |
| Belluomini and Hammatt 2016 | Waiʻanae High School | Literature Review and Field Inspection | No findings. |
| Hensley et al. 2017 | Waiʻanae High School | Literature Review and Field Inspection | No findings. It was mentioned that the OR&L railroad crossed the project area, however the entire region had been disturbed by prior construction. |
| Hammatt and Shideler 2018 | Farrington Highway | Archaeological Literature Review | No findings near the project area. Noted human remains near the Old Government Road. |

**Table 3. Archaeological Sites Near the Project Area**

| Site Number 50-80-07- | Site Name | Description | Author |
|---|---|---|---|
| 160 | Kane Heiau | A possible luakini heiau located mauka of Kamaile School. It was recorded as destroyed. | McAllister 1933 |
| 161 | Kamaile Heiau | Located at the base of Kamaileʻunu Ridge, this possible luakini heiau has multiple enclosures and terraces. It is just above the Kukaʻauʻau Cave and part of the Waiʻanae Complex. | McAllister 1933; Hommon 1978; Yucha et al. 2014 |
| 1181 | Waiʻanae Complex | A traditional Hawaiian habitation and ceremonial complex that contains four sites including Kamaile Heiau (Site 161). | McAllister 1933; Yucha et al. 2014 |

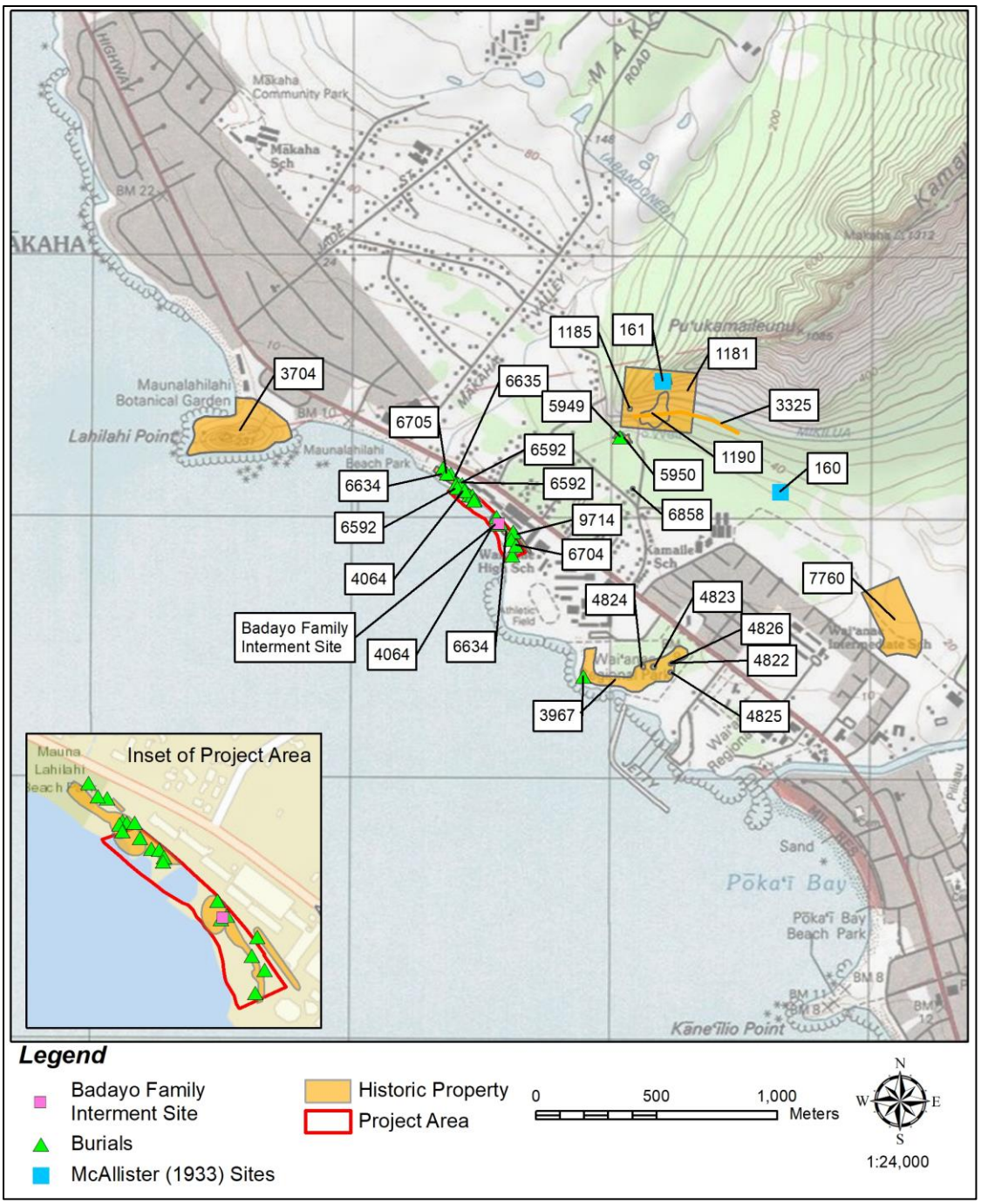



**Figure 13. Archaeological sites near the project area. SIHP site numbers are prefaced by 50-80-07 (USGS 2017).**

**Table 3. (Continued)**

| Site Number 50-80-07- | Site Name | Description | Author |
|---|---|---|---|
| 1185 | Kukaʻauʻau Cave Shelter | A shallow cave shelter roughly 40 ft. deep located just below Kamaile Heiau within the Waiʻanae Complex. | McAllister 1933; Hommon 1978; Yucha et al. 2014 |
| 1190 | Habitation site | Traditional Hawaiian habitation area located within the Waiʻanae Complex. The site includes a pre and/or early post-contact rockshelter with a terraced entrance, a historic wall/terrace, and two pre-contact terraces. | Mooney et al. 2013; Dagher and Spear 2016 |
| 3325 | Mikilua Flume | Historic sugarcane plantation flume with 11 features located partially within the Waiʻanae Complex. It consists of flume remnants and dry-stacked rock supports. | Kalilihiwa and Cleghorn 2003; Dagher and Spear 2016 |
| 3704 | Mauna Lahilahi Point Complex | 16 features at Mauna Lahilahi Point including enclosures, platforms, petroglyphs, a rockshelter, two burials with grave goods, and others. | Kennedy 1986; Komori 1987; Kawachi 1990 |
| 3967 | Waiʻanae Regional Park | 8 features including a human burial, 3 temporary habitation sites, 3 sinkholes, and a modified sinkhole. | Sinoto 1975; Kawachi 1992; Clark et al. 2004; Hammatt and Shideler 2004 |
| 4064 | Cluster of human burials | 6 burials consisting of approximately 7 individuals. 3 burials were reinterred at the designated Badayos family reinterment area at Mauna Lahilahi Beach park, one was reinterred in the Makua Sinkhole Complex, one was left in situ, and one has an unknown location. | Douglas and Pietrusewsky 1988; Douglas 1991a and b; Kawachi 1991a and b; Ayau 1992; Jourdane 1995; Cordy 2002; Perzinski and Hammatt 2004 |
| 4822 | Enclosure | Historic enclosure thought to have been used as an animal pen. | Kawachi 1992; Clark et al. 2004 |
| 4823 | L-shaped structure | L-shaped structure of unknown function. It was noted as possibly destroyed by Clark et al. (2004). | Kawachi 1992; Clark et al. 2004 |
| 4824 | Wall | Rock wall of unknown function. It was noted as possibly destroyed by Clark et al. (2004). | Kawachi 1992; Clark et al. 2004 |
| 4825 | Enclosure | Enclosure of unknown function that has been partially destroyed by a bulldozer. | Kawachi 1992; Clark et al. 2004 |
| 4826 | L-shaped structure | L-shaped structure of unknown function. | Kawachi 1992; Clark et al. 2004 |
| 5949 | Habitation and burial site | 3 features: a burial, a traditional cultural deposit, and a habitation site located within the Kamaile Camp and just outside of the Waiʻanae Complex. | Hommon 1978; Elmore and Kennedy 2001; Yucha et al. 2014 |

**Table 3. (Continued)**

| Site Number 50-80-07- | Site Name | Description | Author |
|---|---|---|---|
| 5950 | Kamaile Camp | Historic sugarcane plantation complex with 15 features including a paved trail, terraces, a cement foundation with troughs, ditches, a midden and artifact scatter, and others. | Elmore and Kennedy 2001; Yucha et al. 2014; Mooney et al. 2013; Dagher and Spear 2016 |
| 6592 | Human burials | Burial found exposed on the beach near the Mākaha Surfside Apartments after large surf. Reinterred at the Badayos family reinterment area. Additional human remains (two individuals) found exposed on the beach west of the Mākaha Surfside Apartment Complex. | Jourdane 1995; Cordy 1997 |
| 6634 | Cultural layer | An intact cultural layer that depicted continuous settlement of the shoreline region throughout the pre- and post-contact era. Samples for radiocarbon dating produced a date of AD 1430. | Hammatt and Shideler 2004; Perzinski and Hammatt 2004 |
| 6635 | Alignment | Rectangular basalt alignment of unknown function. No cultural layer was present. | Perzinski and Hammatt 2004 |
| 6704 | Human burial | Human remains found at Mauna Lahilahi Beach Park and left in situ. | Jones and Hammatt 2009 |
| 6705 | Human burial | Human remains found at Mauna Lahilahi Beach Park and left in situ. | Jones and Hammatt 2009 |
| 6858 | L-shaped foundation | Remnant of a rock and mortar L-shaped foundation associated with historic sugarcane plantation activities. | Tulchin and Hammatt 2007 |
| 7760 | Historic dairy | Historic dairy in poor condition with 33 features including multiple concrete troughs, walls, a trench, concrete slabs, and a pavement. | Mooney et al. 2013; Dagher and Spear 2016 |
| 9714 | OR&L railroad | Portion of the historic OR&L railroad alignment associated with sugarcane activities. | Perzinski and Hammatt 2004 |

Site 160 Kane heiau, Kamaile

The approximate location in the cane field was pointed out, but all the stones have been moved. The full name is said to be Kane-i-ka-pua-lena. This is the heiau at which Kawelo is said to have stopped and offered sacrifices when on his way to Kauai to wage war on Aikanaka. Some legends say that Kawelo stopped at the Makaha heiau known as Kaneaki (Site 170).

Site 161 Kamaile heiau, on Kamaile ridge between Waianae and Makaha valleys, an elevation about 400 feet, just above pumping station.

The heiau is a single terrace, built of large, sharp lava rocks. The facings of the terrace are surprisingly even and were carefully fitted. The heiau was formerly paved with small bits

> of coral, giving it the appearance of fine, white gravel. The amount of such coral is surprising. Small inclosures [sic] and terraces are shown in figure 36. Thrum offers the following information: "A medium sized heiau of platform character and pookanaka class, still in fair condition, to be seen from the road on the bluff above the pipe line of the electric pumping station."
>
> Beneath the heiau, but still above the pump, is a shallow cave shelter known as Kukaauau. The entrance, which faces due south, is concealed by a large *kiawe* (algaroba), some *cactus*, and *haole* koa. The cave is approximately 40 feet deep and 25 feet wide and 10 feet high at the entrance. It might prove interesting if excavated because it is on the ridge back of what was once a large Hawaiian settlement. The famous Kamaile spring, known as Kekoo, which watered many acres of taro land (73 just before it was taken over by the plantation) between the ridge and Mauna Lahilahi, was near the base of the shelter. The cave has the appearance of being artificially filled in, for the dust of the floor does not appear to have dropped from the roof. On the floor are many bits of matting, broken gourds, straw, and a few pages from a book printed in Hawaiian…A number of tapa (kapa) fragments were found; one a brick-red color. The floor is covered with grasses, ti leaves, banana stalks, coral, sea shells, a bunch of awa strainers, kukui nuts, coconut shells, charcoal, and a few broken bottles…Though there is a small plantation camp at the base, the shelter is probably not often frequented now.

During his survey, McAllister drew a perspective view and plan view map of Kamaile Heiau (Figure 14). Within the heiau is a small enclosure with a paved floor, an irregular pile of stones that was possibly a platform, a rectangle platform with a central pit, and a coral-paved open terrace. There was also a short wall roughly 8 ft. below the level of the terrace.

Later archaeological fieldwork in this area has further documented Kamaile Heiau and the associated cave below it (Hommon 1978). A habitation complex and burial (SIHP 50-80-07-5949) below the Kamaile Heiau complex and Kukaʻauʻau Cave (SIHP 50-80-07-1185) were mapped. A subsurface platform or paving was also identified at this site. The habitation feature is likely associated with the large Kamaile loʻi and habitation complex. Kukaʻauʻau Cave is approximately 40 ft. deep and was recorded by Hommon (1978) as a possible habitation site.

Archaeological reconnaissance was carried out for the Waiʻanae Light-Draft Boat Harbor on the west side of Waiʻanae Regional Park (Sinoto 1975). Five sites were recorded, including SIHP 50-80-07-4822, an animal pen or enclosure; SIHP 50-80-07-4823, a rectangular enclosure and adjoining L-shaped wall; SIHP 50-80-07-4824, a rock wall; SIHP 50-80-07-4825, a partially destroyed enclosure; and SIHP 50-80-07-4826, an L-shaped wall or shelter. OR&L railroad remnants and other heavily disturbed sites were also noted but not recorded due to their poor condition. In 1992, a burial was exposed during Hurricane Iniki on the southwest side of the park (Kawachi 1992) and recorded as SIHP 50-80-07-3967. The individual was found at 60 cm below surface (cmbs) and was identified as possibly an adult female. The burial was covered with sand and left in place.

The five sites documented by Sinoto (1975) were later re-examined through archaeological inventory survey and subsurface testing (Clark et al. 2004; Hammatt and Shideler 2004). Two of the sites had been destroyed and four new features and two cultural deposits were identified. The new features, the three remaining previously identified sites, and the burial were subsumed under a single site number, SIHP 3967. The new features were sinkholes interpreted as gardening areas. The cultural deposits were found within the sinkholes and yielded charcoal, marine shell, and animal bone.

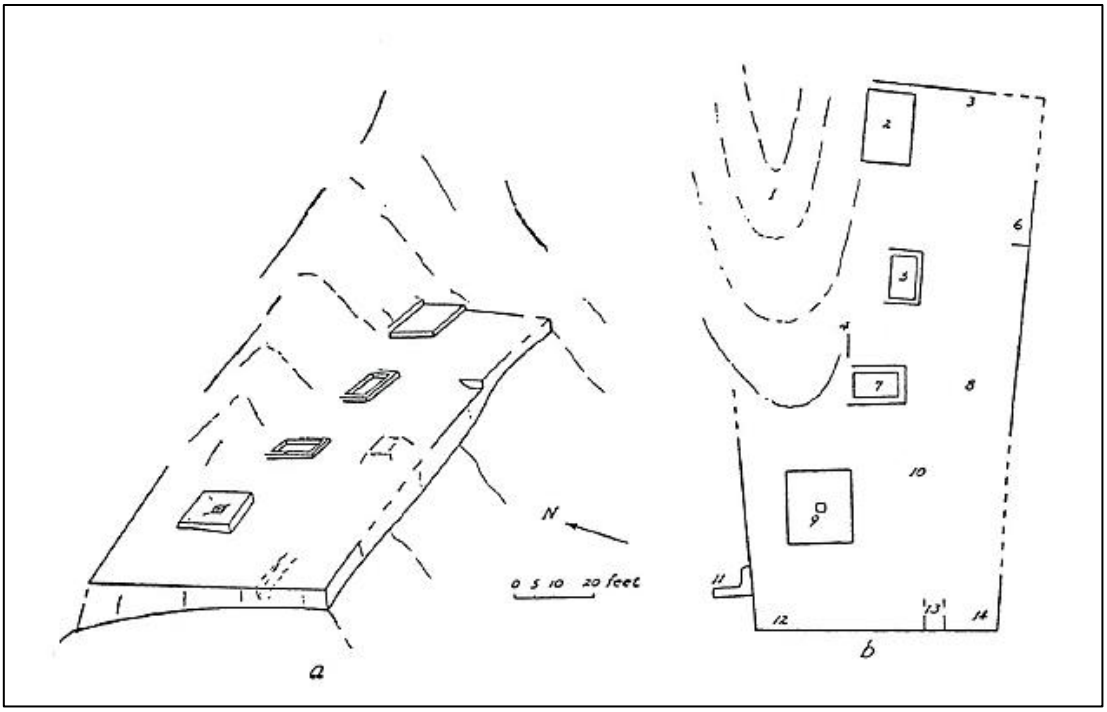



**Figure 14. Perspective view (a) and plan view (b) of Kamaile Heiau from McAllister (1933:15).**

Various studies were completed at Mauna Lahilahi Point at the west end of the beach. Preliminary archaeological investigations recorded five sites (Kennedy 1986) that would be combined under SIHP 50-80-07-3704. The following year, an additional 11 new sites were identified and the original five sites relocated, for a total of 16 sites under SIHP 3704 (Komori 1987). The features include multiple enclosures and platforms, agricultural features, petroglyphs, a midden deposit and a rockshelter. A burial report was completed for Mauna Lahilahi Point, which documented two human burials with associated grave goods that were also listed as Site 3704 (Kawachi 1990). Finally, in 2014, data recovery was completed for inadvertently discovered human remains at Mauna Lahilahi Point (Gosser et al. 2014). The burials were determined to be of at least three individuals and listed as part of SIHP 3704.

The earliest documentation of human remains within the project area is in a burial report by Douglas and Pietrusewsky (1988). The remains of a single individual were exposed on the beach in December 1987 and discovered by a couple while walking on the beach directly behind the Mākaha Surfside Apartments. The burial was determined to be of an adult male, roughly 48 years old. The remains "appeared to be very old. The dirt and sand appeared to have been washed away." The iwi were reinterred at the Lucio Badayos family reinterment site at Mauna Lahilahi Beach Park.

On the west side of the Mākaha Surfside Apartments, another burial with two individuals was encountered eroding out of the beach in February 1991 (Kawachi 1991a). A shell fishhook preform was found within a cultural layer exposed at 54 cmbs. The burial (SIHP 50-80-07-4064) was situated within the cultural layer, which included charcoal, dark staining, and midden. The human remains were documented in a supine flexed position. Osteological analysis determined that the remains belonged to two individuals, a 7–9 year old sub-adult and the other a middle-aged adult male (Douglas 1991a). Only cranial fragments were identified as belonging to the adult individual. The iwi were also reinterred at the Badayos family site.

Artifact and osteological analyses were completed on SIHP 4064, discovered by the SHPD in October 1979 (Kawachi 1991b and Douglas 1991b). The burial was located just in front of the Mākaha Surfside Apartments and contained two individuals, an adult male approximately 5 ft. 10 in. tall and a possible adult female. The ethnicity and time period of the individuals are unknown. Kawachi (1991b:6) stated that the "place of burial infers that these two were not people of rank." Artifacts identified with the burial included a rusty nail, wood fragments, a faunal bone, kukui nutshell, and five buttons. Despite the fact that most artifacts are historic, archaeologists were unable to associate them with the burial since it is possible that the artifacts part of fill material.

Another burial near the Mākaha Surfside Apartments was identified in 1992 (Ayau). The human remains were recorded as one individual and designated as part of SIHP 4064. The remains are believed to have been reinterred by the Koa Mana Organization at the Makua Sinkhole Complex (Poʻohuna).

Two burials (SIHP 50-80-07-6592 and 50-80-07-4064) were found exposed on the beach after large surf by Alika Silva (Jourdane 1995). The first burial was encountered just west of the Mākaha Surfside Apartment complex in a burial pit, while the second burial of a sub-adult individual was documented at the edge of the lawn farther inland. Both burials were reinterred at the Badayos family area. Two additional burials found in 1997 also on the west of the apartment complex were included as SIHP 6592 (Cordy 1997). One burial was documented as completely destroyed by beach erosion and the other was left in situ.

An archaeological reconnaissance survey was conducted inland from the project area at Kamaile Elementary School (Magnusson 2000). No historic properties were found during the pedestrian field inspection. Magnusson noted exposed remnants of limestone reef and that the area had been previously disturbed by prior bulldozing.

In 2001, an archaeological inventory survey was completed for the Waiʻanae Coast Emergency Access Road spanning Mākaha, Waiʻanae Kai, Lualualei, and Nānākuli (Elmore and Kennedy 2001). Two sites were identified during the survey. SIHP 50-80-07-5949 is a traditional Hawaiian cultural deposit within the previously documented burial and habitation site at Kamaile Camp. SIHP 50-80-07-5950 is the Kamaile Camp complex. It consists of historic sugarcane plantation features such as mortar and basalt foundations, and a well.

Further archaeological investigations were completed for SIHP 4064 at Mauna Lahilahi Beach Park (Cordy 2002). The study concluded that the previously identified site covered over 425 m of the shore and extended approximately 60–70 m inland. Over the course of the three year study, 15 features were recorded. These consist of two burial pits with fragmented human remains, two 20$^{th}$ century trash pits, two fire pits, two paved stone foundations, two pit features of unknown function, two fire pits, and three pits containing charcoal. Stratigraphy was composed of two layers of modern fill above a clear plastic sheeting. This was above a cultural layer and three layers of sand, all of which overlaid a brownish basal soil layer (Cordy 2002:3).

Archaeological monitoring for the Shoreline Protection Project at Mauna Lahilahi Beach Park had no findings (Jones and Hammatt 2003). The area deemed culturally sensitive and containing the burial cluster was protected with temporary fencing during the project.

Water systems improvements required archaeological monitoring on various streets in Mākaha and Waiʻanae (Kalilihiwa and Cleghorn 2003). Three sites (SIHP 50-80-07-6521, 50-80-07-3325, and 50-80-07-6522) with five features were recorded during monitoring. SIHP 6521, a pit feature, and 6522, two fire pits are not located near the project area. SIHP 3325 is a portion of the historic Mikilua flume associated with the Waiʻanae Sugar Plantation.

An archaeological inventory survey for Mauna Lahilahi Beach Park included 32 test trenches and four wave-cut bank profiles (Perzinski and Hammatt 2004). Two previously documented sites and two new sites were identified. The new sites include an intact cultural layer (SIHP 50-80-07-6634) and a historic basalt alignment (SIHP 50-80-07-6635). Radiocarbon dating of the cultural layer produced a date of AD 1430, indicating along with stratigraphic data that the area was under continued use and occupation throughout the pre-contact and post-contact eras. SIHP 4064 is the burial cluster, while the previously identified SIHP 9714 is an OR&L railroad alignment remnant. Historic maps place the railroad tracks outside of the inland edge of the project area. A possible burial crypt was also found, however it was devoid of human remains. A burial eroding out of the wave-cut face was determined to be the previously documented SIHP 6592.

Four archaeological studies were completed on Farrington Highway. Monitoring for three highway projects in the vicinity of the study area produced no findings (Tulchin and Hammatt 2004; Gregg and Kennedy 2005; McElroy 2008). It was noted in all three studies that the region had been significantly impacted by modern development. An archaeological literature review for Waiʻanae Water Systems Improvements did not mention any sites near the project area, however human remains were noted near the Old Government Road at Pōkaʻī Bay.

Development of a private residence located mauka of the current project area required an archaeological inventory survey (Tulchin and Hammatt 2007). Six test trenches and a surface survey were completed for the 6.7-acre parcel, and one site was identified. The site is an L-shaped basalt and mortar foundation (SIHP 50-80-07-6858) associated with historic sugarcane activities and was in poor condition.

In 2009, a beautification project for Mauna Lahilahi Beach Park required archaeological monitoring (Jones and Hammatt 2009). Ground disturbance included the planting of trees, installation of utility lines and fence posts, and grading. Two human burials were documented (SIHP 50-80-07-6704 and 50-80-07-6705) and preserved in situ. SIHP 6704 is a historic coffin burial located in the southeast portion of the park and was not associated with a cultural layer. Human remains (SIHP 6705) were also found on the northwest side of the park and were noted as previously disturbed. The absence of historic artifacts and proximity to the cultural layer make it a possible pre-contact era burial.

An archaeological inventory survey was conducted for multiple streets just off of Farrington Highway near Mākaha Valley Road (Liebhart and Kennedy 2010). No historic properties were encountered and it was found that the entire area had been extensively modified by prior development.

In 2013, an archaeological assessment was completed for the Waiʻanae Solar Power Farm Project (Mooney et al. 2013). The project area spanned the entrance to the valley between the two ridges. Multiple sites associated with sugarcane plantations were recorded and given temporary site numbers, although they were ultimately not considered historic properties. An archaeological inventory survey for the same project recorded many new pre- and post-contact features, which were grouped into three SIHP site numbers (Dagher and Spear 2016). These are SIHP 50-80-07-7760, a historic dairy on the east end of the project area; SIHP 5950, Kamaile Camp; and SIHP 50-80-07-3325, Mikilua Flume. The dairy site was in poor condition and consists of 33 features including multiple concrete troughs, walls, a trench, concrete slabs, and a pavement. Kamaile Camp is a previously identified historic sugarcane plantation complex with 15 features consisting of a paved trail, terraces, a cement foundation with troughs, ditches, and a midden and artifact scatter, among others. Mikilua Flume is a historic sugarcane plantation flume with 11 features, some of which is partially located within the Waiʻanae Complex (SIHP 50-80-07-1181). It consists of flume alignment remnants and dry-stacked basalt rock supports. The traditional Hawaiian habitation and ceremonial

complex known as the Waiʻanae Complex was also documented. It contains four sites including Kamaile Heiau.

Also near the base of Kamaileʻunu Ridge, the Kamaile Plantation Wells Project recorded several sites during archaeological monitoring (Yucha et al. 2014). These are the Waiʻanae Complex (SIHP 1181), a traditional Hawaiian habitation and ceremonial complex that contains Kamaile Heiau (Site 161); a basalt platform and disturbed human remains that are located within the Kamaile Camp site (SIHP 5949); and historic sugarcane plantation features also within the Kamaile Camp (SIHP 5950).

Two archaeological literature reviews were conducted for projects at Waiʻanae High School just east of the current project area. The first was for the replacement of athletic bleachers surrounding the high school's football field on a 0.2 acre portion of the campus (Belluomini and Hammatt 2016). The report stated that no historic properties would likely be affected by the proposed project. The second study at Waiʻanae High School was completed in 2017 for a project to connect Buildings SP and T (Hensley et al. 2017). It was mentioned that the OR&L railroad crossed through the project area, however the location was already disturbed from previous construction activities. The report concluded that historic properties were unlikely to be encountered or affected.

**Settlement Patterns**

In pre-contact times, Waiʻanae Ahupuaʻa was split into many ʻili consisting of agricultural and habitation features spread from the coastal area as well as inland and adjacent to the major streams that drain into the valley from the mountains and ridges that surround it on three sides. Agricultural lands are clustered around both streams and springs such as Kekoʻi Spring, located inland from the project area. Large portions of the ahupuaʻa were cultivated loʻi. By 1870 when the first maps were developed, some areas of Waiʻanae Ahupuaʻa had already been abandoned.

Fishponds were located along the coastline east of the project area near Pōkaʻī Bay. House sites, both on historic maps and those identified by archaeologists, fit the pattern of dispersed habitation. There are house sites on the coast as well as in inland areas. Most appear to be adjacent to locations where loʻi or other agricultural plots would have been cultivated.

At least four heiau in Waiʻanae were located on the ahupuaʻa boundaries with Mākaha and Lualualei, highlighting the potential integration of these separate communities by religious considerations as well as by socio-political relationships. Several other heiau were adjacent to or within the boundaries of named ʻili, such as Kane Heiau in the ʻili of Kamaile, suggesting they served as one or more landholding units. Heiau also occur inland, such as the one found near Punanaʻula Stream.

**Summary of Background Information**

Several features of Waiʻanae Ahupuaʻa suggest it was an important center in Leeward Oʻahu. These include its central location, large size, inland boundary that extended to the Koʻolau Mountains, substantial number of heiau, and association with at least four paramount chiefs of Oʻahu mentioned in oral traditions. While portions of the leeward coast likely had a lower density of population at the time of European contact, there were some areas such as Waiʻanae that supported more substantial groups. The population of Waiʻanae Kai could have reached as many as 800–1,000 individuals. The large number of LCA awards, in excess of 160, made to residents of Waiʻanae likewise are a testament to its sizeable and influential community. A number of aliʻi also made their home in Waiʻanae, probably living along the coast and attached to the larger ʻili. Large tracts of land were devoted to the cultivation of irrigated taro and these plots extended from the makai area of the valley into the upper portion where there were many springs and multiple streams with perennial water flow. Elsewhere dryland crops, such as sweet potato, sugarcane, and yams were grown on the lower

ridges that separated the stream drainages. At least three fishponds are known for Waiʻanae; one of them was at least 1 km in length. The ocean was a major resource, with prime fishing grounds exploited along the coast. Finally, there were at least 10 named heiau in the ahupuaʻa, many of which are mentioned in moʻolelo and several occupying key landmark locations or near important resources.

The historic period brought widespread changes to the region. Large numbers of the population were lost to the catastrophic diseases introduced to the islands by early Europeans and Americans. This set off a series of relocations of communities as well as the abandonment of less productive areas in favor of locations closer to population centers or with access to irrigated farming. Nonetheless, Waiʻanae continued to support a series of local households and extended families. Later with large expanses converted to cattle ranches and sugarcane fields, its population grew again through immigration of laborers for the plantations and the development of Waiʻanae as a commercial center.

Many archaeological projects have taken place in the ahupuaʻa of Waiʻanae and near Mauna Lahilahi Beach Park. These, along with historic maps, documented a wide variety and extensive array of structures, features, and artifacts that date to the pre- and post-contact periods. Multiple traditional and historic human burials have been identified within and near the project area including a large cluster. The Badayos family reinterment area is also located within Mauna Lahilahi Beach Park. There is a cultural deposit within the study area and a remnant of an OR&L railroad alignment just outside of the project boundaries. Other archaeological remains in the region consist of heiau, habitation features, walls, L-shaped structures, a historic sugarcane camp, a historic flume, remnants of a dairy, and other features associated with the sugarcane plantation.

## METHODS

Archaeological monitoring was conducted from July 24, 2020 to October 5, 2020, with a total of 11 days of monitoring, (71.5 person hours) during that time. The archaeological monitor was Robin Kapoi, BA. Windy McElroy, PhD served as principal investigator, overseeing all aspects of the project. Archaeological monitoring was guided by a SHPD-accepted monitoring plan, which called for monitoring of all ground disturbing activities requiring machinery operation within the "Mauna Lahilahi Beach Park located west of the Makaha Surfside Apartments and north of Waianae High School on Farrington Hwy." (Vernon 2014). There were no deviations from the plan.

Before the project began, several site visits were made by the archaeological monitor, the principal investigator, and the SHPD. At these meetings, there were discussions about how to minimize impacts to potential archaeological resources while moving equipment to and from the area of excavation. It was determined that protective measures, such as orange construction fencing, would be installed in sensitive areas, and that the archaeological monitor would document these protection measures and share this documentation with SHPD before the start of construction. The documentation was done on July 24, 2020, and SHPD was apprised via email on July 26, 2020 (Appendix B). The protective measures consisted of fencing a 20 ft. wide buffer zone around known locations of subsurface cultural deposits including human burials. The 20 ft. wide buffer began at the northern construction access corridor and extended from the existing parking area toward the southern access corridor along the sand embankment, and ended on the west side of the rock revetment area.

On the first day of work, the archaeological monitor spoke with the construction team to ensure that they understood the purpose of the monitoring and that the monitor has the authority to halt construction activity. Excavation was conducted primarily with excavators (Figure 15). Representative profiles were drawn and photographed, and sediments were described using Munsell Soil Color Charts (Munsell 2010), a sediment texture flow chart (Thien 1979), and the U.S. Department of Agriculture soil manual (Soil Science Division 2017). The scale in all field photographs is marked in 10 cm increments. The north arrow on all maps points to magnetic north. Throughout this report rock sizes follow the conventions outlined in *Field Book for Describing and Sampling Soils*: Gravel <7 cm; Cobble 7–25 cm; Stone 25–60 cm; Boulder >60 cm (Schoeneberger et al. 2002:2-35). No material was collected and no laboratory analyses were conducted.

**Figure 15. Setting of boulders on the new revetment wall by excavator.**

## RESULTS

Archaeological monitoring was conducted between July 24, 2020 and October 5, 2020. Excavations were monitored along the seawall cove fronting the Makaha Surfside Apartments with Mauna Lahilahi Beach Park to the west and Waiʻanae High School to the east (Figure 16). There were no trenches excavated, and ground disturbance consisted of removal of sandbags, as well as excavation on the far southeast end of the revetment to facilitate placement of large boulders to build the new revetment wall. The excavator had a 20 ft. buffer to avoid slumping when excavating this southeastern end of the wall. The removal of the sandbags did not expose any native beach deposits, only the boulders that had been placed there before and underneath the sandbags (Figure 17). Excavation also occurred in the ocean along the new revetment to secure the boulder foundation for the revetment wall (Figure 18). Stratigraphy was consistent throughout the project area, composed of natural sand mottled with disturbed native soil (Table 4). No cultural material or deposits were encountered.

### Stratigraphy

Stratigraphy was very consistent throughout the small project area, and one profile is presented here. The profile location can be seen in Figure 16. Stratigraphy was composed of two stratigraphic layers. These were a natural beach sand and a basal deposit of native soil. The sand and native soil both contained roots from the overgrown naupaka plants encroaching from the Makaha Surfside Apartments property. The sand layer was also disturbed by a water irrigation line that ran along the naupaka. Construction aggregate was also noted and placed on the surface as a safety resistance to shoreline erosion.

Stratigraphic profiles were recorded beginning at the west corner of the revetment wall, the central area, and the southeast end of the wall. The profile at the southeast end of the wall is presented below. Stratigraphy consisted of two layers as noted above (Figures 17 and 18; see Table 4). No cultural material or deposits were observed.

### Summary of Results

In sum, excavations were monitored along the seawall cove fronting the Makaha Surfside Apartments in Waiʻanae Ahupuaʻa. Stratigraphy consisted of natural beach sand and native soil. No cultural material or deposits were found.

**Table 4. Soil Descriptions**

| Location | Layer | Depth (cmbs) | Color | Description | Interpretation |
|---|---|---|---|---|---|
| SE corner of revetment wall | I | 0–60 | 10YR 8.5/2 | Moist loamy sand with mottles of 10YR 3/2; weak, single grain; medium roots; natural marine shell; coral inclusions; irregular; abrupt boundary. | Natural Beach |
| | II | 20–100 | 10YR 3/2 | Moist coarse sandy loam; weak, granular; non plastic, friable; fine roots; base of excavation. | Native Soil |

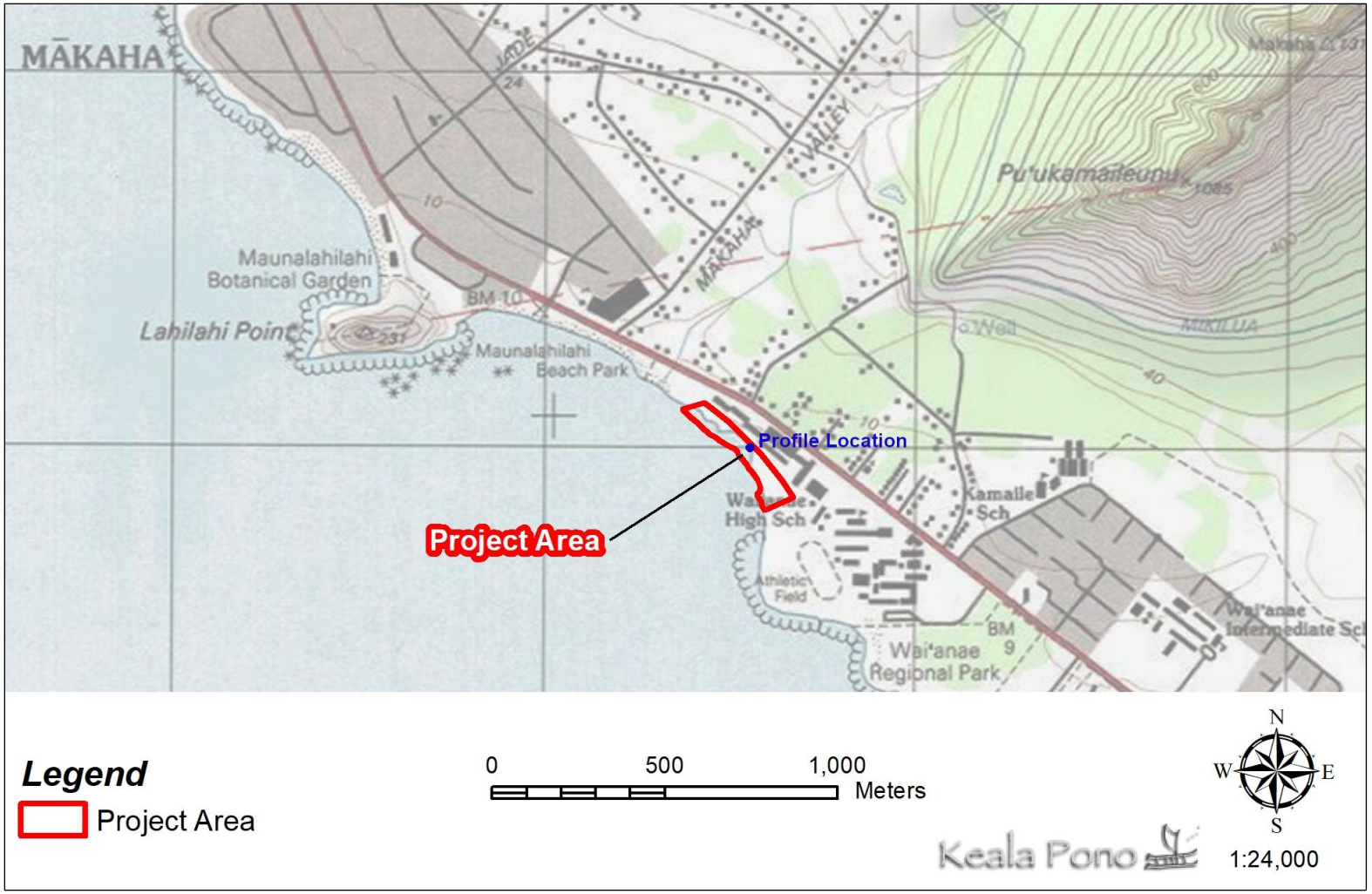



**Figure 16. Project area and profile location.**


**Figure 17. Filling of new sand bags. Note scattered material from old sand bags over existing boulders in the foreground. Orientation is to the northwest.**


**Figure 18. Setting foundation boulders for the new revetment wall. Orientation is to the southwest.**

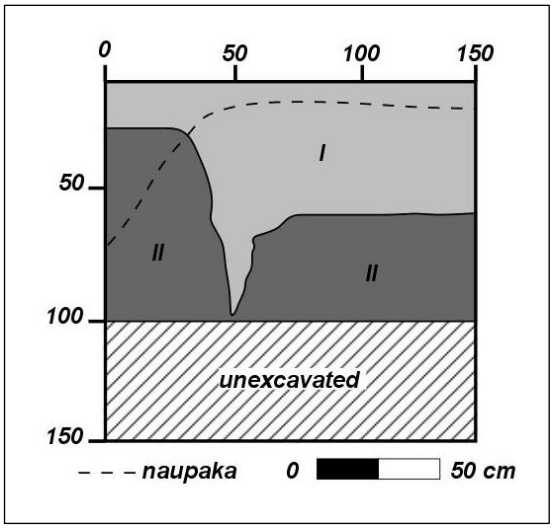



**Figure 19. Northeast face profile drawing.**

**Figure 20. Northeast face profile photo.**

## SUMMARY AND CONCLUSION

In summary, the Mauna Lahilahi Beach Park Rock Revetment Project is located at TMK: (1) 8-5-017:001 (por.), 002 (por.), 003 (por.), 004, 005 (por.), 006, and 007 in Waiʻanae Ahupuaʻa, Waiʻanae District, on the island of Oʻahu. Archaeological monitoring covered a small portion of the 3.915-acre project area, as the archaeological monitoring plan called for the monitoring of all ground disturbing activities requiring machinery operation within the "Mauna Lahilahi Beach Park located west of the Makaha Surfside Apartments and north of Waianae High School on Farrington Hwy." (Vernon 2014). This consisted of approximately 0.64 acre of the project area, along the seawall cove fronting the Makaha Surfside Apartments. Excavations were not conducted outside of this small area.

No cultural material or deposits were encountered during monitoring, and stratigraphy consisted of natural beach sand and native soil. Because of known locations of subsurface cultural deposits and human burials, as well as possible remnants of the former OR&L railroad, it is recommended that archaeological monitoring should be conducted for any future work in the area. Even though no archaeological remains were present on the surface and no subsurface evidence of them were found during this project, they may be encountered in the vicinity. Future projects within this area should consult with SHPD.

## GLOSSARY

**ahupua‘a** Traditional Hawaiian land division usually extending from the uplands to the sea.

**aku** The bonito or skipjack (*Katsuwonus pelamis*), a prized eating fish.

**ali‘i** Chief, chiefess, monarch.

**‘auwai** Ditch, often for irrigated agriculture.

**‘awa** The shrub *Piper methysticum*, or kava, the root of which was used as a ceremonial drink throughout the Pacific.

**heiau** Place of worship and ritual in traditional Hawai‘i.

**‘ili, ‘ili‘āina** Land area; a land section, next in importance to ahupua‘a and usually a subdivision of an ahupua‘a.

**‘ili kūpono** An ‘ili within an ahupua‘a that was nearly independent. Tribute was paid to the ruling chief rather than the chief of the ahupua‘a, and when an ahupua‘a changed hands, the ‘ili kūpono were not transferred to the new ruler.

**iwi** Bone.

**ka‘ānani‘au** Rare term for ahupua‘a or an altar marking an ahupua‘a.

**Kahiki** A far away land, sometimes refers to Tahiti.

**kahuna** An expert in any profession, often referring to a priest, sorcerer, or magician.

**kalo** The Polynesian-introduced Colocasia esculenta, or taro, the staple of the traditional Hawaiian diet.

**kama‘āina** Native-born.

**kiawe** The algaroba tree, *Prosopis* sp., a legume from tropical America, first planted in 1828 in Hawai‘i.

**kilu** A small container used for storing precious objects or for feeding a favorite child; a quoit in the kilu game in which a player would attempt to hit an object with the kilu to win a kiss from a member of the opposite sex.

**koa haole** The small tree *Leucaena glauca*, historically-introduced to Hawai‘i.

**kō‘ele** Small land unit farmed by a tenant for the chief.

**konohiki** The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.

**kukui** The candlenut tree, or *Aleurites moluccana*, the nuts of which were eaten as a relish and used for lamp fuel in traditional times.

**kuleana** Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.

**kupuna** Grandparent, ancestor; kūpuna is the plural form.

**lo‘i, lo‘i kalo** An irrigated terrace or set of terraces for the cultivation of taro.

**luakini** Large heiau of human sacrifice.

**Māhele** The 1848 division of land.

**maile** *Alyxia olivaeformis*, a fragrant native shrub used for twining.

| | |
|---|---|
| **makai** | Toward the sea. |
| **mauka** | Inland, upland, toward the mountain. |
| **mele** | Song, chant, or poem. |
| **midden** | A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawai‘i, the term generally refers to food remains, whether or not they appear as a heap or stratum. |
| **moku** | District, island. |
| **mo‘o** | Narrow strip of land, smaller than an ‘ili. |
| **mo‘olelo** | A story, myth, history, tradition, legend, or record. |
| **niu** | The Polynesian-introduced tree *Cocos nucifera*, or coconut. |
| **‘ōlelo no‘eau** | Proverb, wise saying, traditional saying. |
| **poi** | A staple of traditional Hawai‘i, made of cooked and pounded taro mixed with water to form a paste. |
| **post-contact** | After A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew. |
| **pre-contact** | Prior to A.D. 1778 and the first recorded arrival of Westerners in the islands. |
| **pu‘u** | Hill, mound, peak. |
| **pu‘uhonua** | Place of refuge. |
| **ti (kī)** | The plant *Cordyline terminalis*, whose leaves were traditionally used in house thatching, raincoats, sandals, whistles, and as a wrapping for food. |
| **‘uala** | The sweet potato, or *Ipomoea batatas*, a Polynesian introduction. |

## REFERENCES


Ayau, E.H.
1992 Memorandum (Case #505) to SHPD burial site program staff regarding remains discovered by Glen Kila on October 20, 1992 on the shoreline fronting the Makaha Surfside Apartments.

Beckwith, M.
1940 *Hawaiian Mythology*. University of Hawai‘i Press, Honolulu.

Belluomini, S.A. and H.H. Hammatt
2016 *Archaeological Literature Review and Field Inspection Report for the Wai‘anae High School Athletic Field Bleachers Replacement Project, Wai‘anae Ahupua‘a, Wai‘anae District, Island of O‘ahu, TMK: [1] 8-5-002:018*. Cultural Surveys Hawai‘i Inc., Kailua, Hawai‘i.

Cachola-Abad, C.K.
2000 *The Evolution of Hawaiian Socio-Political Complexity: An Analysis of Hawaiian Oral Traditions*. PhD. Dissertation, Department of Anthropology, University of Hawai‘i at Mānoa, Honolulu.

Clark, S.D., D. Gosser, and R. Nees
2004 *Archaeological Inventory Survey for the Proposed Wai‘anae Regional Park, Wai‘anae Kai Ahupua‘a, O‘ahu, Hawai‘i [TMK: 8-5-02:11]*. Pacific Consulting Services, Inc., Honolulu.

Cordy, R.
1997 *Archaeological Survey in Upper Wai‘anae Valley, Wai‘anae Ahupua‘a, Wai‘anae District, O‘ahu*. Manuscript on file, State Historic Preservation Division, Department of Land and Natural Resources, Honolulu.

2002 *Archaeological Investigations at a Coastal Habitation Site (Site 4064) in Front of the Makaha Surfside Apartments, Kamaile ‘ili, Wai‘anae Ahupua‘a (TMK: 8-5-17:1-7; 8-5-18:1)*. Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawai‘i.

2002b *An Ancient History of Wai‘anae*. Mutual Publishing, Honolulu.

2012 *Appendix A. Archaeological Survey of the Former Wai‘anae Valley Ranch Headquarters Area and Appendix B. Information on Historic Sites, Upper Wai‘anae Valley [TMK: (1) 8-5-06: 04]. Final Environmental Assessment for the Wai‘anae Valley Ranch Application for a General Lease by Ka‘ala Farm, Inc. and Ho‘omau Ke Ola*. Hawaiian-Pacific Studies, University of Hawai‘i-West O‘ahu, Kapolei, Hawai‘i.

Commissioner of Public Lands (Compiler and Publisher)
1929 *Indices of Awards made by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands*. Territory of Hawai‘i, Honolulu.

Dagher, A.C. and R.L. Spear
2016 *Archaeological Inventory Survey Report for the Waiʻanae Solar Farm Project, ʻIli of Kamaile 2, Waiʻanae Ahupuaʻa, Waiʻanae District, Oʻahu Island, Hawaiʻi, TMK: [1] 8-5-002:022 and 8-5-003:030 (por.)*. Scientific Consulting Services, Honolulu.

Douglas, M.T.
1991a *Report of a Child's Skeleton Recovered From the Beach at Makaha Surfside Apartments.* University of Hawaiʻi at Mānoa, Honolulu.

1991b *Makaha Surfside Burial (1979): Artifacts, Kamaile, Waiʻanae, Oʻahu, TMK: 8-5-17:005, State Site No. 80-07-4064*. Memorandum on file, Department of Land and Natural Resources, State Historic Preservation Division, Honolulu.

Douglas, M.T. and M. Pietrusewsky
1988 *Human Remains at Makaha Beach, Makaha, Oʻahu, TMK: 8-5-17:08, Site 80-07-4064, Police Report, Medical Examiner's Report and Physical Anthropologist's Report*. University of Hawaiʻi at Mānoa, Honolulu.

Elmore, M. and J. Kennedy
2001 *An Archaeological Inventory Survey Report for the Coast Emergency Access Road, Waiʻanae District, Island of Oʻahu.* Archaeological Consultants of the Pacific, Haleʻiwa, Hawaiʻi.

Foote, D., E. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. United States Department of Agriculture, Soil Conservation Service. Published in cooperation with the University of Hawaii Agricultural Experiment Station, Washington, D.C.

Fornander, A.
1916–1917 *Hawaiian Antiquities and Folk-Lore. Memoirs, Vol 4*. Bernice P. Bishop Museum, Honolulu.

1918–1919 *Hawaiian Antiquities and Folk-Lore. Memoirs, Vol 5*. Bernice P. Bishop Museum, Honolulu.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte
2013 *Online Rainfall Atlas of Hawaiʻi*. Bulletin of the American Meteorological Society 94, 313–316, doi: 10.1175/BAMS-D-11-00228.

Geological Survey (USGS)
2017 Waianae Quadrangle, Island of Oahu, 7.5 Minute Series Topographic Map. Department of the Interior, United State, Washington, DC. Scale on map.

Green, R.C.
1980 *Mākaha Before 1880 A.D.: Mākaha Valley Historical Project-Summary*, Report No. 5. Pacific Anthropological Records, 31. B.P. Bishop Museum, Honolulu.

Gregg, E. and J. Kennedy
2005 *An Archaeological Monitoring Report for the Farrington Highway Safety Improvement Project Located in Makaha and Waiʻanae Ahupuaʻa, Waiʻanae District, Island of Oʻahu*. Archaeological Consultants of the Pacific, Inc., Haleʻiwa, Hawaiʻi.

Gosser, D.C., S. Clark, S.L. Collins, and P. Titchenal
2014 *Burial Site Component of a Data Recovery Report for Site 50-80-07-3704, Mauna Lahilahi Cultural Garden Park, Makaha Ahupuaʻa, Waiʻanae District, Oʻahu Island, Hawaiʻi, TMK: [1] 8-4-001:008 & 009*. Pacific Consulting Services, Inc., Honolulu.

Hammatt, H.H., and D.W. Shideler
2018 *Archaeological Literature Review in Support of Obtaining an HAR 13-275-3 Determination Letter for the Waiʻane Water Systems Improvements Part II Project, Waiʻanae Ahupuaʻa, Waiʻanae District, Oʻahu, TMK: [1] 8-5 various plats Farrington Highway Right-of-Way and Old Government Road Right-of-Way*. Cultural Surveys Hawaiʻi, Kailua, Hawaiʻi.

Handy, E.S.C.
1940 *The Hawaiian Planter: His Plants, Methods and Areas of Cultivation*. Bulletin 161. Bishop Museum Press, Honolulu.

Handy, E.S., E.G. Handy, and M.K. Pukui
1991 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Revised Edition. Bernice P. Bishop Museum Bulletin 23, Bishop Museum Press, Honolulu.

Hensley, S., C.R. O'Hare, and M. McDermott
2017 *Archaeological Literature Review and Field Inspection Report for the Waiʻanae High School Connection of Buildings SP and T Project, Waiʻanae Ahupuaʻa, Waiʻanae District, Oʻahu, [TMK (1) 8-5-002:018 (por.) and 8-5-015:001 (por.)]*. Cultural Surveys Hawaiʻi, Inc. Kailua, Hawaiʻi.

Holt, A., S. Kapoi, A. Lino, O. Kamohalii, M. Lee, and R. Cordy.
2002 *Archaeological Work at a House Site, Site 5803, Waiʻanae Valley, Oʻahu*. Report by Waiʻanae High School Hawaiian Studies Program, Waiʻanae, Hawaiʻi.

Hommon, R.
1978 *Waiʻanae (Kamaile) Complex, Oʻahu: [TMK 80-07-1181] and Hoʻohana Project*. Ms. on file, State Historic Preservation Division, Department of Land and Natural Resources, Honolulu.

Jackson, G.E.G.
1884 Pokai Bay (Waiʻanae) Oʻahu. Hawaiian Government Survey Map. Kingdom of the Hawaiian Islands. Scale 1:6000. Registered Map 1349. On file, Department of Accounting and General Services. State of Hawaiʻi, Honolulu.

Jones, C.K. and H.H. Hammatt
2003 *Archaeological Monitoring Report for the Mauna Lahilahi Shoreline Protection Project, Waiʻanae Ahupuaʻa, Waiʻanae District, Island of Oʻahu, Hawaiʻi [TMK 8-5-017:005]*. Cultural Surveys Hawaiʻi, Inc. Kailua, Hawaiʻi.

2009 *Archaeological Monitoring Report for the Mauna Lahilahi Beach Park Improvements Project, Waiʻanae Ahupuaʻa, Waiʻanae District, TMK: [1] 8-04-001 001; 8-05-017:001-007 & 0022, and 8-05-018:001-003.* Cultural Surveys Hawaiʻi, Inc. Kailua, Hawaiʻi.

Jourdane, E.R.
1995 *Inadvertent Discovery of Human Remains at Makaha Surfside Condominiums, Makaha, Waiʻanae, Oʻahu, Hawaiʻi*. Department of Land and Natural Resources, State Historic Preservation Division, Honolulu.

Kalilihiwa, S.H., III, and P.L. Cleghorn
2003 *Archaeological Monitoring of Mākaha Water Systems Improvements Phase II for Ten Streets in Waiʻanae [TMK 8-5-16], Island of Oʻahu*. Pacific Legacy, Inc., Kailua, Hawaiʻi.

Kamakau, S.M.
1991 *Nā Moʻolelo a Ka Poʻe Kahiko Tales and Traditions of the People of Old.* Bishop Museum Press, Honolulu.

Kawachi, C.
1990 *Mauna Lahilahi Crevice Burials, Mākaha Waiʻanae, Oʻahu*. State Historic Preservation Division, Honolulu.

1991a *Recovery of Burial Beachside of Makaha Surfside Apartments, Waiʻanae-Kai, Waiʻanae, Oʻahu, TMK: 8-5-17:07, State Site No. 80-07-4064.* Memorandum on file, Department of Land and Natural Resources, State Historic Preservation Division, Honolulu.

1991b *Makaha Surfside Burial (1979): Artifacts, Kamaile, Waiʻanae, Oʻahu, TMK: 8-5-17:005, State Site No. 80-07-4064*. Memorandum on file, Department of Land and Natural Resources, State Historic Preservation Division, Honolulu.

1992 *Burial Exposed by Hurricane Iniki, Waiʻanae Regional Park, Waiʻanae, Waiʻanae, Oʻahu [TMK: 8-5-02:11]*. Memorandum on file at the State Historic Preservation Division, Honolulu.

Kingdom of Hawaiʻi
1846 *An Act to Organize the Executive Departments of the Hawaiian Islands (Part 1, Chapter VII, Article IV) Of the Board of Commissioners to Quiet Land Titles*. Honolulu.

Kirch, P.V.
2011 *How Chiefs Became Kings: Divine Kingship and the Rise of Archaic States in Ancient Hawaiʻi*. University of California Press, Berkeley and Los Angeles.

Kennedy, J
1986 *Archaeological Investigations at Mauna Lahilahi, Waiʻanae, Island of Oʻahu*. Archaeological Consultants of the Pacific, Inc., Haleʻiwa, Hawaiʻi.

Komori, E.
1987 *Archaeological Survey and Testing at Mauna Lahilahi, Waiʻanae District, Island of Oʻahu*. Bernice Pauahi Bishop Museum, Honolulu.

Liebhardt, C. and J. Kennedy
2010 *An Archaeological Inventory Survey Report for a Property Located at TMK: (1) 8-05-018: 017, in Makaha Ahupuaʻa, Waiʻanae District, Island of Oʻahu*. Archaeological Consultants of the Pacific, Inc., Haleʻiwa, Hawaiʻi.

McAllister, J.G.
1933 *Archaeology of Oʻahu*. Bulletin 104. Bernice P. Bishop Museum, Honolulu.

McElroy, W.
2008 *Archaeological Monitoring Report for the Sandwich Isles Communication's Fiber Optic Duct Lines Project, Lualualei, Waiʻanae, and Mākaha Ahupuaʻa, Waiʻanae District, Island of Oʻahu, Hawaiʻi*. Garcia and Associates, Kailua, Hawaiʻi.

McElroy W., M. Ellison, and D. Duhaylonsod
2013 *Cultural Impact Assessment for a Proposed Solar Farm in Kalaeloa, Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu, TMK (1) 9-1-013:001*. Keala Pono Archaeological Consulting, Kāneʻohe, Hawaiʻi.

Magnusen, C.
2000 *Archaeological Reconnaissance for Kamaile Elementary School Expansion, Waiʻanae, Oʻahu*. International Archaeological Research Institute, Inc., Honolulu.

Monsarrat, M.D.
1909 *Oʻahu Fisheries, Waiʻanae Section Barbers Point-Kaʻena Point*. Scale 1:2000.

n.d. *Map of Waiʻanae, Oʻahu*. Scale 1:300.

Mooney, K.M., J. McIntosh, and P.L. Cleghorn
2010 *Summary of an Archaeological Assessment at the Proposed Waiʻanae Solar Power Farm, Waiʻanae, Oʻahu, Hawaiʻi [TMK: (1) 8-5-002:022, 023, 124; 8-5-003:030]*. Pacific Legacy, Inc., Kailua, Hawaiʻi.

Munsell Color (Firm)
2010 *Munsell Soil Color Charts: with Genuine Munsell Color Chips*. Munsell Color, Grand Rapids, Michigan.

Nakuina, M.K.
2005 *The Wind Gourd of Laʻamaomao*. Revised Edition. Kalamakū Press, Honolulu.

Perzinski, D. and H.H. Hammatt
2004 *Archaeological Inventory Survey Report for Proposed Improvements at Mauna Lahilahi Beach Park in the Ahupuaʻa of Waiʻanae, District of Waiʻanae, Island of Oʻahu, [Portions of TMK 8-4-01:1, 8-5-18:1-3]*. Cultural Surveys Hawaiʻi, Inc. Kailua, Hawaiʻi.

Pukui, M.K.
1983 *ʻŌlelo Noʻeau: Hawaiian Proverbs and Poetical Sayings.* Bishop Museum Press, Honolulu.

Pukui, M.K., and S.H. Elbert
1986 *Hawaiian Dictionary*. University of Hawaiʻi Press, Honolulu.

Pukui, M.K., S.H. Elbert, and E.T. Mookini.
1974 *Place Names of Hawaii.* University Press of Hawaii, Honolulu.

Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and W.D. Broderson (editors)
2002 *Field Book for Describing and Sampling Soils, Version 2.0*. Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska.

Sinoto, A.
1975 *Archaeological Reconnaissance Survey of the Waiʻanae Light-Draft Harbor Project Site Waiʻanae, Oʻahu, Hawaiʻi*. Department of Anthropology, Bishop Museum, Honolulu.

Soil Science Division Staff
2017 Soil survey manual. C. Ditzler, K. Scheffe, and H.C. Monger (eds.). USDA Handbook 18. Government Printing Office, Washington, D.C.

State of Hawaiʻi
1948 TMK Map, Zone 8 Sec 5 Plat 017. Waianae-Kai, Waianae, Oahu, T.H.. Scale 1:2,200. Department of Finance, Property Assessment Division, Honolulu.

Sterling, E and C. Summers (editors)
1978 *Sites of Oʻahu*. Bishop Museum Press, Honolulu.

Thien, S.
1979 A Flow Diagram for Teaching Texture-By-Feel Analysis. *Journal of Agronomic Education* 8:54–55.

Thrum, T.G.
1909 *Almanac and Annual for 1910*. Honolulu.

Tulchin, J. and H.H. Hammatt
2007 *Archaeological Inventory Survey Report for the Spotkaeff House Project, Waiʻanae Ahupuaʻa, Waiʻanae District, Island of Oʻahu: TMK: [1] 8-5-002:025]*. Cultural Surveys Hawaiʻi, Inc. Kailua, Hawaiʻi.

Tulchin, T. and H.H. Hammatt
2004 *Archaeological Monitoring Report for the BWS Farrington Highway Part III Project, Jade Street to Kaulawaha Road, Mākaha and Waiʻanae Ahupuaʻa, Waiʻanae District, Island of Oʻahu (TMK: 8-4-01, 03, 04, 11, 13, 14) (TMK 8-5-02, 14-18).* Cultural Surveys Hawaiʻi, Inc. Kailua, Hawaiʻi.

Vernon, N.I.
2014 *Archaeological Monitoring Plan in Support of Construction of a Rock Revetment at Mauna Lahilahi Beach Park, Waiʻanae Ahupuaʻa, Waiʻanae District, Island of Oʻahu, Hawaiʻi [TMK: 8-5-017:001-007]*. Pacific Consulting Services, Inc., Honolulu.

Wall, W.A.
1902 *Hawaiʻi Territory Survey: Oʻahu Hawaiian Islands*. Scale 1:2000.

1925 *Hawaiʻi Territory Survey: Honouliuli, Forest Reserve District of Ewa, Nanakuli, Lualualei, Waianae, Makua-Keaau and Kuaokala Forest Reserves District of Waianae, Kuaokala and Mokuleia Forest Reserves District of Waialua, Island of Oʻahu*. Scale 1:2000.

Yucha, J., T.M. Yucha, and H.H. Hammatt
2014 *Archaeological Inventory Survey Report for the Kamaile Plantation Wells and Production Wells Sites, Waiʻanae Kai Ahupuaʻa, Waiʻanae District, Oʻahu, [TMK (1) 8-5-002:016]*. Cultural Surveys Hawaiʻi, Inc. Kailua, Hawaiʻi.

## APPENDIX A: CHAPTER 6E-8 HISTORIC PRESERVATION REVIEW LETTER

DAVID Y. IGE
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CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
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CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
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**STATE OF HAWAII**
**DEPARTMENT OF LAND AND NATURAL RESOURCES**
STATE HISTORIC PRESERVATION DIVISION
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May 8, 2018

IN REPLY REFER TO:
Log No. 2018.02547
Doc No. 1905GC02
Archaeology

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands (OCCL)
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Dear Mr. Lemmo and Mr. Lau:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
**Mauna Lahilahi Beach Park Rock Revetment Project**
**OCCL - Conservation District Use Permit (CDUA) OA-3840**
**Department of Design and Construction (DDC) Job No. 05-P-20**
**Mākaha Ahupua'a, Wai'anae District, Island of O'ahu**
**TMK: (1) 8-5-017:005**

This letter provides the State Historic Preservation Division's (SHPD's) comments on OCCL's CDUA permit for the DDC's Mauna Lahilahi Beach Rock Revetment Project, Job No. 05-P-20 (SHPD Log No. 2018.02547). The SHPD received this submittal on October 29, 2018. The submittal included a SHPD HRS 6E Submittal Form, a TMK Plat map, photographs, permit set, and a supporting document titled, *Archaeological Monitoring Plan (AMP) in Support Construction of a Rock Revetment at Mauna Lahilahi Beach Park, Wai'anae Ahupua'a, Wai'anae District, Island of O'ahu, State of Hawaii, TMK: (1) 8-5-017:001-007* (Vernon, December 2014). The AMP was prepared for the rock revetment work for the full extent of the park. However, the current project involves only the portion within Parcel 005.

SHPD received via email additional information on March 29, 2019 (Taylor Chock [Oceanit] to Garnet Clark [SHPD]), regarding the U.S. Army Corps of Engineers' (USACOE) response dated December 4, 2013 (File Number POH-2010-00248) concerning the NHPA Section 106 consultation. The USACOE indicated that because the scope of work has not changed since 2014 and because no new cultural information has become available since that time, the USACOE will not be reopening the NHPA Section 106 process. On April 16, 2019, SHPD received from OCCL a request for comments on the subject permit application, CDUA OA-3840 (SHPD Log No. 2019.00860), and on April 30, 2019, SHPD received a letter dated April 26, 2019 from the Office of Planning, State of Hawaii (DTS201904160729NA) titled, *Hawaii Coastal Zone Management Program Federal Consistency Review for Mauna Lahilahi Beach Park Rock Revetment, Waianae, Oahu, TMK: (1) 8-5-017:005; Department of the Army Permit File No. POH-2010-00248* (SHPD Log No. 2019.00910). This Office of Planning letter provides information clarifying that the current project is for a 330-ft.-long rock revetment.

The current project involves the removal and replacement of the existing damaged temporary sand bag revetment and with a permanent rock revetment to protect the eroding shoreline within a 0.64-acre portion of the 2.10-acre State-owned property. The temporary sand bag revetment was added to the eroding shoreline within the project area in 2003. The first 275 ft. of the revetment is on existing coral grade thus no excavation will be conducted within this area. Excavation within the sandy beach portion is anticipated to extend 4 ft. below sea level (5 ft. below beach level) and approximately 20 ft. in width. Per the submitted permit set, ingress and egress will involve the previously-defined northern corridor only.

A review of SHPD records indicates that SHPD provided comments (March 7, 2014; Log Nos. 2013.3225, 2013.3278, Doc No. 1403NN03) on the *Draft Environmental Assessment for Mauna Lahilahi Beach Park Rock Revetment.* The SHPD indicated that this area is known to contain historic properties, including subsurface intact cultural layers (Sites 50-80-07-6634 and 50-80-07-6592), human burials containing multiple individuals in several areas (Site 50-80-07-4064), the Badayos family reinternment crypt (Site R1992-1-001-001), and a rectangular alignment (Site 50-80-07-6635). The intact cultural layers are located between the middle of the Makaha Surfside Apartments (*makai*) and the northwest drainage of the park, with the uppermost layer beginning at 25 cm below current ground surface. Burials are associated with these habitation deposits, and SHPD has been monitoring and recording these deposits since 1999. The former Badayos residence and the Badayos re-internment site are located on the Waianae High School end of the shoreline within TMK: (1) 8-5-017:005. Additionally, cultural deposits have been documented nearby on TMK: (1) 8-5-017:003 and 004.

On December 30, 2014, SHPD accepted aforementioned Vernon (December 2014) AMP which includes the current project area and proposed revetment work (Log No. 201404215, Doc. No. 1412SL28). The AMP includes the following provisions:

1. On-site archaeological monitoring will occur for all machinery-related ground disturbances;
2. The archaeological monitor will examine, record, and photograph the stratigraphic sequence exposed following the removal of the existing sandbag revetment;
3. If layers containing archaeological materials and/or subsurface features are present, they will be identified, documented, and sampled;
4. If datable materials are visible in subsurface features, they will be collected, identified (e.g., wood charcoal) and submitted for radiocarbon dating;
5. Access measures include the archaeologist monitoring the movement of machinery and construction vehicles to ensure that no burials or non-burial cultural deposits or features are disturbed during access and staging activities;
6. Machinery and other vehicles will remain a minimum of 20 ft. from the sand embankment to avoid slumping that may expose burials;
7. Access will occur along one of two corridors with a maximum width of 15 feet:
    a. Southern Corridor (Waianae) is the preferred route. If used, orange plastic fencing will be installed 20 feet from the beach edge along this access corridor. This route will extend from an existing dirt access road on the south end of the project area and terminate at the selected stockpile area on the east side of the rock revetment location; and
    b. Northern Corridor (Makaha) is the alternate route and will extend from the existing parking lot on the north end of the project area and terminate at a proposed stockpile area on the west side of the rock revetment area;
8. The ground surface beneath the stockpile areas will be protected with metal sheeting or a cushion of coral gravel before stockpiling begins;
9. Avoidance measures include the contractor installing a buffer defined by orange plastic fencing around the known locations of human burials in or near the proposed access corridors, stockpile areas, and revetment area;
10. These buffers will be established in consultation with the archaeological monitor and SHPD and will include all burial locations, potential burial locations, and past burial locations depicted on Figure 10 within the AMP;
11. A 20-ft. wide buffer marked with plastic fencing will also be installed along the sand embankment that runs parallel to the southern access corridor; and

12. The archaeological monitor will ensure that construction work, equipment, and personnel do not encroach on these demarcated areas.

Due to the passage of time since SHPD accepted the AMP (Vernon 2014), SHPD scheduled and attended a site inspection on May 7, 2019, with staff from the following agencies: OHA, Oceanit, DDC, OCCL, and the Leeward Representative of the O'ahu Island Burial Council. The purpose of the site visit was to assess ingress and egress routes for machinery entering from the Makaha side of the project area, assess protection measures for subsurface cultural deposits including human burials, and to assess an acceptable distance from the shoreline to ensure that machinery does not cause slumping of the already eroded shoreline and weight distribution of machinery on the Makaha side of the project area. All parties agreed to the following:

- Access will involve the Makaha corridor;
- Access using the Waianae High School corridor would be restricted to emergency purposes only;
- Steel plates will be placed to cover the Makaha corridor to ensure protection to subsurface historic properties;
- If the Waianae High School corridor needs to be used, steel plates will be installed prior to usage of this corridor;
- Coconut trees within the project area subject to removal would be removed through cutting and leaving the stumps in situ; and
- The sand mining needed to fill the replacement sand bags will be subject to full-time archaeological monitoring.

Based on the information provided, SHPD **concurs** with OCCL's project effect determination of "Effect, with proposed mitigation commitments" and the proposed mitigation in the form of archaeological monitoring. The SHPD accepted archaeological monitoring plan (Vernon, December 2014) will be implemented.

**SHPD request that the DDC notify** all recognized lineal and cultural descendants of the upcoming project prior to project initiation. Please contact Ms. Regina Hilo, Oahu Island Burial Specialist at Regina.Hilo@hawaii.gov or at (808) 692- 8026, for names and contacts for these descendants.

**SHPD hereby notifies the OCCL and the DDC**, construction activities for the present project may proceed with the implementation of the SHPD approved monitoring plan (Vernon, December 2014). The permit issuance process may proceed.

**SHPD requests** the selected archaeological firm consult with our office regarding the AMP, to ensure appropriate implementation, and that this firm provide SHPD written and photographic documentation of the implementation of the interim protection measures (orange fencing, metal sheeting or gravel cushion) prior to project initiation.

Following completion of the of archaeological monitoring fieldwork, SHPD looks forward to receiving within 60 days for review and acceptance an archaeological monitoring report meeting the requirements of HAR §13-279-5.

Please contact Dr. Susan Lebo, Archaeology Branch Chief, at Susan.A.Lebo@hawaii.gov or at (808) 692-8019 for any questions regarding archaeological resources or this letter.

Aloha,

*Alan Downer*

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
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## APPENDIX B: KEALA PONO'S LETTER TO SHPD REGARDING PRE-CONSTRUCTION MEASURES

Keala Pono Archaeological Consulting
PO Box 1645
Kaneohe, HI 96744

July 25, 2020

State Historic Preservation Division
601 Kamokila Blvd., Suite 555
Kapolei, HI 96707

Re: Pre-Construction Protection Measures for Mauna Lahilahi Beach Park Rock Revetment Project

Aloha,

This letter reports on the protection measures installed for the Mauna Lahilahi Beach Park Rock Revetment Project located at the Makaha Surfside Apartments, 85-175 Farrington Hwy., in Makaha Ahupua'a of Waianae District, O'ahu Island, Hawai'i. On Friday 07/24/20 I met with Jared Tavares of Kiewit and did an inspection of the protection measures put in place as directed by the State Historic Preservation Division (SHPD) Construction fencing was installed for the proposed buffer zone around known locations of subsurface cultural deposits including human burials. The 20 ft. wide buffer begins at the northern construction access corridor and extends from the existing parking area toward the southern access corridor along the sand embankment, and ends on the west side of the rock revetment area.

The installation of the orange fencing accurately protects cultural resources and Kiewit also placed signage along the orange fencing as an extra preventative measure. Coconut trees near the northern corridor that were not removed but also within the 20 ft. wide boundary were also wrapped with orange fencing.

Attached are photos of the fencing installation and signage.

Please feel free to contact me or Windy McElroy, PhD (Principal, Keala Pono Archaeological Consulting) with any questions,

Robin Kapoi, BA
Archaeologist
Keala Pono Archaeological Consulting

**Beginning of fencing in the northern construction access corridor in the parking lot area.**

**Fencing installed around coconut trees within the 20 ft. wide buffer zone between the access corridor and shoreline.**


**Signage placed on fencing that runs along the shoreline.**

**Fencing placed around the perimeter of a known burial on the southern side of the project area near Waiʻanae High School.**

**View of where the fencing ends, near the staging area on the west end of the revetment wall.**