

FINAL—Cultural Impact Assessment for a Proposed Solar Farm in Kalaeloa, Honouliuli Ahupua‘a, ‘Ewa District, Island of O‘ahu

TMK: (1)9-1-013:001



Prepared For:

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December 2013

Keala Pono 

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MANAGEMENT SUMMARY

A Cultural Impact Assessment was conducted for the area of Kalaeloa (Barbers Point) for proposed development of a solar farm at TMK: (1)9-1-013:001, a 43 acre parcel located in Honouliuli Ahupua'a, Ewa District, on the island of O'ahu. The purpose of this investigation was to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources or traditional cultural practices associated with the subject property and the Kalaeloa area. This Cultural Impact Assessment also identifies effects that the proposed development may have on cultural resources within the project area. Extensive archival research was completed and four ethnographic interviews were conducted.

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INTRODUCTION

At the request of Mana Elua, Keala Pono Archaeological Consulting conducted a Cultural Impact Assessment for TMK: (1)9-1-013:001, a 43 acre parcel located in Honouliuli Ahupua‘a, ‘Ewa District, on the island of O‘ahu, in the State of Hawai‘i. Mana Elua is planning to construct a 5 megawatt solar farm on the property.

Project Location and Environment

The project area is located in Kalaeloa, or Barbers Point, in Honouliuli Ahupua‘a, ‘Ewa District, on the island of O‘ahu (Figure 1). TMK: (1)9-1-013:001 is a 43 acre parcel on the northwest side of the Kalaeloa Airport John Rogers Field runway (Figures 2 and 3). The property is bounded on the south by Malakole Street, on the east by a large drainage canal, and on the north and west by adjacent properties.

The parcel is owned by the Department of Hawaiian Homelands and is currently leased by Mana Elua to develop a 5 megawatt solar farm. The property is situated between 0 and 50 feet (0–15 m) in elevation. Rainfall is sparse, averaging roughly 0–20 inches (0–50 cm) per year (Juvik and Juvik 1998). Honouliuli Stream is the only one permanent watercourse in the area, thus when the ‘Ewa plain floods, water percolates into the porous limestone and drains into sinkholes. Ponds and marshes were more plentiful across the plain in the past, as drilling of artesian wells for historic-era sugarcane cultivation has drained the water table significantly. Vegetation in the project area consists predominantly of *kiawe*, *koa haole*, and thick grass.

The project area lies 1.2 miles (2 km) from the coast on the south and 1.6 miles (2.6 km) from the shoreline on the west. Topography is relatively flat, with an upraised coral limestone ground surface. Soils in the area are of the Lualualei-Fill land-Ewa Association, described by Foote et al. (1972) as follows:

Deep, nearly level to moderately sloping, well-drained soils that have a fine-textured or moderately fine-textured subsoil or underlying material, and areas of fill land; on coastal plains.

Project Goals

The purpose of this study was to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources or traditional cultural practices associated with the subject property and Kalaeloa area. This Cultural Impact Assessment also identifies effects that the proposed development may have on cultural resources within the project area. To promote responsible decision-making, this document may also be used to provide Mana Elua with cultural background information which may be incorporated into various elements of the building’s architecture and design. Information produced will be provided to recognized descendants of the project area as a means to document the history of their *‘ohana*.

Research Design

Research conducted for this project begins with the earliest traditional Hawaiian settlement of the region and extends to the historic era. This study examines various cultural practices and beliefs which include, but are not limited to, agricultural, commercial, recreational, subsistence, as well as religious and spiritual customs. Cultural resources may also include traditional properties or other historic sites, both man-made and natural, which are and/or were associated with cultural practices and beliefs.

Research was performed in two concurrent phases. The first phase consisted of extensive archival and literature research, including an examination of historical documents, newspaper articles, maps, *mele*, *oli*, photographs and other documents on the internet and on file at institutions such as the Bernice Pauahi Bishop Museum, the Hawai'i State Archives, and the State Historic Preservation Division (SHPD).

The second-phase of research included oral history interviews with four consultants. Cultural descendants of the Kalaeloa area were among the individuals canvassed for potential consultants who were knowledgeable about the cultural setting, land-use and historical development of the subject property and Kalaeloa. As a result of this consultation process, four individuals were identified and interviewed. All four interviews are included in this report.

Report Structure

The first section of this report provides an overview of the environmental and cultural background of Kalaeloa and a discussion of traditional Hawaiian practices and beliefs through the presentation of *ōlelo no'eau*, *mo'olelo*, and *mele*, as well as a discussion of place names and land use of the area. Historic period land use is summarized with early visitor accounts of the area, historic maps, as well as information on warfare and Māhele land tenure. The following section consists of the methodology and results of the oral history investigation. The final section includes conclusions and recommendations. Hawaiian words, flora and fauna, and technical terms are defined in a glossary, and an index at the end of the report assists readers in finding specific information. Also included are appendices with documents relevant to the ethnographic survey, including full transcripts of the interviews.

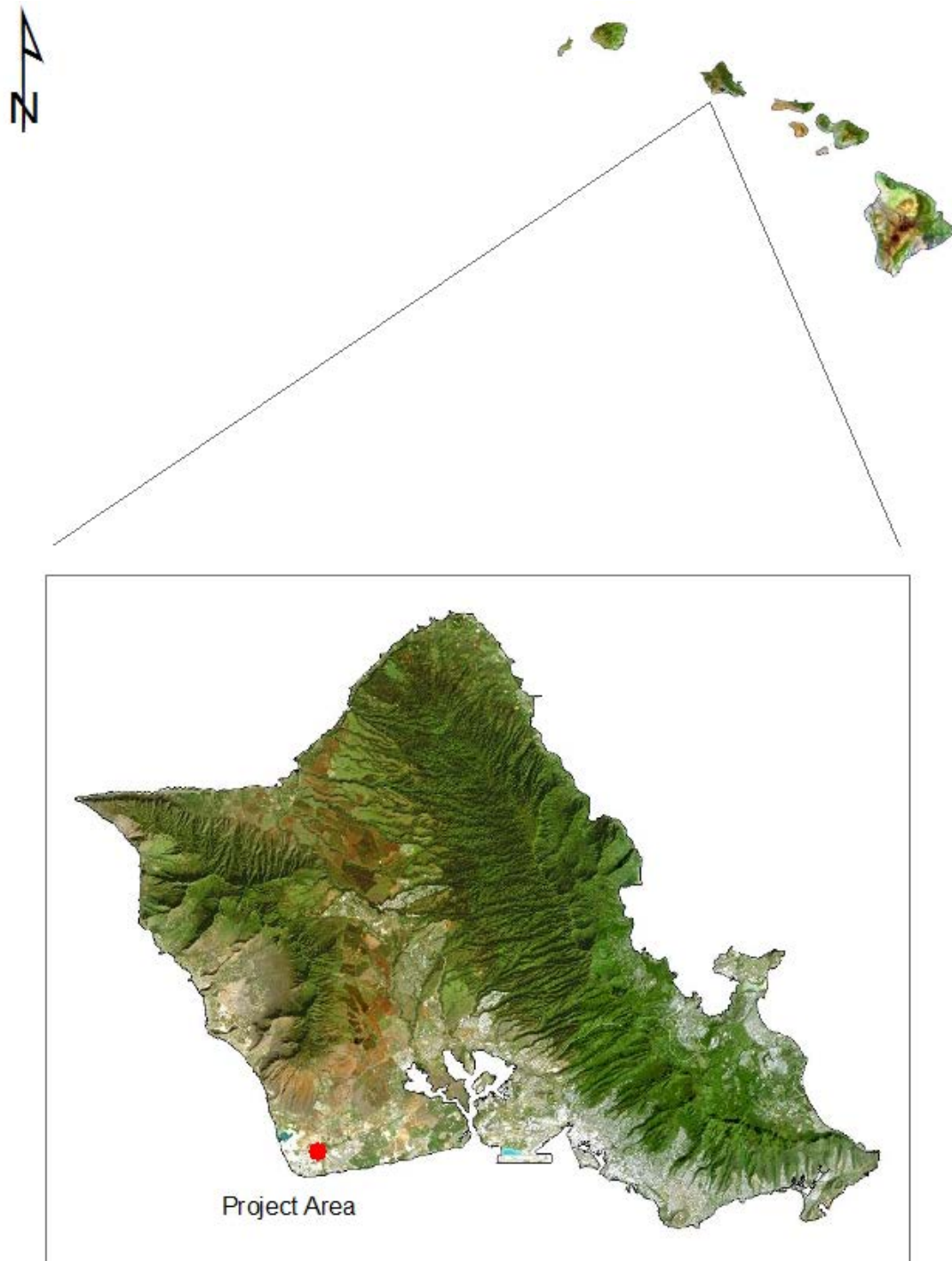


Figure 1. Project location in Kalaeloa, island of O‘ahu.

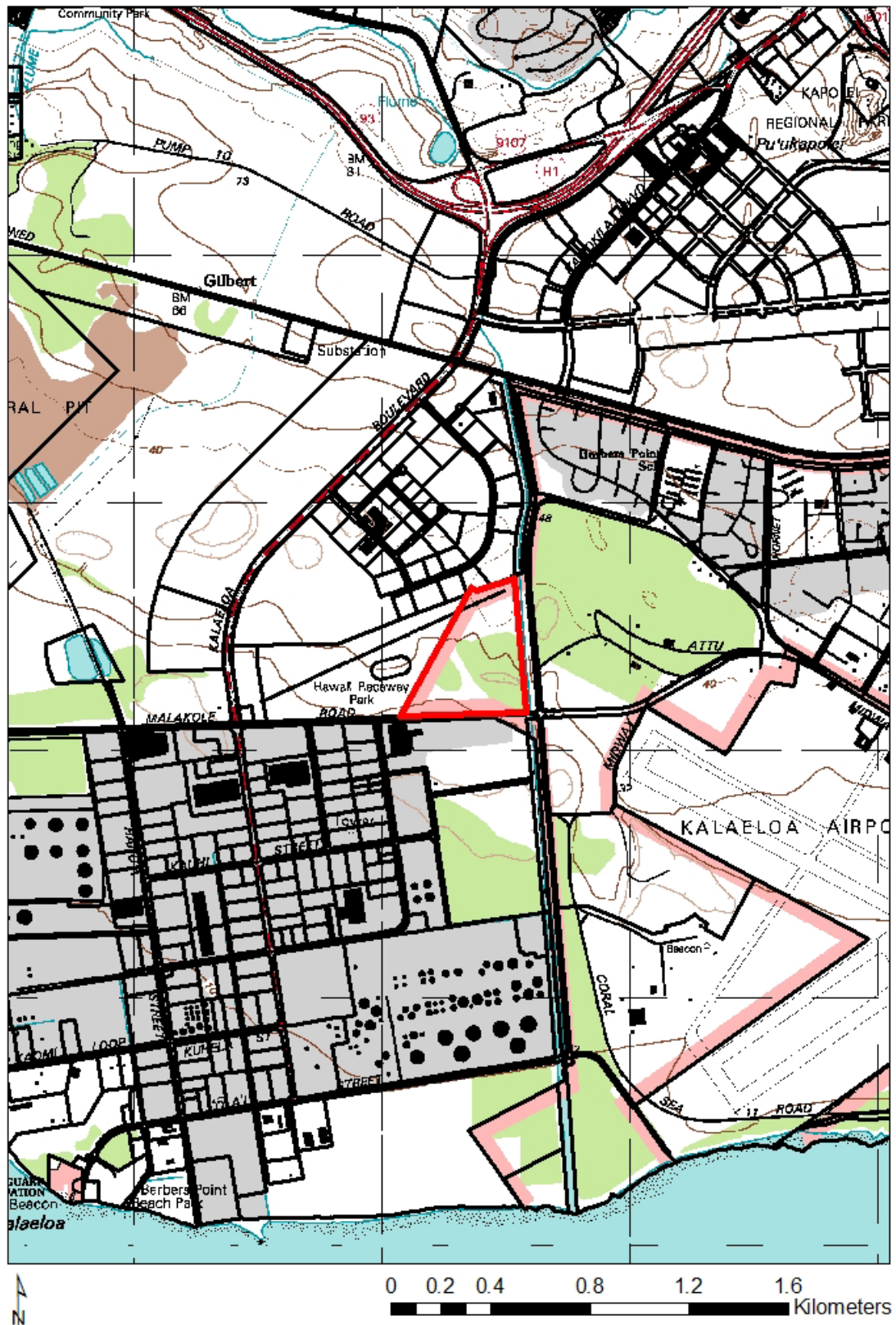


Figure 2. Project area (shown in red) on a USGS Ewa quadrangle map with TMK overlay.

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 'Ewa plain and the *ahupua'a* of Honouliuli. In the attempt to record and preserve both the tangible (i.e., traditional and historic archaeological sites) and intangible (i.e., *mo'olelo*, *mele*, place names) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawaii State Archives, Hawaii State Library, and the State Historic Preservation Division. Historical maps, archaeological reports, and historical reference books were among the materials examined.

'Ewa and Honouliuli in the Pre-Contact Era

The current subject property is located in the 'Ewa District, the largest land district on O'ahu, situated on the southern shore of the island of O'ahu. The name "'Ewa" means "to crook, to twist, to bend" (Andrews 1865). This name may refer to the *mo'olelo* within which Kāne and Kanaloa threw stones to determine the boundaries of the district (see *Mo'olelo* section) (Sterling and Summers 1978). The current area of study is located within the *ahupua'a* of Honouliuli, which is the largest of 'Ewa's *ahupua'a*. Translated, Honouliuli means "dark bay" (Pukui et al. 1974), likely referring to the deep waters of what is now called West Loch of Pearl Harbor, located on the eastern perimeter of Honouliuli Ahupua'a.

Within the *mo'olelo* of Kūapāka'a and Pāka'a and the wind gourd of La'amaomao, the winds of O'ahu are recited by Kūapāka'a:

...Moa'e-ku is of Ewaloa,
Kēhau is of Waiopua,
Waikōloa is of Līhu'e,
Kona is of Pu'uokapolei,
Māunuunu is of Pu'uloa... (Nakuina 1990:43)

...He Moae-ku ko Ewaloa,
He Kehau ko Waiopua,
He Waikoloa ko Lihue,
He Kona ko Puuokapolei,
He Maunuunu ko Puuloa... (Nakuina 1902:57)

This Moa'e wind is also mentioned in the *'ōlelo no'eau*, "*Haunāele 'Ewa i ka Moa'e*" which is translated as "'Ewa is disturbed by the Moa'e wind" (Pukui 1983:59). According to Pukui, this phrase was used when discussing something disturbing, such as a violent argument. It is said that the people of 'Ewa gathered *pipi*, or pearl oyster, in silence due to the belief that if they spoke, a Moa'e breeze would blow, rippling the water and making the oysters "disappear" (Pukui 1983).

'Ōlelo No'eau

'*Ōlelo no'eau* referring to the 'Ewa plain are numerous while a single '*ōlelo no'eau* was found referring to Honouliuli. The following Hawaiian proverbs and poetical sayings provide further insight to traditional beliefs and practices of these lands.

'Āina koi 'ula i ka lepo.
Land reddened by the rising dust.
Said of 'Ewa, O'ahu. (Pukui 1983:11)

O 'Ewa, 'āina kai 'ula i ka lepo.
'Ewa, land of the sea reddened by earth.
'Ewa was once noted for being dusty, and its sea was reddened by mud in time of rain.
(Pukui 1983:257)

Anu o 'Ewa i ka i'a hāmau leo e. E hāmau!
'Ewa is made cold by the fish that silences the voice. Hush!
A warning to keep still. First uttered by Hi'iaka to her friend Wahine'oma'o to warn her not to speak to Lohi'au while they were in a canoe near 'Ewa. (Pukui 1983:16)

E 'Ewa e—e ku'i na lima!
O 'Ewa—join hands!
This cry was a call of the men of Kona, O'ahu, when they went with their chief to destroy his brother, the 'Ewa chief. (Pukui 1983:33)

'Ewa kai lumaluma'i.
'Ewa of the drowning sea.
An epithet applied to 'Ewa, where *kauwā* were drowned prior to offering their bodies in sacrifice. (Pukui 1983:47)

'Ewa nui a La'akona.
Great 'Ewa of La'akona.
La'akona was a chief of 'Ewa, which was prosperous in his day. (Pukui 1983:47)

He kai puhi nehu, puhi lala ke kai o 'Ewa.
A sea that blows up nehu fish, blows up a quantity of them, is the sea of 'Ewa. (Pukui 1983:74)

He lō'ihī o 'Ewa; he pali o Nu'uānu; he kula o Kulaokahu'a; he hiki mai koe.
'Ewa is a long way off; Nu'uānu is a cliff; Kulaokahu'a is a dry plain; but all will be here before long.
Said of an unkept promise of food, fish, etc. O'ahu was once peopled by evil beings who invited canoe travelers ashore with promises of food and other things. When the travelers asked when these things were coming, this was the reply. When the visitors were fast asleep at night, the evil ones would creep in and kill them. (Pukui 1983:85)

I Waialua ka po'ina a ke kai, o ka leo ka 'Ewa e ho'olohe nei.
The dashing of the waves is at Waialua but the sound is being heard at 'Ewa.
Sounds of fighting in one locality are quickly heard in another. (Pukui 1983:137)

Ka i'a hāmau leo o 'Ewa.
The fish of 'Ewa that silences the voice.
The pearl oyster, which has to be gathered in silence. (Pukui 1983:145)

Ka i'a kuhi lima o 'Ewa.
The gesturing fish of 'Ewa.
The *pipi*, or pearl oyster. Fishermen did not speak when fishing for them but gestured to each other like deaf-mutes. (Pukui 1983:148)

Ke kai he'e nehu o 'Ewa.
The sea where the nehu come in schools to 'Ewa.
Nehu (anchovy) come by the millions into Pearl Harbor. They are used as bait for fishing, or eaten dried or fresh. (Pukui 1983:185)

Ke one kuilima laula o 'Ewa.

The sand on which there was a linking of arms on the breadth of 'Ewa.

'Ewa, O'ahu. The chiefs of Waikīkī and Waikele were brothers. The former wanted to destroy the latter and laid his plot. He went fishing and caught a large *niuhi*, whose skin he stretched over a framework. Then he sent a messenger to ask his brother if he would keep a fish for him. Having gained his consent, the chief left Waikīkī, hidden with his best warriors in the "fish." Other warriors joined them along the way until there was a large army. They surrounded the residence of the chief of Waikele and linked arms to form a wall, while the Waikīkī warriors poured out of the "fish" and destroyed those of Waikele. (Pukui 1983:191)

Ku a'e 'Ewa; Noho iho 'Ewa.

Stand-up 'Ewa; Sit-down 'Ewa.

The names of two stones, now destroyed, that once marked the boundary between the chiefs' land (*Kua'e 'Ewa*) and that of the commoners (*Noho iho 'Ewa*) in 'Ewa, O'ahu. (Pukui 1983:200)

Ua 'ai i ke kākoi o 'Ewa.

He has eaten the kākoi taro of 'Ewa.

Kākoi is O'ahu's best eating taro; one who has eaten it will always like it. Said of a youth or a maiden of 'Ewa, who, like the *kākoi* taro, is not easily forgotten. (Pukui 1983:305)

Ka i'a hali a ka makani.

The fish fetched by the wind.

The '*anaeholo*, a fish that travels from Honuliuli, where it breeds, to Kaipāpa'u on the windward side of O'ahu. It then turns about and returns to its original home. It is driven closer to shore when the wind is strong. (Pukui 1983:145)

Mo'olelo

The boundaries of 'Ewa have been linked to the story of the gods Kāne and Kanaloa who, while surveying the islands, reached Red Hill and saw the expanse of what is the 'Ewa plain. To mark the boundaries of the area, they would throw a stone, and the boundary would be placed where the stone landed. Seeing the beautiful land below them, they thought to include as much as possible, throwing the stone as far as the Wai'anae mountain range in the area known as Waimānalo. While in search of their flung stone, Kāne and Kanaloa were unable to find where it had landed. Because of this, the area was named "'Ewa" due to the "straying" of the stone. Eventually, the stone was found on a hill and was named Pili o Kahe. This place marks the boundary between the 'Ewa and Wai'anae Districts, Honouliuli Ahupua'a within 'Ewa, and Nānākuli in Wai'anae (Nawa'a in Sterling and Summers 1978:1).

The cultural richness of 'Ewa *moku* is seen with the important *mo'olelo* of the origin of the '*ulu*, or breadfruit in Hawai'i. Noted as one of the two places in Hawai'i where the '*ulu* "is to be found," the other being Ka'awaloa in Kona on the island of Hawai'i (W.S. Lokai in Fornander 1918–1919:676–677). The breadfruit of Pu'uloa came from a mythical land in Kahiki, named Kanehunamoku. It was brought by two men of Pu'uloa who were out fishing and, caught in a rainstorm, landed on an island only inhabited by the gods who then introduced the two men to the fruit of the '*ulu* tree.

According to Beckwith, near Pu'uloa, at 'Ewa Beach, the first "human beings" or *olohe*, landed on O'ahu. At this place, caves of the *olohe* (*ka lua olohe*) are to be seen. Represented in legends as "professional robbers" with tendencies towards cannibalism, the *olohe*, or Ha'a people were highly skilled in the art *lua* which includes wrestling and bone-breaking (Beckwith 1970:343).

In the epic tale of Hi'iakaikapoliopole, the sister of Pele, traversed the 'Ewa plain as she returned back to her sister's domain of Kīlauea, Hawai'i, from Hā'ena, Kaua'i where she was to fetch her sister's lover, Lohi'au-ipo (Lohi'au). The full story was printed in the Hawaiian-language newspaper, *Ka Hōkū o Hawai'i* from September 18, 1924 to July 17, 1928. An excellent summary of this story can be found within Appendix G of Beardsley (2001) which was written by Kepā Maly. An excerpt pertaining to the 'Ewa plain and Honouliuli is included below (translations by Kepā Maly).

*...Aloha ka hau o Ka'ala
'Oia hau halihali 'a'ala mau'u nēnē
Honi ai ke kupa o Pu'uloa
He loa ka imina e ke aloha e...*

Beloved is the dew of Ka'ala
That dew which bears the fragrance of the *nēnē* grasses
[fragrant dew which] Kissed the natives of Pu'uloa
One searches far for love...
(*Ka Hōkū o Hawai'i*, January 18, 1927 in Beardsley 2001:G-1)

As Lohi'au and Wahine'ōma'o traveled by boat from Pōka'i (Wai'anae) to Kou (Honolulu), Hi'iaka traveled over land and traversed the plain of Honouliuli, encountering women on their way to gather *pāpa'i* (crabs), *limu* (seaweed), *mahamoe*, and *'ōkupe* (both edible bivalves). At the plain of Keahumoa (between Waipi'o and Honouliuli), Hi'iaka came across a group of women gathering *ma'o* blossoms (*Gossypium tomentosum*, an endemic yellow-flowered hibiscus typically found on dryland plains) with which they would make *lei*. Hi'iaka offered them the following *oli*:

*E lei ana ke kula o Keahumoa i ka ma'o
'Ohu'ohu wale nā wahine kui lei o ke kanahale
Ua like no a like me ka lehua o Hōpoe
Me he pua koili lehua ala i ka lā
Ka oni pua koai'a i ka pali
I nā kaupoku hale o 'Āpuku
Ke ku no I ke alo o ka pali o Pu'uku'ua
He ali'i no na'e ka 'āina
He kauwā no na'e ke kanaka
I kauwā no na'e wau i ke aloha
Na ke aloha no na'e i kono e haele no māua
E hele no wau a—*

The plain of Keahumoa wears the ma'o blossoms as its lei
Adorning the women who string garlands in the wild
It is like the lehua blossoms of Hōpoe
Lehua blossom upon which the sun beats down
On the nodding koai'a flowers of the cliff
On the rooftops of the houses at 'Āpuku
Rising in the presence of the cliff of Pu'uku'ua
The land is indeed the chief
Man is indeed a slave
I am indeed a slave to aloha – love
It is love which invites us two – come
I come-

(*Ka Hōkū o Hawai'i*, February, 1927 in Beardsley 2001:G-3)

[Place names 'Āpuku and Pu'u Ku'ua are both areas located in the uplands of Honouliuli]

The *mo'olelo* of Kahalaopuna also takes place in 'Ewa (Fornander 1918, Vol. V:188–192). Kahalaopuna was a young woman who was from Mānoa. Betrothed to marry Kauhi, a man from Ko'olau, he sent her numerous gifts before they were to be married. He soon became very angry when he heard rumors that Kahalaopuna had been unfaithful to him. Kauhi took Kahalaopuna to 'Ewa, leading her through the back valley and trails to a place known as Pohakea and a large *lehua* tree, where he took her life, even though she begged of her innocence. After burying her body under leaves of the *lehua* tree, Kauhi returned home. Meanwhile, Kahalaopuna's spirit had flown into the tree, and was able to chant to passers-by to tell her parents of her death and of her location. After she was brought back to life by her parents, Kauhi returned to Kahalaopuna, asking for forgiveness, however, she would not listen to him.

The *mo'olelo* of Namakaokapaoo, is about the aforementioned boy, who has extraordinary strength for a young man his age. His father was Kauluakahai, a great chief with a “godly relationship” who hailed from a great land in Kahiki. Namakaokapaoo's mother was Pokai. The couple met in 'Ewa, in a place called Hoaeae. Shortly after Namakaokapaoo was conceived, Kauluakahai returned to his own land. Pokai then met a man named Pualii who was from Līhu'e [Wahiawa, O'ahu] and was fishing at Honouliuli. The couple resided at the plains of Keahumoa where Pualii had two large potato patches. One day, while Pualii was gone, Namakaokapaoo pulled up Pualii's potato plants. Upon his return, Pualii attempted to kill Namakaokapaoo with his axe, but ended up cutting off his own head. Namakaokapaoo flung the head towards Waipouli, a cave located on the beach at Honouliuli (Fornander 1918, Vol. 5:275, 276).

In the *mo'olelo* of Kawelo, the king, Aikanaka is offended by Kawelo and sends him to live at Waikīkī. While at Waikīkī, Kawelo studied the art of *lua* in order to get his revenge on Aikanaka. Kawelo's teacher was a fish *kupua*, or demi-god, Uhu maikaikai, who lived at Pohaku o Kawai, near Kalaeloa (Hawaiian Ethnological Notes, Vol. II:114 in Sterling and Summers 1978:41).

The 'Ewa plain was known to be a very fruitful place, with abundant resources in the ocean and on land. Protecting such a place was the *kia'i*, or caretaker of 'Ewa, named Kanekua'ana (Kamakau 1991:83). Relied on by the 'Ewa *kama'aina*, during times of scarcity of fish, her descendants built Waihou Heiau and lit fires for the cooking of offerings with the hope of blessings. According to Kamakau (1991), blessings were in the form of the various types of seafood:

The *pipi* (pearl oyster)—strung along from Namakaohalawa to the cliffs of Honouliuli, from the *kuapa* fishponds of inland 'Ewa clear out to Kapakule. That was the oyster that came in from the deep water to the mussel beds near shore, from the channel entrance of Pu'uloa to the rocks along the edges of the fishponds. They grew right on the *nahawe*le mussels, and thus was this *i'a* obtained. Not six months after the *hau* branches [that placed a kapu on these waters until the *pipi* should come in] were set up, the *pipi* were found in abundance—enough for all 'Ewa—and fat with flesh. Within the oyster was a jewel (*daimana*) called a pearl (*moni*), beautiful as the eyeball of a fish, white and shining; white as cuttlefish, and shining with the colors of the rainbow—reds and yellows and blues, and some pinkish white, ranging in size from small to large. They were of great bargaining value (*he waiwai kumuku'ai nui*) in the ancient days, but were just “rubbish” (*opala*) in 'Ewa. (Kamakau 1991:83)

Other seafood described by Kamakau include the transparent shrimp (*ōpae huna*) and spiked shrimp (*ōpae kakala*) which came into the *kuapa* and *pu'uone* fishponds, the *nehu pala* and *nehu maoli* fish which filled the *nuku awalau* (lochs), as well as the bivalves *mahamoe* and *okupe* and other types which have disappeared long ago (Kamakau 1991:84).

'Ewa's abundance could also be attributed to the blessings it received from the gods Kāne and Kanaloa:

...There are many other legends of 'Ewa which Mrs. Pukui has collected from old-timers or translated from old newspaper stories. ...According to another legend it was here in 'Ewa that Kane and Kanaloa were invoked by a planter of sweet potatoes, taros, and 'awa named Maihea. This man, living in the upland of Wai'awa, when he had prepared his meal and his 'awa, would pray:

O unknown gods of mine,
Here are 'awa, taro greens and sweet potatoes
Raised by me, Maihea, the great farmer.
Grant health to me, to my wife and to my son.
Grant us *mana*, knowledge and skill.
Amama. It is freed.

Kane and Kanaloa sent ashore at Waimalu a great whale. It lay there many days. Children climbed on it. Maihea's son did likewise. One day the whale moved into the water. The other children jumped off, but Maihea's son remained on the whale's back. It swam out to sea, and on to Kahiki. There 'Ula-a-Maihea, the farmer's son, "was trained in priestly lore and all of its arts through the instructions of these gods, Kane and Kanaloa." One day two strangers appeared at his door as Maihea was about to pray to his unknown gods. He poured 'awa into three cups and said, "Let me pray to my unknown gods." Then the two strangers revealed that they were his "unknown gods," Kane and Kanaloa, and instructed him to call upon them by name. "This was the beginning of the travels of these gods on earth...." The gods went up the hill named Hau'upu and gazed down upon the fishponds and plantations and coconut groves of 'Ewa and blessed them.

There was a fisherman at Pu'uloa named Hanakahi, who, like Maihea, prayed to "unknown gods." Kane and Kanaloa visited him also, revealed their identity, and taught him to pray properly. They went on to Ke-ana-pua'a, and built a fishpond which "is there to this day." They made another at Kepo'okala, and then another opposite this. Then they returned to Hanakahi's house and told them that these ponds were made for him and his descendants. Thus they blessed the beautiful land of 'Ewa" (*Ka Loea Kalai'aina*, June 10, 1899 in Handy and Handy 1991:472, 473).

The land of Honouliuli was known for its 'ama'ama, or mullet fish. The following *mo'olelo* describes how the route of the 'ama'ama, which travel from Honouliuli to Lā'ie, came to be.

Kaihuopala'ai (a place) was famous from olden times down to the time when the foreigner ruled Honouliuli, after which time the famous old name was no longer used. It is said that in those days the 'ama'ama heard and understood speech, for it was a fish born of a human being, a supernatural fish. These were the keepers of this fish. Kaulu, the husband, and Apoka'a, the wife, who bore the children, Laniloa, the son, and Awawalei, the daughter. These two children were born with two other supernatural children, an eel and a young 'ama'ama. From this 'ama'ama child came all the 'ama'ama of Kaihuopala'ai, and thus did it gain renown for its 'ama'ama. Laniloa went to La'ie, in Ko'olauloa, and there he married. His sister remained in Honouliuli and married Mokueo, and to them were born the people who owned the 'ama'ama, including the late Maui'awa and others. These were fishermen who knew the art of making the fish multiply and make them come up to the sand.

While Laniloa lived in La'ie he heard of the great schools of 'ama'ama at Honouliuli. There were no 'ama'ama, large or small, where he lived. He thought of his younger sister, the 'ama'ama, and guessed that was the reason the place was growing so famous. He said to his wife, "I shall ask my sister to send us some fish for I have a longing for 'ama'ama ..." Laniloa left La'ie to go to Ewa. He reached the house and found his parents and sister. His parents were quite old for he had been away a long time. He said,

“I have come to my ‘ama‘ama sister for a bit of fish as there is none where I live except for some *au moana* (sea-faring) crabs.” After three days and nights he left Ewa. The fish were divided into two groups, those that were going and those that were staying. As Laniloa’s sister went along the shore she went in her human form. The fish came from, that is, left Honouliuli without being seen on the surface. They went deep under water until they passed Ka‘a‘ali‘i, then they rose to the surface. They reached Waikiki. They went on. The sister slept at Nu‘upia while the fish stopped outside of Na Moku Manu. Finally she reached La‘ie, and to this day this is the route taken by the ‘ama‘ama. (Mokumaia 1922 and *Ka Loea Kalaiaina* 1899 in Titcomb 1972:65)

Mele

Printed during the last few months of 1895, *Buke Mele Lahui*, was a response to the recent overthrow of the Hawaiian monarchy in 1893. A collection of 105 songs, this publication served as a means of expression during a time of censorship. The following song mentions various places in ‘Ewa and Wai‘anae and in this *mele*, the bending sugarcane leaves of beautiful Honouliuli are described. (Hawaiian Historical Society 2003:98,99).

KUE HAO O KA LANAKILA.
Hanohano Lanakila i ka'u ike, Ka niniu poahi a na kue, Ua kolu naia no ka moana, Ka pakika, ka pahee i ke alahao, Kilohi iho au ma ka aoao, O Moanalua ka i hai ke au, A ke kula makou a o Puuloa, Laulea pu ana me na hoa, Kau aku ka manao no Aiea, Ka pa a ka makani a he Moae, Aia ka iini i Pualehua, I ka hale hulahu malu ohai, A hiki makou a i Manana, Ano kaukaulua e ka Lanakila, Ike i ka nani kai o Polea, I ka hapa-Ilikini ili-ulaula; Hanohano Waikele i ka ulu niu, I ke kai o ka Pa Hamauleo, A Honouliuli ike i ka nani, I ka luhe a na lau o ke kumu ko, A ke kula wela a o Waimanalo, Malu ana e ka lau a o ke kiawe,
Alawa ae au Puuohulu, O ka puu kaulana o Waianae, Kuupau Lanakila i ke oeoe, E i mai ana o Waianae, Ike i ka nani o ia wahi, Me ke kai holu mai i ka pueone; Haina ka puana no Waianae, Ka makani ahehe he Kaiaulu S. PINAO.

Place Names

Within various accounts, place names can contain significant information which further reveal traditional beliefs and practices associated with an area. Maps of traditional places and features can be found in Figures 4 and 5. The following places are in the Honouliuli region:

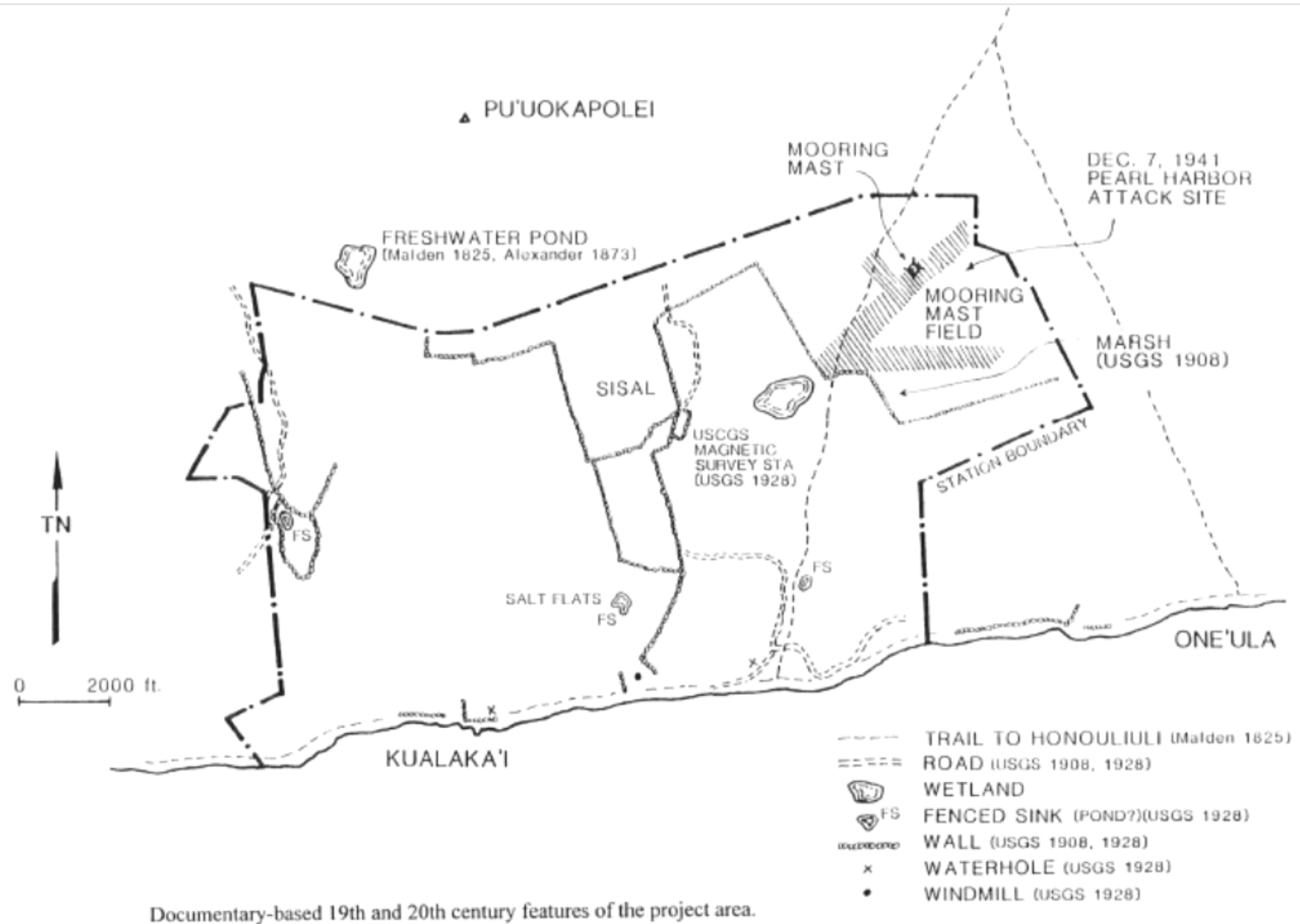


Figure 4. Features of Kalaeloa (adopted from Tuggle and Tomonari-Tuggle 1994:11-12).

Kaloi

....Harry's first thought when riding over the country was where to find water, and during the years 1890-91-92 much was done in the way of new troughs, getting water from plantations of flumes, and digging out wet places that showed any prospects of water. One of those places is on the old trail to Palehua, and had evidently been a place of which the Hawaiians had known, for its name is Kaloi (the taro patch), and even in dry weather water would be standing in the holes made by the cattle, as they tried to get a drop or two. ...When water was finally led down the rocky hillside to the trough at Kaloi, Mr. William R. Castle, who was with Harry, rechristened the spring "Wai o Kakela," Kakela being Mr. Castle's Hawaiian name. But the old name still stuck to it, and as Kaloi it is known to this day. (Knudsen von Holt 1953:116 in Sterling and Summers 1978:35)

Keahumoa

"...Was the plain before reaching the Kipapa gulch."(Fornander 1918, vol. IV:274) (see Battle of Keahumoa Plain)

Pohakea

A place where Lohiau and Hiiaka rested on their journey to meet Pele, between 'Ewa and Wai'anae (Fornander, 1918:188).

...The travelers only stopped one night and spent the following night on the other side of Pohakea. The elders and children who went with them slept above Kunia on this side of Pohakea... (I'i 1959:23)

Pukaua Plain

The Two Old Women Who Turned to Stone

If a traveller [sic] should go by the government road to Waianae, after leaving the village of gold, Honouliuli, he will first come to the plain of Puu-ainako and when that is passed, Ke-one-ae. Then there is a straight climb up to Puu-o-Kapolei and there look seaward from that government road to a small hill. That is Puu-o-Kapolei. It is this hill that hides Ewa from view. When you go to that side of Waimanalo, you see no more of the sight back here. You go down some small inclines, then to a plain. This plain is Pukaua and on the mauka side of the road, you will see a large rock standing on the plain. This stone has a legend that made this plain noted.... (*Ka Loea Kalaiaina* 1900 in Sterling and Summers 1978:39)

Puu-Kuua

Here are some pointers for the traveler to Ewa. If you are going by train, look up toward the Ewa mill. If you are above Puuloa, you will see Puu-o-Kapolei, a small hill. Lying below and back of that hill is the government road going to Waianae. Above that is also a small hill and back of that, is a big hill and above it is a large hollow. That is Puu-Kuua where the very dirty ones lived. (*Ka Loea Kalaiaina* 1899 in Sterling and Summers 1978:32)

...A place where the chiefs lived. Was said to be a battlefield. There were two important things concerning this place. (1) This place is entirely deserted and left uninhabited and it seems that this happened before the coming of righteousness to Hawaii Nei. Not an inhabitant is left. (2) The descendants of the people of this place were so mixed that they

were all of one class. Here the gods became tired of working and returned to Kahiki. (*Ka Loea Kalaiaina*, July 8, 1899 in Sterling and Summers 1978:32–33)

Pu‘uloa

Literally translates to “long hill,” this area is now known as Pearl Harbor (Pukui et al.1974).

Puu o Kapolei

Located to the north of the current subject property, “it is here that Kamauluaniiho (Kamaunuaniiho) lived with her grandson, Kekeleaiiku, the older brother of Kamapua‘a after they left Kaliuwaa in Kaluanui, Koolau-loa” (*Ka Loea Kalaiaina* 1900 in Sterling and Summers 1978:32–33).

After Kamapua‘a conquered most of O‘ahu, he installed his grandmother, Kamaunuaniiho as queen, taking her to Puuokapolei. It was noted as a desolate spot, being “almost equally distant from the sea, from which came the fish supplies; from the taro and potato patches of Ewa, and from the mountain ravines containing the banana and sugarcane plantations.” It was believed that the foundations of Kamaunuaniiho’s house, as well as her grave, were still present before the turn of the 20th century. However, with the expansion of sisal and cane activities at the base of Puuokapolei, stones may have been removed for making walls (Nakuina 1904:50 in Sterling and Summers 1978:34).

Pu‘uokapolei is also noted as an important landmark which marked the season of Ho‘oilō:

...the people of Oahu reckoned from the time when the sun set over Pu‘uokapolei until it set in the hollow of Mahinaona and called this period Kau, and when it moved south again from Pu‘uokapolei and it grew cold and the time came when young sprouts started, the season was called for their germination (oilō) the season of Ho‘oilō. (Kamakau n.d.:23 in Sterling and Summers 1978:34).

Legendary fisherman, Nihooleki, lived at Kuukuu on Pu‘u o Kapolei under the name of Keaha-ikiaholeha. Born at Keauhou in Kona, he became a ruling chief of Wai‘anae. Wielding his famous *aku*-attracting pearl fishhook named Pahuhu, Keaha-ikiaholeha traveled to Kaua‘i, the birthplace of his high chiefess wife, and became ruling chief. When he died, his body was brought back to Wai‘anae and prayed back to life by his parents. Among his later exploits, Nihooleki returns to Wai‘anae and “enters his tomb” and dies (Beckwith 1970:420).

Waimanalo

Koolina is in Waimanalo near the boundary of Ewa and Waianae. This was a vacationing place for chief Kakuhihewa and the priest Napuaikamao was the caretaker of the place. Remember Reader, this Koolina is not situated in the Waimanalo on the Koolau side of the island but the Waimanalo in Ewa. It is a lovely and delightful place and the chief, Kakuhihewa loved this home of his. (*Ke Au Hou* 1910 in Sterling and Summers 1978:41)

Land Use and Coastal Resources

What truly sets the ‘Ewa area apart is its expansive coastal plain which is surrounded by the deep bays of West Loch and Pearl Harbor. Offering a favorable environment for the construction of *loko i‘a*, fishponds, and fish traps, residents of this area had the opportunities to catch deep-sea fish such as *akule*, which entered the bays during the incoming tide. These ponds were the summer home of the ‘*ama‘ama*, or mullet. Another important resource of the coastal area was the diverse variety of shellfish found in the harbor. The Hawaiian pearl oyster, *pipi*, was eaten raw and was

prized for its shell that was used to make fishhooks. Other shellfish of the area included *papaua*, *‘owa* *‘owaka*, *nahawe*, *kupekala*, *mahamoe* (Lahilahi Webb in Handy and Handy 1991:471).

The wide lowlands, bisected by streams, created a land that easily facilitated the cultivation of *lo‘i kalo*, irrigated taro patches. ‘Ewa’s natural landscape and sprawling plain, and gently sloping valley walls, created environments ideal for crops such as banana and yams. Inland, ‘Ewa was noted for the cultivation of *‘awa*, as well as its *mamaki*, *wauke*, and *olonā*. This extensive upland area, also known as *wao*, gave inhabitants an advantage during times of famine as a place where they could forage for food during droughts (Handy and Handy 1991:469). The upland areas of ‘Ewa were also home to unique avifauna and birds which were prized for their colorful feathers that were used in helmets, capes, and *lei*.

‘Ewa and Honouliuli in the Historic Period

Descriptions and maps from early visitors to Hawai‘i help to paint a picture of what Honouliuli was like in the 18th to 20th centuries.

Early Descriptions of the ‘Ewa Plain

Anchored off the entrance to West Loch in 1793, Captain George Vancouver described the ‘Ewa landscape:

The part of the island opposite to us was low, or rather only moderately elevated, forming a level country between the mountains that compose the east [Koolau] and west [Waianae] ends of the island. This tract of land was of some extent, but did not seem to be populous, nor to possess any great degree of natural fertility; although we were told that, at a little distance from the sea, the soil is rich, and all the necessities of life are abundantly produced. ...Mr. Whitbey observed [sic], that the soil in the neighborhood of the harbor appeared of a loose sandy nature; the country low for some distance, and, from the number of houses within the harbour, it should seem to be very populous; but the very few inhabitants who made their appearance were an indication of the contrary. (Vancouver 1801, vol. 3:361,363)

Campbell’s 1819 account includes a description of his way through ‘Ewa:

We passed by foot-paths winding through an extensive and fertile plain, the whole of which is the highest state of cultivation. Every stream was carefully embanked, to supply water for the taro beds. Where there was no water, the land was under crops of yams and sweet potatoes. The roads and numerous houses are shaded by cocoa-nut trees, and the sides of the mountains covered with wood to a great height. We halted two or three times, and were treated by the natives with the utmost hospitality.” (Campbell 1819:145)

G.F. Mathison, visiting the “Sandwich Islands” in 1821–1822, noted the abundance of resources of the ‘Ewa Plain:

The adjoining low country is overflowed both naturally and by artificial means, and is well stocked with taro-plantations, bananas, etc. The land belongs to many different proprietors; and on every estate there is a fishpond surrounded by a stone wall, where the fish are strictly preserved for the use of their rightful owners, or tabooed, as the natives express it. One of particular dimensions belongs to the King. (Mathison 1825 in McAllister 1933:109)

During a visit to Hawai‘i in 1825, James Macrae offered the following remarks about Pu‘uloa and the surrounding area:

The neighborhood of the Pearl River is very extensive, rising backwards with a gentle slope towards the woods, but is without cultivation, except round the outskirts to about half a mile from the water. The country is divided into separate farms or allotments belonging to the chiefs, and enclosed with walls from four to six feet high, made of a mixture of mud and stone. (Macrae 1922 in McAllister 1933:31)

Captain Jacobus Boelen’s 1828 narrative of Pu‘uloa discusses traveling to ‘Ewa from Honolulu and the shallow reefs which shelter the bay. He notes of the highly fertile soils which are heavily cultivated in *kalo* and sugarcane:

On 26 February, in the company of some good friends and acquaintances, we made an excursion to what the Indians called the harbor of Oporooa [Pu‘uloa], which I believe means approximately “Pearl River”—at least that is what the foreigners call this bay. This is because the Indians sometimes find pearls there, which they offer for sale in Honoruru. We departed from Honoruru at ten o’clock in the morning in two boats, sailed out of the harbor to sea, and rowed a distance of about three quarters or one league toward the west along the coral reef that encircles the whole south coast of Woahoo. We passed over the bar of Oporooa harbor. The bar is no more than ten feet deep at low tide, from which one can conclude that in a rough sea high waves will break against it. Even at high tide the passing of this bar can be very dangerous unless the sea is calm. Therefore, on the advice of our pilot, a native of the island, we remained for a time outside the bar and then rowed hard across it.

We found ourselves in a rectangular bay, or rather a lake with several arms, consisting of several deep bights. Two of the most important of these stretched to the northeast, while the one to the northwest cut the farthest....The soil in this region seemed at first sight to be exceptionally fertile, and the land consisted of meadows and *taro* and sugar [cane] fields....

We rowed to the end of the harbor of Oporooa, or the so-called Pearl River, and landed with the boats near a small Indian village with the name of Mannonco....In the meantime, we strolled through the surrounding land, which everywhere was very fertile, with cultivated fields of *tarro*, maize, and also sugar cane (Boelen 1988:64-65).

In an 1873 map, Honouliuli is depicted with numerous place names such as Puu Kuua, Puu Kapolei, Kapuai, Puu Kaua, an “Old Catholic Church”, salt ponds, Waioha, Kaheeka, Oneula, Milolii, Anue, a pond, and Laulaunui Island (Figure 6). It is interesting to note that while Pu‘uloa is the area adjacent to the entrance to West Loch, the map confirms that this passageway actually belongs to the “Fishery of Honouliuli” (Alexander 1873).

An 1878 map of “Honouliuli Taro Lands” illustrates the thriving cultivation of *kalo* in Honouliuli (Figure 7). Numerous family plots are mapped in this figure, as is an area on the west marked as “mud flats,” a road circling the land plots, as well as a wall, or “pa aina” which encloses several of the lots.

A map titled, “Coast of Oahu, from Windmill at Puuloa to Waimanalo” shows tents” a stone quarry and flag located along the western end of Honouliuli at Waimanalo (Figure 8). In addition to recording the shoreline type (“Sand” or “Rock”), this 1881 map also shows the location of “Anchors,” Barbers Point, Laeloa, Kualakai, Oneula, a stone wall, and Puuloa.



Figure 6. 1873 map of Honouliuli (Alexander 1873).

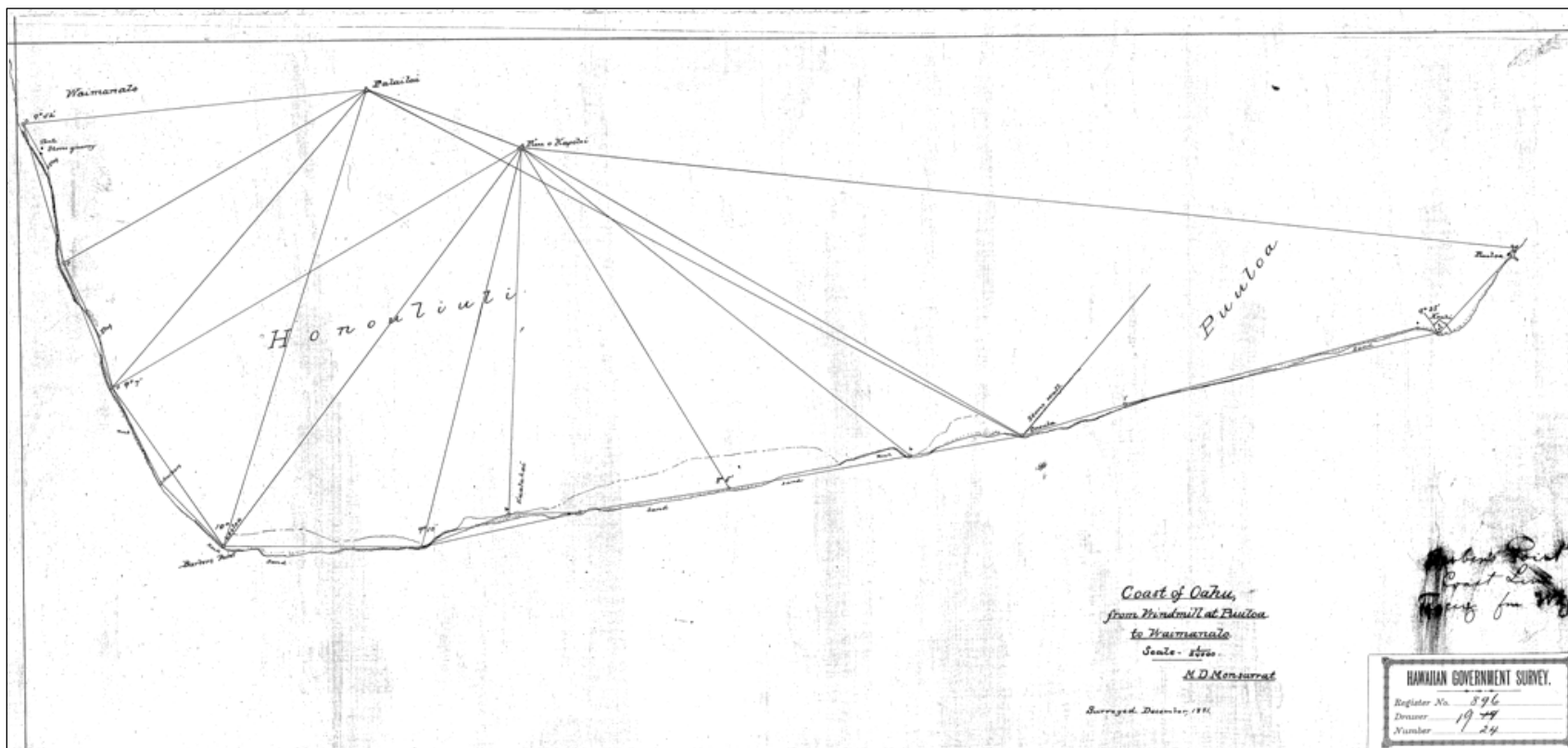


Figure 8. Coast of Oahu map (Monsarrat 1881).

An 1884 map of Barbers Point, shows depths and sea floor material of the waters off of Kalaeloa (Figure 9). While the map uses “Barbers Point” in its title, the location is noted with the traditional name of Kalaeloa. To the west of Kalaeloa is a place named Puhilele.

Power and Warfare in Honouliuli

Known for its bountiful resources which included fertile lands and well-stocked fishponds, the ‘Ewa area was a sought-after land for the *ali‘i*, and as a result, numerous battles ensued on these lands. One such example is the unfought battle of the Keahumoa Plain which involved Kualī‘i (ca. 1650) who was a celebrated *ali‘i*, skilled, and victorious in the art of warfare. This bloodless “battle” instigated by brothers Kapaahulani and Kamakaaulani resulted in Kualī‘i uniting all the islands (Fornander 1918, vol. IV:364).

Another battle known to have taken place on the ‘Ewa Plain was that of Mā‘ilikūkahi. During this battle, chiefs from the island of Hawai‘i, joined with *ali‘i* from Maui, waged war on O‘ahu *mō‘i*, Mā‘ilikūkahi. Fornander offers a genealogy of *ali‘i* preceding Mā‘ilikūkahi and follows with an account of the battle:

On Oahu, at the close of the migratory period, after the departure of *Laamaikahiki*, we find his son, *Lauli-a-Laa*, (88) Maelo, married to *Maelo*, the sixth in descent from *Maweke*, and daughter of *Kuolono*, on the *Mulielealii-Moikeha* line. They probably ruled over the Kona side of the island, while *Kaulaulaokalani*, on the *Maweke-Kalehenui* line, ruled over the Koolau side, and *Lakona*, also sixth from *Maweke*, on the *Mulielealii-Kumuhonua* line, ruled over Ewa, Waianae, and Waialua districts, and in this latter line descended the dignity of *Moi* of Oahu. Tradition is scanty as to the exploits of the Oahu *Mois* and chieftains, until *Haka* we arrive at the time of *Haka*, *Moi* of Oahu, chief of Ewa, and residing at Lihue. The only genealogy of this chief that I have, while correct and confirmed by others from *Maweke* to *Kapae-a-Lakona*, is deficient in three generations from *Kapae-a-Lakona* to *Haka*. Of *Haka's* place on the genealogy there can be no doubt, however, as he was superseded as *Moi* by *Mailikukahi*, whose genealogy is perfectly correct from the time of *Maweke* down, and conformable to all the other genealogies, descending from *Maweke* through his various children and grandchildren. Of this *Haka*, tradition records that he was a stingy, rapacious, and ill-natured chief, who paid no regard to either his chiefs or his commoners. As a consequence they revolted from him, made war upon him, and besieged him in his fortress, called *Waewae*, near Lihue. During one night of the siege, an officer of his guards, whom he had ill-treated, surrendered the fort to the rebel chiefs, who entered and killed *Haka*, whose life- was the only one spilt on the occasion. Tradition does not say whether *Mailikukahi* had a hand in this affair, but he was clamorously elected by the Oahu chiefs in council convened as *Moi* of Oahu, and duly installed and anointed as such at the *Heiau* (temple).

I have before (p. 70) referred to the expedition by some Hawaii chiefs, *Hilo-a-Lakapu*, *Hilo-a Hilo-Kapuhi*, and *Punaluu*, joined by *Luokoo* of Maui, which invaded Oahu during the reign of *Mailikukahi*. It cannot be considered as a war between the two islands, but rather as a (90) raid by some restless and turbulent Hawaii chiefs, whom the pacific temper of *Mailikukahi* and the wealthy condition of his island had emboldened to attempt the enterprise, as well as the *éclat* that would attend them if successful, a very frequent motive alone in those days. The invading force landed at first at Waikiki, but, for reasons not stated in the legend, altered their mind, and proceeded up the Ewa lagoon and marched inland. At Waikakalaua they met *Mailikukahi* with his forces, and a sanguinary battle ensued. The fight continued from there to the Kipapa gulch. The invaders were thoroughly defeated, and the gulch is said to have been literally paved with the corpses of the slain, and received its name, “Kipapa,” from this circumstance. *Punaluu* was slain on

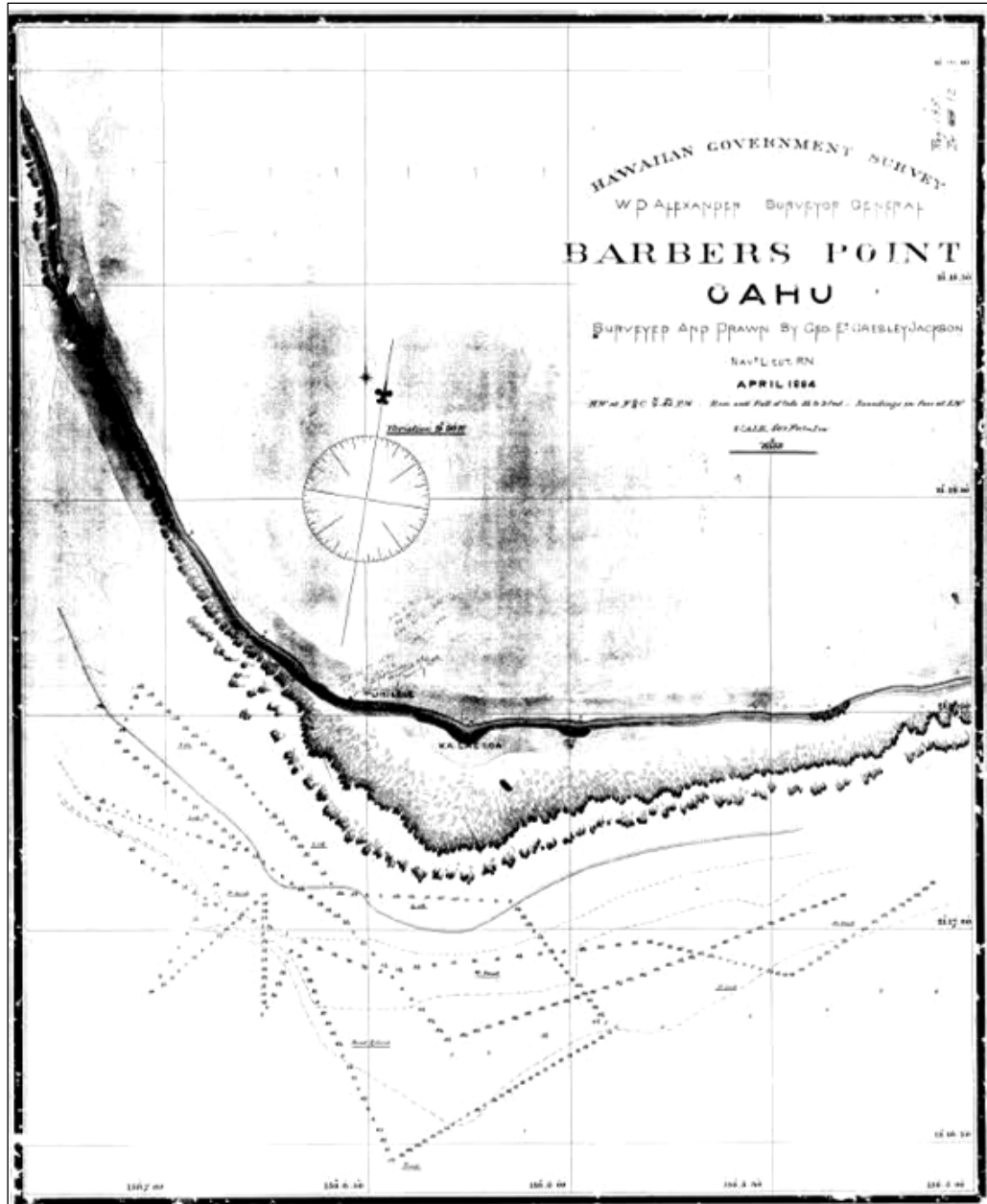


Figure 9. Hawaiian Government Survey map of Barbers Point (Jackson 1884).

the plain which bears his name, the fugitives were pursued as far as Waimano, and the head of *Hilo* was cut off and carried in triumph to Honouliuli, and stuck up at a place called *Poo-Hilo*.

Mailikukahi's wife was *Kanepukoa*, but to what branch of the aristocratic families of the country she belonged has not been retained on the legends. They had two sons, *Kalononui* and *Kalona-iki*, the latter succeeding his father as *Moi* of Oahu. (Fornander 1996:87–90)

Māhele Land Tenure and Ownership of Honouliuli and Kalaeloa

The change in the traditional land tenure system in Hawai'i 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 Legislature was passed allowing citizens to present claims before the Land Commission for lands 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 *kama'āina* totaling only about 30,000 acres and recorded in ten large volumes.

During the Māhele, 97 *kuleana* awards were given to applicants in Honouliuli by the Board of Commissioners to Quiet Land Titles. A majority of these claims were located in the wetland *lo'i* and were approximately one acre in size, with all 97 awards totaling only 106.54 acres (Haun 1991:160). The majority of the land of Honouliuli, 43,250 acres, was granted to Kekau'onohi, granddaughter of Kamehameha I, within LCA 11216.

In 1849, Kekau'onohi sold the land of Pu'uloa, now known as Pearl Harbor, to Isaac Montgomery, where it is believed that he and Kamehameha III established a successful salt works enterprise that shipped salt to the Pacific Northwest (Haun 1991:160).

Land also changed hands when Kekau'onohi's widow, Ha'alele'a died, and his second wife, Anadelia Amoe deeded the land to her sister's husband, John H. Coney. In 1877, Coney subsequently sold Honouliuli to James Campbell. For approximately 43,640 acres of land, Campbell paid a sum of \$95,000 (Haun 1991:160). During the initial years of his ownership, Campbell utilized about 10,000 acres as a cattle ranch and also leased out land for rice cultivation, fishing rights to Pearl Harbor, as well as a lime quarry.

In 1889, Campbell leased Honouliuli for 50 years to Benjamin Dillingham, who established the Ewa Sugar Plantation in the lower portion of the *ahupua'a*, and Oahu Sugar Company's cane fields in the upper reaches of Honouliuli. Dillingham also built the Oahu Railway and Land Company in Honouliuli which extended out to Wai'anae. In 1893, the first sisal was brought to Hawai'i from Florida, and was grown in Honouliuli. The sisal plantation operated under the name of Hawaii Fibre Company in 1898 (Haun 1991:166).

A 1913 map of the fisheries from Pearl Harbor to Honolulu depicts the lands noted as "Honouliuli Fishery, Estate of James Campbell" (Figure 10). On the northeastern portion of Honouliuli Ahupua'a shows Lauaunui Island and a pond, as well as Kapapahu Point.

The presence of government structures in Kalaeloa began in 1888 with the construction of the Barbers Point Lighthouse by the Hawaiian Government. The following work in the area consisted of the construction of the United States Coast and Geodetic Survey Magnetic Observatory. In the 1930s the military leased a 3,000 square foot area from Campbell Estate. This era brought much development of the areas infrastructure and capital improvements and included the creation of

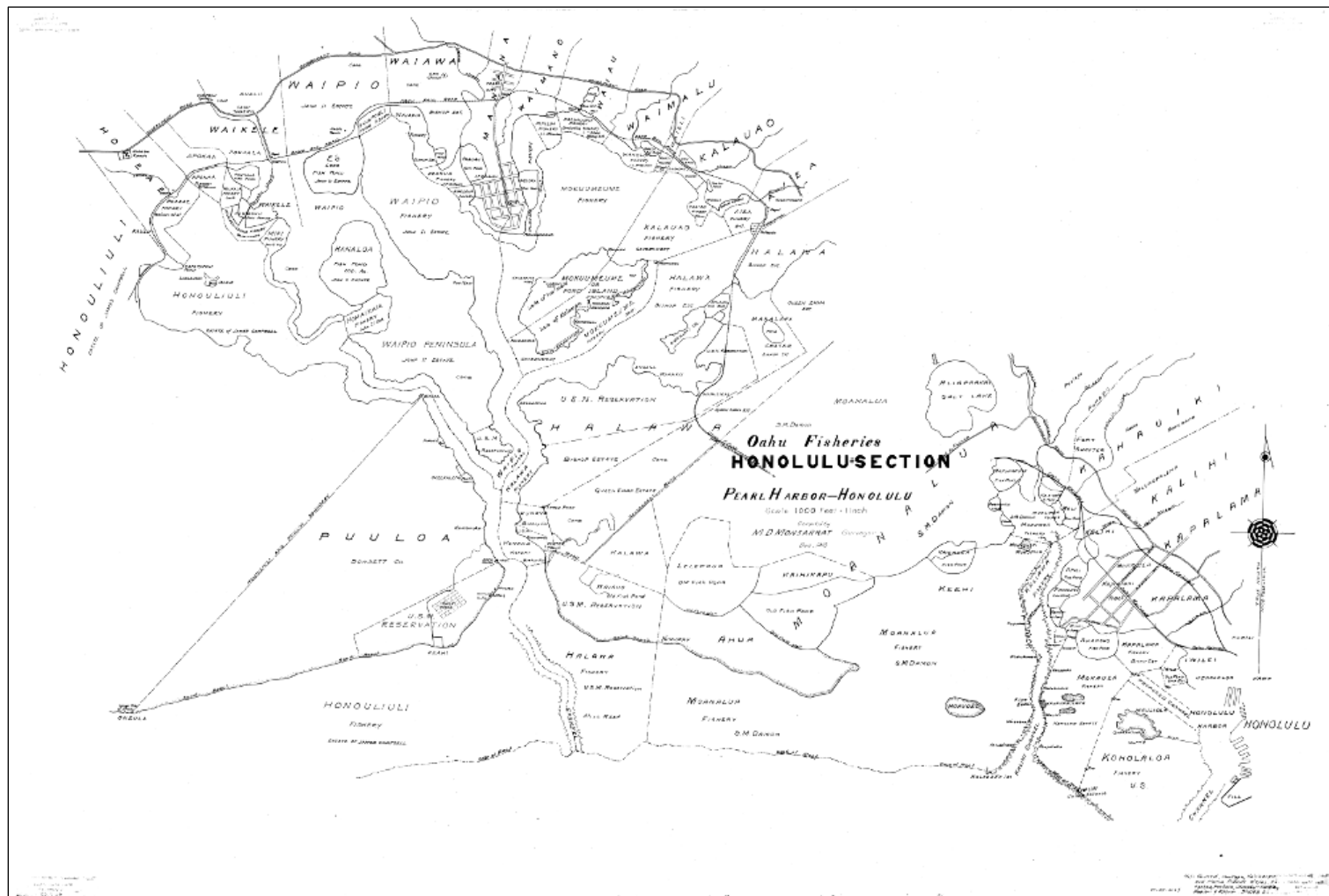


Figure 10. Oahu fisheries map (Monsarrat 1913).

approximately 18 miles of road built between 1935 and 1937 (Beardsley 2001:II.23). When the military's lease expired in 1940, the Navy acquired a lease of 3,500 acres on which the 'Ewa Marine Corps Air Station, and later, Barbers Point Naval Air Station would be built. The Following the Japanese bombings of Pearl Harbor on December 7, 1941, construction at the Air Station dramatically increased after the 'Ewa airstrip and majority of the planes were destroyed in the attack. Construction of the Naval Air Station at Barbers Point was completed on April 15, 1942.

Since World War II, Barbers Point Naval Air Station has played an integral role as a strategic military base and has provided a diverse range of functions including: an antisubmarine patrol, headquarters of the Pacific Airborne Barrier Command (1958–1965), guided missile units, and the Pacific Sound Surveillance System (Beardsley 2001:II.24). Over the course of time, activities associated with construction and the execution of these functions have had a major impact on cultural and natural resources. Some of these impacts include: a defensive line of barbed wire and gun emplacements along the coast, infrastructure developments of roads, sewers, water systems, utilities, electricity, gas, housing units, and general bulldozing and grading in surrounding areas (Hammatt 1984, Kelly 1991, Tuggle and Tomonari-Tuggle 1995 in Beardsley 2001:II.24).

In 1999 the Naval Air Station was closed by Base Realignment and Closure (BRAC) and was turned over to the State of Hawai'i and is currently titled the Kalaeloa Community Development District (Hawai'i Community Development Authority 2012).

A 1933 map depicts the location of the Honouliuli-Ewa Road Realignment (Figure 11). The 50-foot realignment extended from the Wai'anae Government Main Road to the Oahu Railway and Land Company's Main Track to Ewa Mill. Of note on this map are Land Commission Award and Royal Patent parcels with numbers and awardees/applicants.

Previous Archaeology

A wealth of archaeological studies have been conducted on the 'Ewa Plain, and within Honouliuli Ahupua'a. The following discussion provides information on archaeological investigations that have been performed in the immediate vicinity of the current area of study (Figure 12). Table 1 lists previous archaeological projects and their results for the larger 'Ewa plain region.

One of the earliest island-wide archaeological studies was conducted in 1930 by J. Gilbert McAllister (1933). In his study of O'ahu, he recorded numerous sites located on the 'Ewa Plain and specifically in the *ahupua'a* of Honouliuli. Sites consist of a variety of types, such as *heiau*, *ko'a*, fishponds, and ranching walls. The only site McAllister noted in the vicinity of the project area is Pu'u Kapolei Heiau (Site 138) (see previous discussion on Pu'u o Kapolei). Unfortunately, the *heiau* was destroyed by the time of McAllister's study (1933:108):

The stones from the heiau supplied the rock crusher which was located on the side of this elevation, which is about 100 feet away on the sea side. There was formerly a large rock shelter on the sea side where Kamapuaa is said to have lived with his grandmother.

Aside from the *heiau* mentioned above, McAllister described the plethora of sites on the 'Ewa plain within a single site number, Site 146 (1933:109):

Ewa coral plains, throughout which are the remains of many sites. The great extent of old stone walls, particularly near the Puuloa Salt Works, belongs to the ranching period of about 75 years ago. It is probable that the holes and pits in the coral were formerly used by the Hawaiians. Frequently the soil on the floor of larger pits was used for cultivation, and even today one comes upon bananas and Hawaiian sugar cane still growing in them.

They afford shelter and protection, but I doubt if previous to the time of Cook there was ever a large population here.

The area *mauka* of Malakole Road to the northwest of the current project area was the subject of many archaeological investigations (Lewis 1970, Barerra 1975, Sinoto 1976, Cleghorn and Davis 1990, Hammatt et al. 1994). The most extensive study (Sinoto 1976) provided a list of the 24 sites identified during previous investigations and identified 44 additional sites within four survey areas (A–D). The most common features were unmodified limestone sinkholes (n=80), walled sinks (n=17), rectangular enclosures (n=18), C-shaped enclosures (n=12), wall segments (n=14), and *ahu* (n=15+). Less frequent site/feature types included cairns, wall/enclosure complexes, an L-shaped wall, a ramp associated with a sinkhole, a filled sinkhole, railroad tracks, a crypt, platforms, and modified caves. Excavating a total of 27 sites, one significant discovery was the recovery of fossil bird bones in limestone sinkholes. Six fossil bird sites were recorded.

In 1991 a large scale archaeological survey was conducted at Barbers Point Naval Air Station, identifying 43 sites comprised of 385 features (Haun 1991) (Figure 13). Approximately three-quarters of these sites were deemed to be associated with the pre-Contact era and are “architecturally complex” suggesting permanent habitation. Within the 1991 survey, Site 1725 was located on the current subject property. The site consisted of 20 pre-Contact and historic features which range from walls, platforms and possible burial mounds to ranching walls. A later survey (Beardsley 2001) reassessed Site 1725 and documented 17 feature components, which include a platform, a terrace, six cairns, three wall alignments, two u-shaped walls, three enclosures, and a modified sinkhole. The site was described as a traditional to early historic multi-use complex, with functions including habitation, agriculture, burial, and historic ranching. McElroy and Elison (2013) revisited Site 1725 and identified ten new features. These consisted of two platforms, an enclosure complex, two c-shaped structures, a wall, three mounds, and a sinkhole used for historic trash disposal.

A survey prior to Haun’s (1991) work recorded an historic homestead (Site NL-25) in the Site 1725 area (Tuggle 1983). This site was not relocated by McElroy and Elison (2013). The report of the original documentation of Site NL-25 could not be located, however the site is briefly mentioned in a later cultural resource summary (Tuggle and Tomonari-Tuggle 1994:62):

Two sites are recorded in this area. One (1725) is a Hawaiian complex, with a possible 19th century component. The second (NL-25) is a 20th century homestead.

The Hawaiian features of 1725 are in excellent condition and the site should be mapped and tested. In addition the features recorded by Tuggle (1983) need to be incorporated into the overall site boundary.

The homestead should be mapped and photographed.

Inventory survey was conducted for 345 acres just west of the current project area (McDermott et al. 2006). Findings included three previously identified historic sites (plantation-era drainage channel, and O.R.&L. railroad right-of-way) and three unrecorded sites including pre- and post-Contact stacked stone walls, mounds and enclosures, and sinkhole features.

Settlement Pattern

Based on a review of previous archaeological studies and examination of both pre- and post-Contact Hawaiian history, settlement patterns for the Honouliuli area and larger ‘Ewa Plain can be surmised. Synthesized with Cordy’s (1993) model of O‘ahu’s sociopolitical model, Beardsley (2001:III-8, III-9) summarizes the following settlement pattern for Honouliuli:

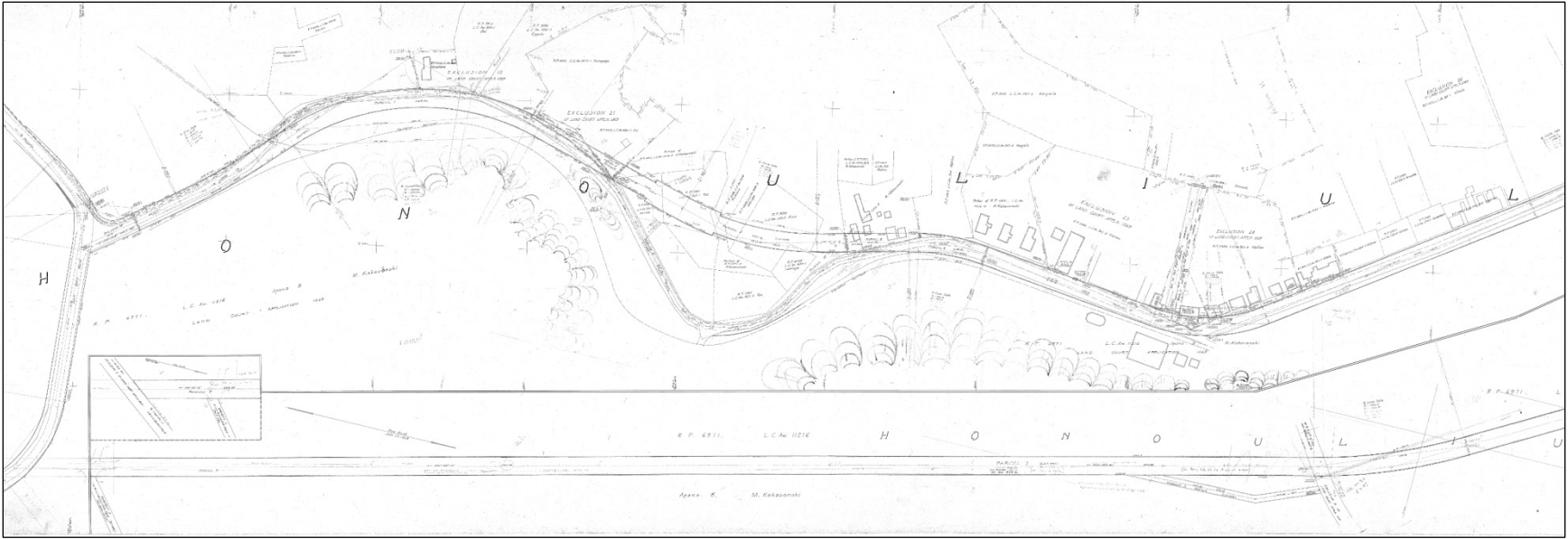


Figure 11. Portion of the Honouliuli-Ewa road realignment map (Evans 1933).

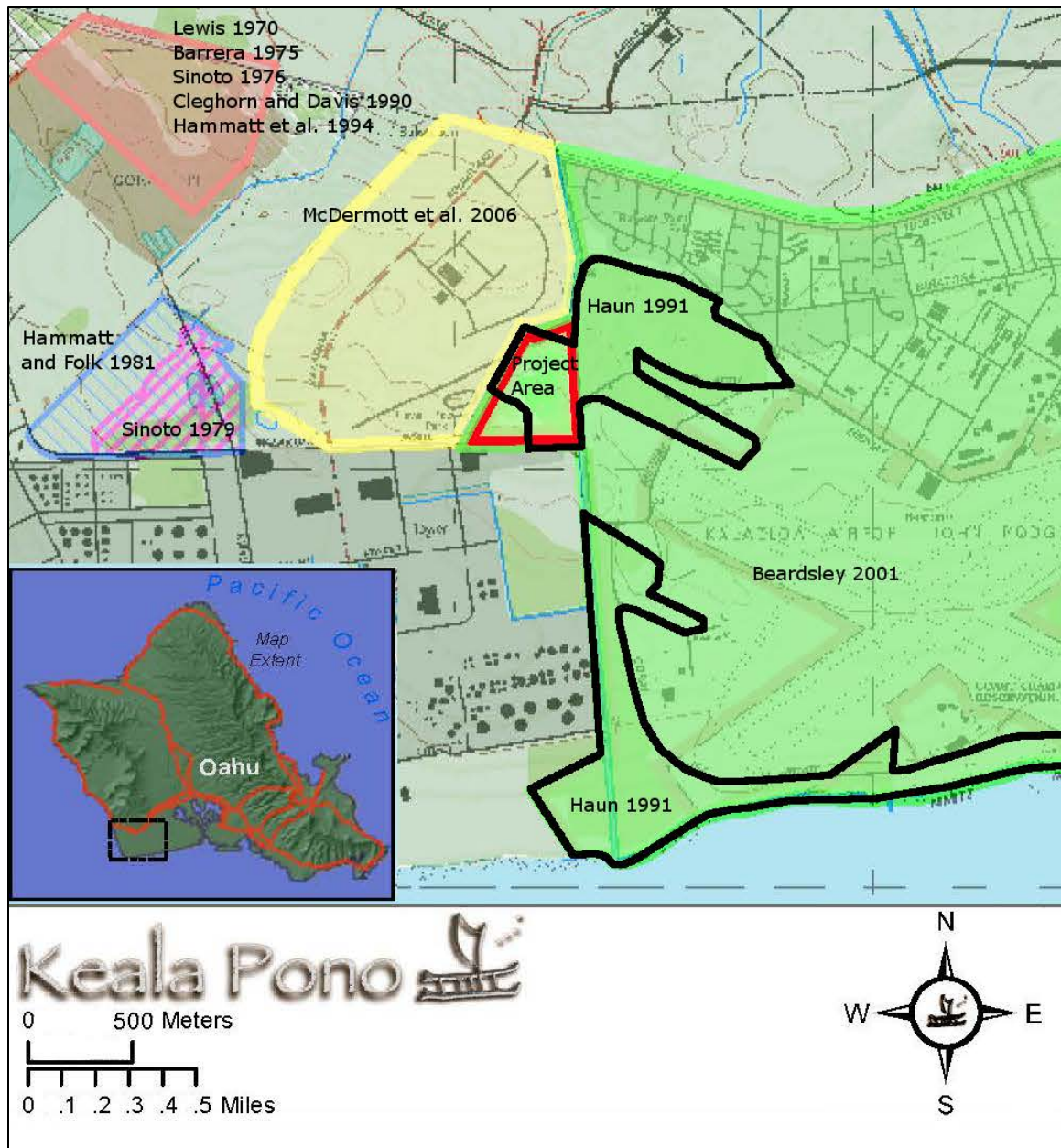


Figure 12. Previous archaeological studies in the vicinity of the project area.

Table 1. Previous Archaeology on the ‘Ewa Plain

Author and Year	Location	Work Completed	Findings
Stokes 1909	Pearl Harbor	Examination of Fishponds	Recorded fish traps, ponds, and fishing shrines of Pearl Harbor.
McAllister 1933	Island of Oahu	Archaeological Survey	McAllister recorded and examined 384 archaeological sites on O‘ahu, many of these located in the ‘Ewa District. Site types include <i>heiau</i> , enclosures, and fishpond.
Kikuchi 1959	Standard Oil refinery	Burial Disinterment	Kikuchi removed 12–16 human burials which were located in a limestone sinkhole prior to the construction of the Standard Oil refinery (noted in Haun 1991:9–10)
Soehren 1962	Barbers Point, Naval Air Station	Burial Documentation	A single burial was recorded as a “second interment” and was found in a sinkhole near house sites and modified pits.
Lewis 1970	Area <i>mauka</i> of Malakole Road	Archaeological Survey	Documented were house sites and compounds, mounds, <i>ahu</i> , modified pits and walls.
Barrera 1975	Barbers Point, Naval Air Station	Archaeological Reconnaissance	A total of 24 sites were located within a 900-acre area, nine of which were re-identified from Lewis’ studies. Site types include house sites, sinkholes, walls, cairns, enclosures, shelters, a terrace, midden deposit, a paved area, a burial cave and many mounds.
Sinoto 1976	Barbers Point, Naval Air Station	Archaeological Survey and Excavations	Sinoto provided a list of sites identified with Lewis' and Barrera’s investigations and identified 44 additional sites within four survey areas (A–D). The most common features were unmodified limestone sinkholes (80 total), walled sinks (17), rectangular enclosures (18), C-shaped enclosures (12), wall segments (14), and <i>ahu</i> (15+). Less frequent site/feature types included cairns, wall/enclosure complexes, an L-shaped wall, a ramp associated with a sinkhole, a filled sinkhole, railroad tracks, a crypt, platforms (2) and modified caves (3). Excavating a total of 27 sites, one significant discovery was the recovery of fossil bird bones in limestone sinkholes. Six fossil bird sites were recorded.
Sinoto 1978	Barbers Point, Harbor	Archaeological and Paleontological Excavations	A total of 18 sites were excavated, five of them being archaeological sites which produced portable artifacts, midden, soil, and land snail samples. Artifacts include basalt tool fragments, modified bird bone, polished hematite and volcanic glass.
Sinoto 1979	Barbers Point, Naval Air Station	Archaeological Survey and Excavations	Survey of an 80 acre parcel southeast of the area Sinoto surveyed in 1976 revealed sites with less frequency and complexity that the previous study. Site/feature types included: c-shapes, <i>ahu</i> and modified natural features.
Hammatt and Folk 1981	Barbers Point, Deep Draft Harbor	Archaeological and Paleontological Investigations	Salvage excavations and paleontological studies at 26 sites.

Table 1. (cont.)

Author and Year	Location	Work Completed	Findings
Cleghorn and Davis 1990	Barbers Point Deep Draft Harbor	Archaeological and Paleontological Investigations	75 sites located within the 89 acre survey area. Habitation sites and culturally-modified sinkholes were documented.
Charvet-Pond et al. 1991	Ko‘olina	Archaeological and Paleontological Excavations	The first of four volumes, this study identifies both archaeological and paleontological sites in the area.
Folk 1991	Honouliuli, Proposed Kapolei Business/Industrial Park	Archaeological Reconnaissance	As a supplement to an archaeological assessment, this study identified one site, Site 2722.
Hammatt et al. 1991	Maka‘iwa Hills	Archaeological Inventory Survey	Within the approximately 1,915 acre parcel, 34 sites were recorded and consisted of permanent and temporary habitation structures, agricultural features (terraces and mounds), rock shelters, a possible rock shelter quarry, <i>ahu</i> , petroglyphs and historic features associated with the Ewa Plantation Co.
Haun 1991	Barbers Point, Naval Air Station	Archaeological Survey	Survey of 1,230 acres recorded 43 sites comprised of 385 features. Three-quarters of sites were determined to be pre-Contact, many of which are “architecturally complex” suggesting permanent habitation.
Burgett and Rosendahl 1992	Barbers Point, Naval Air Station: Contaminated Soil Stockpile Remediation Facility	Archaeological Inventory Survey	Within the 17 acre project area, 21 sites were identified, comprised of more than 71 features. Feature types included: mounds, outcrops, modified sinkhole, wall, terrace, cairn, enclosure, pavement, platform, alignment, cave, and cupboard. Features are associated with agricultural, habitation, burial, marker, and possible storage functions.
Denham and Kennedy 1992	The Ewa Beach International Golf Club	Archaeological Preservation Plan	Outlines a preservation plan for 11 sites which include sinkholes, a residential complex, a religious site, a raised reef environment, and a habitation site.
Erkelens 1992	Barbers Point, Naval Air Station	Archaeological Survey	Survey report included detailed mapping of Site 1719, as it was described in Haun (1991). The scope included 5 features which consisted of enclosure, c-shape, and mound features, as well as a sinkhole and cairn (possible grave). Additional features were encountered during this survey, however, but they were not included in Haun’s survey and were not mapped.

Table 1. (cont.)

Author and Year	Location	Work Completed	Findings
Folk 1992	Barbers Point, Naval Air Station	Archaeological Subsurface Testing	Testing within a beach berm, a cultural layer was recorded.
Goodman et al. 1993	Pu'uloa	Archaeological Reconnaissance	Within the 20 acre parcel, evidence of sugarcane cultivation was encountered. There was an absence of cultural material or surface features.
Jones 1993	Barbers Point, Naval Air Station	Archaeological Inventory Survey	A total of 274 pre-Contact and historic archaeological features were identified and included: linear alignments, mounds, enclosures, sinkholes, cairns, modified outcrops, platforms, a possible hearth, historic wall segments, an irrigation ditch, concrete cistern and stone cattle tank. This survey re-identified 5 sites recorded by Bishop Museum (Haun 1991): Sites 50-80-08-1718, -1719, -1720, -1723, and -1726.
Nakamura et al. 1993	Makakilo, Honouliuli	Archaeological Inventory Survey	Survey of the 87 acre project area documented one historic site and a portion of the Ewa Plantation irrigation system.
Hammatt 1994	Honouliuli, Estate of James Campbell	Burial Treatment Plan	Preservation of burial in place within burial cave.
Hammatt et al. 1994	Barbers Point Harbor	Archaeological Inventory Survey	This 56.5-acre survey associated with the proposed Harbor Expansion project identified 37 sites including habitation, sinkholes, mounds, walls, historic occupation sites. Test excavations were conducted at 21 features. Radiocarbon dating was also performed.
Kaneshiro and Schilz 1994	Barbers Point, Naval Air Station	Review of Previous Archaeological Survey	Provides recommendations to the management of cultural resources.
Tuggle and Tomonari-Tuggle 1994	Barbers Point, Naval Air Station	Summary and Assessment of Cultural Resources, Inventory Research Design	Findings of previous studies summarized.
Davis et al. 1995	Barbers Point, Naval Air Station, Deep Draft Harbor	Archaeological and Paleontological Investigations	This study identified 19 sites.
Dye 1995	Barbers Point, Naval Air Station, Nimitz Beach	Inadvertent Discovery of Human Remains	Partially exposed cranium and cultural deposit were recorded in a dune at Nimitz Beach and make up part of Site 2220. Radiocarbon dating returned a date of 270 +/-110 BP. Nearby was a single, flexed burial.

Table 1. (cont.)

Author and Year	Location	Work Completed	Findings
Franklin and Goodfellow 1995	Ewa Marina	Archaeological Data Recovery	Investigations consisted of 92 test units in 67 features in 22 sites, radiocarbon dating, pollen, and macrofloral analyses were also performed.
Jourdane 1995	"Paradise Cove," Honouliuli	Inadvertent Discovery of Human Remains	The burial of at least one individual was identified during excavation for a gas line trench.
Tuggle 1995	Barbers Point, Naval Air Station	Archaeological Inventory Survey	Within an approximately 60 acre area, 274 features were identified, with 33 features within 5 sites having been previously identified within or adjacent to the current study. Feature types consisted of mounds, enclosures, c-shapes and modified sinkholes attributed to the pre-Contact and early post-Contact periods.
Wulzen and Rosendahl 1995	West Loch, Barbers Point and Kaneohe	Archaeological Assessment	This report recorded 19 sites (28 features) which were all military related. No state site numbers were assigned
Corbin et al. 1996	Laulaunui Island and Fishpond	Field Reconnaissance	The report concludes Laulaunui Island and Fishpond has potential to be used as an educational site. It also notes that much work would be needed to restore the area for use.
Schilz and Landrum 1996a	Barbers Point, Naval Air Station	Archaeological Test Excavations	Conducted at the Shipboard Electronic Systems Evaluation Facility (SESEF), no historic sites were encountered.
Schilz and Landrum 1996b	Barbers Point, Naval Air Station	Archaeological Monitoring Report	During subsurface excavations, the burial of a Polynesian male was encountered.
Spear 1996	Kapolei	Cultural Resources Review	No sites were encountered as land was previously utilized as for sugar cane cultivation.
Trembly 1995	Barbers Point, Naval Air Station	Osteological Report	This report recorded the inadvertent discovery of a human burial encountered exposed on a sand dune. This pre-Contact burial is believed to be a young child (2-3 years old) and was recorded as Site 2220.
Wickler et al. 1996	Barbers Point, Naval Air Station	Cultural Resource Inventory	Within a 59-acre area, this study mapped and tested 2 Hawaiian site complexes and included detailed mapping of 22 additional sites which consisted of residential <i>kauhale</i> sites with associated agricultural features, historic military sites, early 20th c. sites.
Hammatt 1997	Pu'uloa, Honouliuli	Archaeological Inventory Survey	Survey of this 0.8-acre parcel did not reveal any archaeological sites.
Hammatt and Chiogioji 1997	Honouliuli	Archaeological Reconnaissance Survey	Survey of a 231.4-acre corridor did not directly impact the structures of the 'Ewa Villages Historic District or the O.R.&L. Railway. No further archaeological work was recommended.

Table 1. (cont.)

Author and Year	Location	Work Completed	Findings
Jensen and Head 1997	Pu'uloa, Honouliuli, Waipi'o, Waikele	Archaeological Reconnaissance Survey	During this survey of the Naval Magazine Lualualei NAVMAG-West Loch, 281 sites were recorded within the 1,483-acre area.
Rosendahl 1997	Ewa Marina, Honouliuli	Archaeological Monitoring Report	Records the monitoring of the grubbing and grading activities in the area of the wetlands and the flagging of specified sites for preservation.
Tuggle and Tomonari-Tuggle 1997	Barbers Point, Naval Air Station	Archaeological and Cultural Synthesis	Provides background research of previous archaeological and cultural studies within Barbers Point Naval Air Station and also provides framework and research design for an inventory.
Dega et al. 1998	University of Hawai'i, West O'ahu Campus	Archaeological Inventory Survey	No traditional sites were recorded during this 1,000-acre survey, however, present were portions of the Waiahole Ditch System.
Goodfellow et al. 1998	West Loch Estates	Archaeological Data Recovery	Subsurface excavations consisted of: 38 test units, 250 backhoe trenches, and 6 pollen cores which documented 68 subsurface features. Burials encountered were disinterred.
Wulzen and Rosendahl 1998	Barbers Point, Naval Air Station, Nimitz Beach	Archaeological Boundary Assessment and Limited Data Collections	A total of 59 shovel tests were excavated along Nimitz Beach and identified 5 distinct, discontinuous horizontal site areas with subsurface deposit.
Hammatt and Shideler 1999	Waimanalo Gulch	Archaeological Inventory Survey	Within the 122.7-acre area, remnants of Battery Arizona and modern rock shrine were found outside of expansion area, but within landfill property.
Magnuson 1999	Farrington Highway	Archaeological Reconnaissance Survey	Associated with the Farrington Highway Expansion between Golf Course Road and Ft. Weaver Rd. Six bridges were identified, none of them considered significant.
McDermott et al. 1999	Kalaeloa	Archaeological Data Recovery	This project examined archaeological sites within the 56-acre Barbers Point Harbor Expansion Area, focusing on the temporal use of traditional habitation sites and the relationships between settlement and avifaunal extinction.
Beardsley 2001	Barbers Point, Naval Air Station	Intensive Archaeological Survey and Testing	This study investigated 63 sites, as recommended in a previous study by IARII (Tuggle and Tomonari-Tuggle 1995). A total of 254 test units were excavated and "confirmed prehistoric Hawaiian occupation and use within the area of Naval Air Station Barbers Point."
Ostroff et al. 2001	Pu'u Kapolei/Fort Barrette	Archaeological Inventory Survey	Survey of this 23-acre parcel identified historic structures associated with Fort Barrette, as well as a mound and petroglyph.

Table 1. (cont.)

Author and Year	Location	Work Completed	Findings
Tulchin et al. 2001	Honouliuli Gulch	Archaeological Inventory Survey	Associated with the proposed 'Ewa Shaft Renovation Project, this survey identified one new site, Site 6370.
Wolforth 2001	'Ewa Plain to West Loch	Archaeological Report	Wolforth utilizes the pre-Historic archaeological record, which spans over 6,000 years, to examine the changing shoreline at West Loch of Pearl Harbor. Identified and delineated buried pondfields across the Honouliuli Stream delta. One habitation site (Site 3321) was recorded and subsurface excavations were performed.
Davis and McGerty 2002	Honouliuli to Mānoa	Archaeological and Cultural Assessment	Assessment along bus rapid transit corridor.
Magnuson and Tomonari-Tuggle 2002	Honouliuli, Hoae'ae, Waikele, Waipio, Waiawa, Waimano	Historical and Archaeological Assessment	Assessment associated with the proposed Waiau Fuel Pipeline
Sinoto and Titchenal 2002	Barbers Point, proposed Desalination Facility	Archaeological Inventory Survey	This survey identified three new archaeological sites.
McIntosh and Cleghorn 2003	Ewa Gentry Makai Development	Archaeological Survey	No new sites were identified within the 284 acre parcel.
O'Hare and Hammatt 2003	Bathhouse at Kalaeloa Campsite, Nimitz Beach	Archaeological Assessment	No intact cultural deposits or burials were encountered. However, "intact yet discontinuous" cultural deposits are located west and east of the area of study suggest original cultural deposits and burials may exist in central area of Nimitz Beach, near area of study.
McDermott et al. 2006	Malakole Rd. and Kalaeloa Blvd.	Archaeological Inventory Survey	Inventory of 345 acres associated with the proposed Kapolei Harborside Center revealed three previously identified historic sites (plantation-era drainage channel, and O.R. & L. railroad right-of-way) and three unrecorded sites including pre- and post-Contact stacked stone walls, mounds and enclosures, and sinkhole features.
Cleghorn and Kahahane 2008	Yorktown, Hancock and Bunker Hill Streets	Archaeological Assessment	Negative findings.

Table 1. (cont.)

Author and Year	Location	Work Completed	Findings
Dye et al. 2008	Pearl Harbor National Wildlife Refuge, in Waiawa, Honouliuli and Kalaeloa	Historic Properties Assessment	No historic properties recorded.
Pacific Legacy 2009	Yorktown Road (within area of former Barbers Point, Naval Air Station)	Monitoring Report	During construction, three “potential sinkholes” were encountered, as were foundations of a late-historic military structure.
Tome and Spear 2010	Kalaeloa Airport (within area of former Barbers Point, Naval Air Station)	Monitoring Report	Negative findings.
Gosser et al. 2011	Saratoga Ave. and Malakole St.	Supplemental Archaeological Inventory Survey	Survey of 80.5 acres encountered 16 sites, four of which were previously identified. Thirteen sites which were previously known were not located. They are believed to have been destroyed during grubbing and grading activities.
Hammatt and Shideler 2012a	Coral Sea Rd. intersections and Roosevelt Ave. at Philippine Sea Rd.	Field Inspection and Literature Review	Within five project areas totaling less than 1 acre, no historic properties were found. Heavy disturbance was noted.
Hammatt and Shideler 2012b	Hawaii Army National Guard Kalaeloa Facility	Archaeological Assessment and Cultural Resource Assessment Survey	No surface archaeological remains found within the 43.6-acre project area. The ground surface consisted mostly of previously graded limestone hard pan.
McElroy and Alison 2013	Current Project Area	Archaeological Inventory Survey	Survey of 43 acres revisited one previously documented site, consisting of 17 features and identified ten new features of the site.



Figure 13. Sites identified by Haun (1991:33). Later annotations presented as found in the SHPD library copy of the report.

Pre-AD 1000 – During this period political organization of the islands consisted of small chiefdoms. Temporary habitations were located in resource rich areas. Permanent settlements were clustered around prime agricultural land; these prime agricultural lands were probably located in well-watered valleys. For the ‘Ewa Plain, this means that only temporary habitations should be found in the project area, located to exploit rich marine resource areas and possible to exploit bird populations. Permanent settlements might have been established in the Honouliuli floodplain.

AD 1000 to 1300s – The political organization of the island coalesced into three independent districts: Greater ‘Ewa, Ko‘olau and Kona. Temporary settlements were established for the first time in inland garden areas, associated with dryland agriculture; permanent habitation expanded into new areas. For ‘Ewa, the Honouliuli floodplain would have been the focus of permanent habitation. Settlement in the project area focused on exploitation of marine resources, but was also associated with permanent inland settlement.

AD 1400 to 1500s – Full development of class stratification occurred during this period, together with the unification of the entire island under one chief. Permanent habitations expanded in all areas; temporary habitations in inland garden areas were replaced by permanent habitations. For the project area, permanent habitations, possibly associated with rectangular enclosures, developed.

AD 1600 to 1778 – District chiefs fought for control over the resources of the islands. For ‘Ewa, the population density was still concentrated on the irrigated Honouliuli Valley floodplain. Other population concentrations occurred around Pearl Harbor and at the base of the Wai‘anae Range. Scattered permanent habitation in the project area, possibly on a seasonal basis, or only in years of high rainfall, might have also occurred.

Post-Contact – Scattered Hawaiian occupations continued across the ‘Ewa Plain and in the project area until the mid-19th century. In the later historical period, populations were low and consisted of scattered families with habitation sites along the coast for marine exploitation and inland houselots with possible walled agricultural areas.

Summary of Background Research

Mo‘olelo, historic literature, and archaeological investigations help to paint a picture of traditional and historic land use of the Kalaeloa region, showing that this area was once a land rich in both natural and cultural resources. *Mo‘olelo* and *‘ōlelo no‘eau* reveal a place blessed by the gods, abundant in natural resources of the land and sea. Known as an *ali‘i* stronghold, as well as a vacationing spot of the royalty, Honouliuli was a significant *ahupua‘a* of importance. Previous archaeological studies express the complexity of Hawaiian settlement of the area through the diversity and range of site types, which include modified sinkholes utilized for habitation and burials, religious sites such as *heiau* and *ko‘a*, agricultural sites, walls, mounds, enclosures, *iwi kupuna*, as well as the remains of extinct animal species. Also unique to this area are the historic resources associated with cattle ranching, sugar and sisal plantations, transportation and military use.

Site 1725 is located on the current subject property. It consists of 27 features, which include three platforms, one terrace, six cairns, four wall alignments, two u-shaped walls, three single enclosures and an enclosure complex, two modified sinkholes, two c-shaped structures, and three mounds. The site was described as a traditional to early historic multi-use complex, with functions including habitation, agriculture, burial, and historic ranching.

ETHNOGRAPHIC SURVEY

As we all know, there are some things that cannot be found in the archives, in textbooks, or at the library. It is here, through the stories, knowledge and experiences of our *kama'āina* and *kūpuna*, that enable us to better understand the past, in order to plan for our future. With the goal to identify and understand the importance of, and potential impacts to, traditional Hawaiian and/or historic cultural resources and traditional cultural practices of Kalaeloa, ethnographic interviews were conducted with community members who are knowledgeable about the area.

Methods

This ethnographic study was conducted through a multi-phase process between May 2013 and August 2013. Guiding documents for this work include The Hawai'i Environmental Council's Guidelines for Assessing Cultural Impacts, A Bill for Environmental Impact Statements, and Act 50 [State of Hawai'i 2000]. The initial phase consisted of consulting community members to identify individuals interested and qualified to participate in the study. The next step included conducting the oral history interviews, transcribing the digitally recorded interviews, analyzing the oral history data, and presenting this data in a written report. Personnel involved with this assessment include Windy McElroy, PhD, Principal Investigator of Keala Pono Archaeological Consulting; Dietrix Ulukoa Duhaylonsod, BA, Ethnographer/Transcriptionist, and Mina Elison, MA, Researcher.

Consultants were selected because they met one or more of the following criteria: 1) was referred by Keala Pono Archaeological Consulting or Mana Elua; 2) had/has ties to the project area or vicinity; 3) is a known Hawaiian cultural resource person; 4) is a known Hawaiian traditional practitioner; or 5) was referred by other cultural resource professionals. Four individuals were identified and participated in the current study. *Mana'o* and *'ike* shared during their interviews are included in this report.

Site visits were conducted with consultants who were interested in visiting the project area. Offering consultants the opportunity to become familiar with the current state of the subject property, the purpose of visiting the project area is to facilitate the sharing of *'ike* and *mana'o* regarding cultural heritage, sites, and practices specific to the parcel. These site visits can also result in additional recollections, descriptions of historic land use, as well as personal reflections. Two consultants visited the subject property, Glen Kila (with nephew Chris Oliveira) and McD Philpotts. Notes of their visits are summarized in the Consultant Site Visits section.

Interviews were taped using a digital MP3 recorder. During the interviews, consultants were provided with a map or aerial photograph of the subject property, the Agreement to Participate (Appendix A), and Consent Form (Appendix B) and briefed on the purpose of the Cultural Impact Assessment. Research categories were addressed in the form of open questions which allowed the consultant to answer in the manner with which he/she was most comfortable. Follow-up questions were asked based on the consultant's responses or to clarify what was said.

Transcription was completed by listening to the recordings and typing the relevant information which was provided. A copy of the edited transcript was sent to each consultant for review, along with the Transcript Release Form. The Transcript Release Form provided space for clarifications, corrections, additions, or deletions to the transcript, as well as an opportunity to address any objections to the release of the document (Appendix C). When the forms were returned, transcripts were corrected to reflect any changes made by the consultant.

The ethnographic analysis process consisted of examining each transcript and organizing information into research themes, or categories. Research topics include personal connections to Kalaeloa, the natural landscape, traditional sites and land use, traditional practices and beliefs, *mo'olelo*, settlement of Kalaeloa, subsistence, burials and funerary practices, *ali'i* presence in the area, ranching, military activities, effects on cultural resources, and recommendations. Edited transcripts are presented in Appendices D–G.

Consultant Background

The following section includes background information obtained from each consultant during the interviews. This includes information on the consultant's *'ohana*, where the consultant was born and raised, and what the consultant's connection is with the project area. The consultants are Shad Kane (Figure 14), Glen Kila (Figure 15), McD Philpotts (Figure 16), and Nettie Tiffany (Figure 17).

Shad Kane



Figure 14. Photograph of Shad Kane.

Highly active in the preservation of Hawaiian cultural heritage and practices, Shad Kane shared his *mana'o* and *'ike* of the Kalaeloa area, Honouliuli, and 'Ewa *moku*. Kane was born in 1945 and spent his childhood in Pearl City, Wahiawā, Kalihi and also lived in Chicago for a few years. Returning to Hawai'i to attend Kamehameha Schools, Kane lived in Waipi'o Acres in Mililani and also Salt Lake. After a few years at Utah State University, Kane joined the U.S. Navy, and later became a police officer in the Honolulu Police Department. In 1976, Kane earned his undergraduate degree in business from the University of Hawai'i, and a Master's degree in Public Administration in 1981 from Central Michigan University.

In the late 1980s to early-1990s, prior to the closure of Barbers Point Naval Air Station in 1993, Kane had horses stabled at facilities on the base. Riding his horse within various areas of Kalaeloa, Kane became "very aware of structures" and extant Hawaiian cultural and historic sites. He was active in the creation of Kapolei Hawaiian Civic Club which was formed to be a Hawaiian

“presence” during a time of great changes in Kalaeloa: the closure of O‘ahu Sugar, a shift in Campbell Estate’s endeavors, and the closure of Barbers Point Naval Air Station (which established the Base Realignment and Closure [BRAC]). Kane has served as a cultural advisor and consultant for numerous developments, studies and projects and is currently active with the Kalaeloa Heritage Park. He also recently authored the book, *Cultural Kapolei* (Kane 2011).

Glen Kila

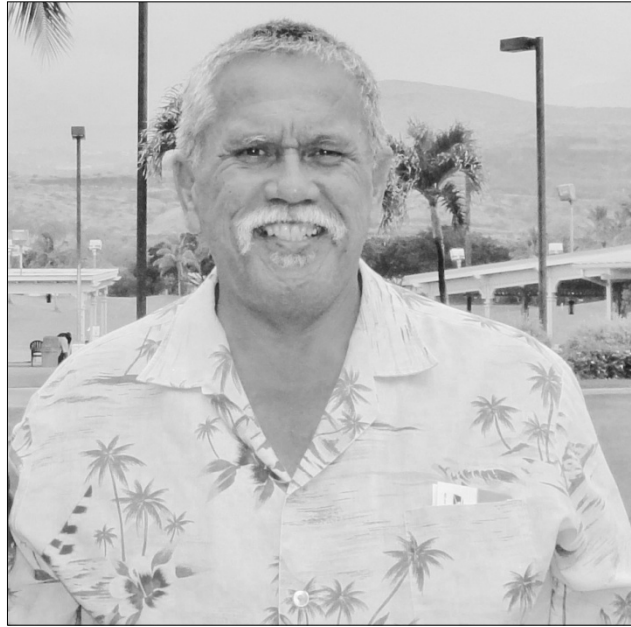


Figure 15. Photograph of Glen Kila.

Glen Makakauli‘i Kila has ancestral ties to the lands of Wai‘anae, within which extended to the area of Honouliuli. ‘*Ohana* with the family name of Haulele lived at Pu‘u Palailai near Honokai Hale. His ancestors were also the *ali‘i* of the Manuia clan. Kila became acquainted with Kalaeloa while pole fishing and diving off the waters of this coast, and also acquired significant knowledge of cultural sites, traditional beliefs and practices from his *kūpuna*. In the 1970s, Kila was selected as a *haumana* of Aunty Lei Fernandez, the *kahu* of the area. It was during his study with Aunty Lei, where Kila visited many of the cultural sites of Kalaeloa, and also participated in numerous projects with renowned scientists who were studying the unique flora, fauna and cultural resources of Kalaeloa.

McD Philpotts



Figure 16. Photograph of McD Philpotts.

McD Philpotts was born in 1958 and grew up at what is now Paradise Cove and Lanikūhonua. His great-grandmother was Kamokila Campbell, noted authority of Hawaiian music and *hula*, territorial senator, and one of the most prominent women in Hawai‘i during the mid-1900s. Campbell used her home at Lanikūhonua to preserve and promote the culture of Hawai‘i. The site is now run by a non-profit organization whose mission is to perpetuate Hawaiian culture at this storied location. This is where McD Philpotts grew up until the late 1960s. In 1980, after returning from college, Philpotts and his wife moved *mauka* to Palehua and raised their boys, who are now the 6th generation on ‘Ewa Ahupua‘a.

Nettie Tiffany



Figure 17. Photograph of Nettie Tiffany.

Lynette Pualani Fernandez Tiffany, or Aunty Nettie, was born on the island of O‘ahu, and went to school at St. Francis, a Catholic school in Honolulu. For her last year of high school she moved to Kailua and went to Kailua High School and graduated from there. She says, “It’s my mother who was very much involved in Hawaiian culture when it wasn’t fashionable to be Hawaiian. I was fortunate that my mother and my grandmother, they retained that.” Aunty Nettie and her mother, the late Aunty Lei Fernandez, are recognized cultural authorities for the ‘Ewa region, particularly for the Lanikūhonua area.

Topical Breakouts

A wealth of information was obtained through the oral interviews. This is organized in the following sections by topic. Topical breakouts include personal connections to Kalaeloa, pre- and post-Contact Kalaeloa, and Kalaeloa today. Each section is further divided by more detailed topics to include subjects such as traditional subsistence activities and potential effects the proposed project may have on cultural resources and/or access to such resources. Quotes from the interviews are provided below for each topic.

Personal Connections to Kalaeloa

So during that period in time, pre-base closure, I spent a lot of time riding my horse in different areas within Kalaeloa, very aware of structures, not so much in the area we’re talking about right now, but structures similar to structures that may have been in the area of the Kalaeloa solar farm. So I was kind of familiar, somewhat familiar to those during the latter part of the 1980s, early 1990s, prior to base closure. [Shad Kane]

So the civic club was actually established, the Kapolei Hawaiian Civic Club was established by the civic clubs in an effort to establish a cultural presence in this new area in light of the many changes: one was the shutting down of O'ahu Sugar, Campbell Estate moving to a different direction in development, and Department of Defense shutting down a number of bases to include Barbers Point. So what it did is that it allowed the civic clubs to play a role in the restoring of not so much the cultural landscape, but to preserve what was left of a cultural landscape and restore the ancient Hawaiian names rather than allowing foreign names to become a part of this new city. [Shad Kane]

One of the first things that I was given was that the civic club again made it to play a part in this whole base closure and evolution within the area. So on the federal level they established BRAC which is the Base Realignment and Closure which provided money for closures. On the state level, the State of Hawai'i established the Barbers Point Redevelopment Commission, and they had monthly meetings within Kalaeloa. Kapolei Hawaiian Civic Club asked me at that time if I would sit on one of their task forces. The task force I was asked to sit on was the Public Facilities and Parks and Recreation Task Force as part of that whole base closure. So I represented the Kapolei Hawaiian Civic Club in that whole process of base closure. What that basically did, it put me in touch with different archaeological firms. It put me in touch with all the stakeholders involved in that process to include community people, our legislators, Hawaiian Home Lands, a whole bunch of different federal agencies. So it allowed me to establish a relationship with different archaeological firms and the military navy region. [Shad Kane]

When we talk about Wai'anae today, people define Wai'anae as from Nānākuli to Ka'ena Point. But in the traditional *kupuka'aina* or aboriginal district, the *moku* is from Ka'ena Point to Honouliuli. We got our *moku* district boundary from our *ali'i* of the Manuia clan. [Glen Kila]

As a fisherman, my father used to go pole fishing and dive off shore along Kalaeloa. More importantly is that in the 1970s, I was selected by Auntie Lei Fernandez, who was the *kumu* of the Kalaeloa area to be her *haumana*. She was the most knowledgeable person about the history and the religion of the area. I was her only student that she taught the traditions of the Wai'anae Moku. [Glen Kila]

I'm very familiar about the Kalaeloa places because I went with my *kūpuna* there. [Glen Kila]

I'm part-Hawaiian, and I was born here in the Territory of Hawai'i in 1958. I grew up at what is now Paradise Cove and Lanikūhonua. My 'ohana is Campbell. So Kamokila Campbell was my great-grandma, and that's where I grew up until the time that we lost the lease there in the late '60s. 1970, we got this place up at Palehua. 1980, I came back from college, and my wife and I have been here since 1980. We've raised our boys here. Our boys are now the 6th generation on this 'Ewa Ahupua'a. [McD Philpotts]

A lot of the information was given to me by my mother [Auntie Lei Fernandez]. She spent a lot of time with elders from the area, and of course, also shared from my grandmother, the history. And she's the only one that I really learned quite a bit from. [Nettie Tiffany]

The Past: Pre-Contact Kalaeloa

The consultants have a deep understanding of Kalaeloa's past and shared interesting information about the pre-Contact era. Topics include the natural landscape, archaeological sites and land use,

traditional practices, *mo'olelo*, settlement of the region, subsistence activities, and burials and funerary practices.

Kalaeloa's Natural Landscape and Environment

That area was known, not only for the sun, but also for the winds that come from the mountains above. [Glen Kila]

Kalaeloa's uniqueness is the clouds' pattern. We're taught by our *kūpunas*, especially studied by my nephew Chris Oliveira who is a brilliant Hawaiian *kupuka'aina* observer. In growing up, he used to observe the clouds in Kalaeloa. The wind pattern will take the clouds to the Wai'anae mountains, and would bypass Kalaeloa. So Kalaeloa is a very dry and arid area because of the air current. The wind current blows all of the wet, rain-laden clouds away from the area. So the environment over in Kalaeloa is very dry except during what we call the Kona weather. [Glen Kila]

...This area was completely unique in terms of its geology. For example, Hawai'i Island, you have basalt and lava rock on top of coral. Same situation in Maui, you got basalt on top of coral. In 'Ewa, you have coral on top of basalt, nowhere else. At other points in history, other places may have had that condition, but in our point in time as contemporary people, this is unique for our time. And the significance of that is understanding the nature of water. The water passes over coral or through coral. Coral is porous. As fresh water passes over coral, it dissolves the limestone and creates a whole series of caves and currents. [Shad Kane]

Probably the greatest population of the concentration of this *ahupua'a* was up here at Palehua. But all of the resources to exist out here are spread from the ocean to the top of the mountain. And to me, my *mana'o* is that the key ingredients for life is the one thing that never changes, and that's the *wai*. [McD Philpotts]

So the water in our area travels from the higher elevations, from the Wai'anae Mountains to the shoreline, in the same manner, it travels within a depression hole, you cannot see it. As water travels from the higher elevations, it's carrying all its soils, and as it hits the flat land, Kalaeloa, it deposits all those soils. What it does, the water makes itself known in sinkholes in our area, so anciently it was in sinkholes. So that's what makes this place unique. And again, the water, although you cannot see it, it travels in the same manner, it travels within a depression. And the center of the river, although you cannot see it, is your clean water. So within Kalaeloa, within the area we're talking about today, although there may not be any today, there would have been water there. [Shad Kane]

The land was dry, but it had lots and lots of fresh water underneath. [Glen Kila]

It was all coral, what we call *papa* or reef. And the livelihood came from these small sinkholes that had water. I remember back in the '70s that my students and I found a large water cavern, and we jumped inside, and we swam. We estimated the depth of that fresh water to be 30 feet deep. So that's an important geological feature because it has lots of underground water. When we went into these sites, we noticed we could find water just below the surface. And this was fresh water that we could drink. The fishermen also used to drink from these water sinkholes as long as there were mosquito larvae in them. [Glen Kila]

I think that this area out here, it wasn't because it had abundant resources that the population came here. It was because there was enough resources and there were other strategic things that made this place desirable to a certain population. The views had a lot

to do with that, you know, this is the place that you can see all the islands. And there's a lot of *mana* here. There's a lot of *mo'olelo*, from Hi'iaka [for example], there's a lot still on the ground up here. There's a school in the area of the *pa*, 40 children, that's written, approximately that number of children were going to the school. So all those things to me seem interesting, to create that picture of what the population looked like, and then looking at the sites around, how did it function. [McD Philpotts]

So you ask...how does this site in pre-Contact system, to this population, how does it fit? I think like, when I saw the shape of the walls and what I think might be a sinkhole that had fresh water, I mean if it doesn't then I don't know how this could be pre-Contact, but my hunch is that it is. I told you, "Oh, ok, here we see the *pueo* again," and everything, but aside from that, there's enough physical stuff on the ground there that I think that it is. [McD Philpotts]

...[Auntie Lei Fernandez] taught Dr. Clay how to propagate the native plants in the area like the '*akoko*. The '*akoko* was *Euphorbia skottsbergii* which was a very rare plant that they were trying to protect. There were a lot of different plants that came from that area. [Glen Kila]

...You can't see the park [Campbell Industrial Park] around you. You have no idea where you are [from within that *kīpuka*]. It's like a little time warp. And the *kiawe* is not an indigenous thing, but still, you're in the wilds in that little environment right there. So in a way, if you can see that those are all around the land, from Barbers Point to One'ula to Honouliuli down here, you know, you can see that there was *kalo*, and you read the history books, you can put the package together. You can see what it is. [McD Philpotts]

Traditional Sites and Land Use

Today, visiting the proposed solar site, I have to say that I think there was many different layers of development, you know, from very recent to, I suspect, pre-Contact. But you know, I don't think it's so evident. But it could be if further exploration of some of the sites were done. [McD Philpotts]

There are archival information that documents, or previous surveys that document some cultural structures on this particular parcel, and in every situation where there's known cultural sites, there's also a history of undocumented sites. So [it] would've been fishing, would've been farming, people living in this particular area all depended on, all structured, the manner in which they lived their subsistence lifestyle was unique in the sense the manner in which water traveled [here]. [Shad Kane]

I'm familiar with that wall [on the property], and I'm actually familiar with other walls in that particular area. And I think at that time when we were having discussions regarding that wall, there was a lot being said that it may have been a cattle wall. So it's really hard for me to say with certainty that it was a Hawaiian wall because there's still that possibility. However the reason why I kind of feel that it's more like a Hawaiian [wall] is because of its association and close proximity to known burials and known cultural sites. When I say cultural sites, I'm talking about house sites. I'm talking about rectangular enclosures, L-shaped, C-shaped structures that were used as temporary structures, house sites. So this wall, and it's typical of every property in Kalaeloa, this wall is actually in association with these cultural structures, so it leaves it open to question. It could be either Hawaiian, or it could be a cattle wall. [Shad Kane]

There were some cattle walls, but most of the walls that you see there we were told to be 'ili walls. 'Ili meaning, boundary walls that were separating different *kauhales* or villages or family units from other family units when clearing the land. [Glen Kila]

Those walls were created prior to cattle [ranching]. It was what we call 'ili walls. In Wai'anae, we do not use the term [*ahupua'a*], at that time, before Kamehameha, we used the term 'ili. 'Ili was an *ahupua'a* in our vocabulary. And so these walls I've seen in Wai'anae ---- including Wai'anae town and in the valley were 'ili walls similar to that in Kalaeloa. Some five to six foot walls called *pa'eke* were constructed to keep cattle in were built but more importantly they were constructed to move rocks away for planting and as boundary walls. When I looked at those walls, I do see that some may have been used for keeping certain animals out just as a deterrent. But we knew that if the cattle ---- wants to jump over, they're going to jump over those low walls. Or cattle will rub their backs against those kinds of walls and knock the walls down easily. So they're just a barrier to let people know this is my property. That came after the Europeans coming to Hawai'i. I see those walls also marking a village. [Glen Kila]

Some of those unusual features that you see there were, to my understanding, from the *kūpuna*, used for worshipping, for burials, and marking places where water was located. And where the potable waters were, that's where they built the houses or their religious structures. We call those house foundations "*paepae*" in Wai'anae. So when we look at these mounds, we see *paepae* or house foundations or burial sites. The sites can be researched but we would like the people who study there, not to go into those burial grounds. We know those sites are burials even if we don't see what's under the stones. We know that's a burial and we want that to be respected. [Glen Kila]

Water was more plentiful up here [in Palehua]. We have a lot of springs and perched water up here. On the 'Ewa Plain, you know, water isn't like in Kane'ohe. So, you know, knowledge is key. And there is water. And I think perhaps the one sinkhole that sort of looks like it's been filled with trash out there, to me looks like once upon a time it was deep enough to be a dangerous situation, they tried to cover it, but it looks like it had an opening in the center of it, and that it might have actually served as a well or something back far enough. So if we go back to pre-Contact and how that might be part of the population out here on the 'Ewa Plain, if that once was a fresh water resource, and we have other evidence in the immediate area actually very close, you know, going towards the harbor and also going towards the naval base area, there's fresh water. So that could have been a fishing site. And it looked like that one structure was a house site, the geometry of the three walls anyway, look like that, and that's only a few yards from that sinkhole we're talking about. [McD Philpotts]

...The significance of a house site means people lived there. If people lived there, that means they had water. So the typical situation would be, people needed drinking water, so the middle of that river, that you cannot see it, that's where they would place their water sinkholes because that would be your cleanest water. They would not be drinking standing water. [Shad Kane]

We were taught that wherever there is a concentration of features, you must have water in those kind of dry areas, like Kalaeloa. So when we saw the walls, the first thing I looked for was the water source. Later Ulukoa took us to the place where there was an old well feature. We believe they built the well over the same traditional water source in the area. These water sources and features need to be protected because they are remnants of the village. [Glen Kila]

So within Kalaeloa, within the area we're talking about, there may have been agricultural sinkholes on those banks that would determine the manner in which they lived their

subsistence lifestyle, the type of foods they grew, the manner in which they lived their lives, the things that they needed to clothe themselves with, was not on the surface like any other place in Hawai‘i. It was within sinkholes. What I’m sharing with you, it’s being supported by other properties within Kalaeloa. The property that we’re talking about, I’m not sure if there’s still cultural structures there, but according to documented archaeological surveys, that there once was cultural structures in that area. [Shad Kane]

I also know that those sinkholes held a lot of history and a lot of rare *iwi* or skeletal remains of animals ---- bats, birds, like the *Chaetoptila*, which is a flightless bird called the *kioea*. We also saw the *Thambetochen*, which is the flightless duck or goose, and the crow, [which is] the ‘*alalā*, and all sorts of other animals that could should be left in place in the sink holes as a repository place for these animal remains. [Glen Kila]

...We do know that large numbers of cultural structures have been destroyed. And most of the destruction has actually been happening since base closure. So since 1999, there’s been more cultural structures destroyed within Barbers Point Naval Air Station than anywhere else in ‘Ewa, almost all of ‘em been right in there. And, you know, it’s hard to really criticize ‘cause all too often the sad thing is that in most cases these guys when they did it, they really didn’t know what was in there. So that’s why it makes it important for people such as us, Ulukoa, to be *maka‘ala*, to kinda help them, because the thing is, beneath all these *kiawe* trees, there’s a cultural landscape, and there’s cultural structures in there. If you stand out in the street on Coral Sea Road, and you look into the *kiawe* bush, you would never imagine what’s underneath all that *kiawe* trees. So it’s hard to be totally critical, but then again there’s situations where the process has been violated with respect to agencies to keep their cost down on projects, and they just move on different things without the proper permits. [Shad Kane]

So on the right hand side, opposite the racetrack, is a 77 acre parcel [Kalaeloa Heritage Park]. It also includes the Kualaka‘i salt pond. The Kualaka‘i salt pond was used by this village in this area. There’s over 200 structures and archaeological sites in there, and it’s all, a lot of it is houses, all house sites. Right on the 3 acres that we’ve cleaned up right now there’s seven houses, two is in excellent shape, the rest, the other five is kind of remnants of a house site. So you can actually see the structure, but it’s not as well-defined as the two of ‘em. So substantial numbers in that area. So it’s along that road. [Shad Kane]

I remember as a child seeing trucks piling up the stones. There would be maybe like a circle of rocks. I never really got close when they were moving things about, I don’t know, but it could have been a place to pray, it could have been a *heiau*, but they were moving it, just piling it up, so they could plant sugarcane. [Nettie Tiffany]

There’s always that possibility. There’s always that one *iwi* that was left there from the old days. There’s always a gathering spot for praying. There’s also a gathering spot for healing, but, as I said, so much has been disturbed that it’s very difficult to say, “Oh it’s right here,” or, “It’s right there,” or, “Please don’t do this because under here is where they would come for the healing,” or maybe, “Watch at night for the fireballs.” [Nettie Tiffany]

Traditional Practices and Beliefs

When we talk about Wai‘anae today, people define Wai‘anae as from Nānākuli to Ka‘ena Point. But in the traditional *kupuka‘aina* or aboriginal district, the *moku* is from Ka‘ena Point to Honouliuli. [Glen Kila]

There's a lot of records that tell us that that Kalaeloa is part of Wai'anae, such as the Catholic Church. The Wai'anae Catholic Church records were held where the Bishop lived in 'Ewa (Honouliuli). I am quoting this because I want to be sure that everyone knows that Kalaeloa was connected to the families of Wai'anae. [Glen Kila]

For the *kupuka'aina* families, the sun was very important, as well as the rains and life. Our religion was based on Kanenuiākea, the Creation God. We lived by the seasons, and we looked at nature. The specific place in Kalaeloa that we visited was part of a place of learning near Pu'u o Kapolei. Near the site was the sun *heiau*, in which Kanenuiākea, was worshipped as the sun deity. Kapolei was selected because the rising and setting of the sun could be tracked from Pu'u o Kapolei. We learned this from our *kūpuna*, my parents, grandparents, from Auntie Lei [Fernandez], and all the *kūpunas* that came from Kalaeloa. [Glen Kila]

Mo'olelo Associated with Kalaeloa

...There are certain things that were told to me by my mother, and sorry, I can't share them. [Nettie Tiffany]

Well Kapolei, that was traditionally the home of Kapo, which was Pele's sister. And also it was the home of Kamapua'a's grandmother. The reason for that is because of the flooding in the Kapolei area. Kamapua'a was in Wai'anae, as the *'aumakua* that brought in the rains, the heavy rains that destroyed land. Like Pele that destroyed land, she also rebuilt the land with the volcano lava flows. Kamapua'a too, destroyed many of the *lo'is*, but also brought in soil down from the mountainside and most of all the valuable fresh water. So that was a tradition in Wai'anae in understanding the seasons, that we call "*ka'ananiau*," "managing the beauty of time." This was practiced as part of our Kane religion that recognizes the seasons, the drought, sun time, the hot time, as well as the wet time or the wet season. [Glen Kila]

One special note too is that some of the plants, such as a special type of *kalo* was brought over by our family from Tahiti specifically for Pele. This taro was grown in Honouliuli when they brought it over during the migration time. Some of these plants were transplanted in Wai'anae Valley for safe keeping by the families who knew the genealogy of this taro. The *'ulu* was also transplanted from Honouliuli. There's lots of history that is still part of our tradition in Waianae. [Glen Kila]

Settlement of Kalaeloa

There's a strong Tahitian association within our geographical area. Why is it so strong? I don't know if I can answer that question. All I can say is that I know there's a strong, nowhere else in the Hawaiian Islands, you not going find it on Kaua'i, you not going find it on the Big Island, you going find 'em only right here in 'Ewa/Honokai Hale/Makakilo, this area, this the only place you going find this Tahitian association... [Shad Kane]

What it does is that amongst the recent surveys they were able to get a carbon-14 date from 1400 associated with these Tahitian structures. I should also say that Hawaiian dry stacking, they take stones, primarily basalt, and you lay 'em horizontally or flat. Tahitian dry stacking, what they did is that they integrate a lot of tall upright stones, so they use upright stones, and they kind of stand 'em up, wide at the bottom, narrow at the top, and they just filled it. So you find that repeated in every structure, you find 'em in their walls, you find 'em in their house sites, you find 'em in their *ahus*, all aspects of construction, you find this integration of Tahitian. So 1400, plus or minus 150 years, tells us that within this Hawaiian-Tahitian landscape, it could be as old as 1250 to as recent as 1550.

And most of us struggle, getting a sense on how long these people were traveling back and forth between the southern latitudes and the northern latitudes. We're all aware that the major Tahitian migrations occurred, on this island O'ahu, around 400 AD. The big question mark is how long did they travel back and forth. Kalaeloa has that answer. [Shad Kane]

And one of the stories associated with Kalaeloa regarding this unique Tahitian aspect is associated with a chief by the name of Kaha'i. The name was Kaha'iaho'okamali'i, he was the son of Ho'okamali'i, he was the grandson of Mo'ikeha. Mo'ikeha was the grandson of Maweke. Well, Kaha'i in the traditions associated with Kalaeloa, Barbers Point Naval Air Station, is referred to as Tahitian although he was born in Hawai'i, born in Hawai'i, five generations, he was not Hawaiian. He called himself Tahitian. So what that tells us is that perhaps as recent as 15—1600, that people still had that connection with the southern latitudes. So they were not calling themselves Hawaiians, they were calling themselves other than Hawaiians. [Shad Kane]

We need *kumu hula's* from our *'āina* to teach our kids about the history and traditions of the sun and about the elements which we again call *ka'ananiau*. This was the land system that we had here in Wai'anae and Kaua'i, which is different from the *ahupua'a* culture. People need to understand that the *ahupua'a* culture from the Big Island had a more stable environment because they had a larger land mass in which people could reside in the area or *kīpuka* for generations. In Wai'anae, we didn't have that *ahupua'a* system because during the dry or *kau* season families moved towards the mountain or down the coast like Honouliuli from Kalaeloa. [Glen Kila]

Traditional Subsistence Activities

Several traditional subsistence strategies were touched upon. These include gathering, agriculture, and fishing.

Gathering Practices

One that Kalaeloa is anciently known for, and I think today to a certain level not everyone, was actually *limu* gathering. And what made this whole area unique, as compared to anywhere else in the Hawaiian Islands, as compared to anywhere else on the island of O'ahu, was *limu līpoa*. This is one of the places where *limu līpoa* was abundant, that's not to say they didn't have 'em anywhere else, but in other places *limu līpoa* was pretty much restricted to just river areas where the river entered the ocean, so in that immediate area you would have *limu līpoa*. Along this whole area, *limu līpoa* thrived, all the way from, probably all the way from Honolulu all the way to Wai'anae, all the way actually to Kahe Point. Once you get around Kahe Point, it was not as abundant, so it was really abundant right in our area. So historically, *limu* gathering in our area was a major manner in which these people sustained themselves. And what it also did is it gave the *'ō'io* a special flavor because of the *limu līpoa* that the *'ō'io* used to feed on. So during this period of transition, the latter part of the 1800s, early 1900s, the price of *'ō'io* that was caught in our area, because of the *limu līpoa*, actually commanded a higher price than *'ō'io* from any other area. [Shad Kane]

In terms of practices, I guess other than what I just shared, that the ancient practice of the *kia manu*, the practice of feather gathering, and all aspects of traditional Hawaiian culture, gathering of the different types of cultural resources, whether it's the gathering of shells, either for decorations, or shell food for eating, all of that had been compromised as we become a more modern people. [Shad Kane]

With respect to practices, for example, there's another example, there's several, for example with respect to feather gathering, amongst the stories associated with cultural practitioners anciently associated with this specific geographical region was that of the *kia manu*. The *kia manu* is the bird-feather gatherer. The manner in which he gathered feathers is different from anywhere else in the Hawaiian Islands. In the traditions, most people are familiar with the *kia manu* gathering feathers by snaring, by trapping birds, by using that sticky - I cannot think of the name - but there's actually a native Hawaiian plant where they used to take the seeds, pods, where there was like a sticky substance, and the *kia manu* would place that sticky substance on a branch where the birds would normally land, so he normally lived out in the forest, but he's very familiar with trees that birds would frequent. So he would actually use this sticky substance. However, in Kalaeloa, his manner of gathering feathers was totally different. And it was based on, it grew out of, the manner in which water traveled in Kalaeloa. And it grew out of its geology. Rather than using these other methods that he may have, but the traditions associated with the *kia manu* makes reference to him smoking. The smoking is the result of him smoking birds within a sinkhole because amongst the birds that he used to smoke was the black bird with the yellow feather, the *manu* 'ō 'ō. So that particular bird used to feed on *noni*. In Kalaeloa, a lot of the *noni* actually grew out of sinkholes. Today, to this very day, in Kalaeloa, there's *noni* growing inside sinkholes. So the birds would actually fly down into the sinkholes, it's actually rooted within the sinkholes, as the *noni* gets big, the branches actually reach for the sun out of the hole, but it's actually firmly planted inside the hole, the *noni*. So the birds would actually fly down into the sinkhole, and the *kia manu* would somehow seal the entrance to the hole with whatever branches and palms, whatever. And he would actually smoke the birds within the sinkhole, to basically, the word they used in English, I don't know what the Hawaiian word was, he dazed 'em. He dazed the birds with smoke. Then he would retrieve the 'ō 'ō, recover whatever yellow feathers he wanted, and release the bird. So it's unique. Nowhere else in the Hawaiian Islands did they smoke birds in the manner the *kia manu* did in Kalaeloa. So that makes it different and unique in the sense of the cultural past associated with the sinkholes in Kalaeloa. [Shad Kane]

Subsistence Agriculture

...Growing up in Wai'anae, one of the things about that area was its lack of water. Water was found in certain water caves that we became familiar with, some caves actually had plants, sweet potato, ti leaves that were grown in the sinkholes and so forth. [Glen Kila]

Fishing

...Fishing was very important because Kalaeloa was a large area that had good fishing like for *kala* and so forth. [Glen Kila]

Burials and Funerary Practices in Kalaeloa

The sinkholes were also burial grounds where I went with our *tutus* to certain sinkholes or caves that held the *iwi* of our *kūpuna*. [Glen Kila]

Within the area that this interview is meant to cover, with respect to what I had access to, on the *mauka* side of Malakole, Wai'anae side of the canal that butts right up against Campbell Industrial Park, the *mauka* side of Malakole just outside the fence-line is the subject property. My knowledge of this area with respect to my participation in the base closure process is that there were substantial both documented and more so undocumented cultural structures within this geographical area to include known burials. [Shad Kane]

Working with the state, we're [Kalaeloa Heritage and Legacy Foundation] leasing a 77 acre parcel in Kalaeloa that cannot be used other than as a heritage park. We've cleaned up just 3 acres of the 77-acre parcel, just 3 acres of the 77 we've claimed. Within those 3 acres were three known burials. Within that three areas we found an additional 4 undocumented burials. That is typical of all the properties in the former naval air station of Barbers Point, to include the Kalaeloa Solar Energy Farm *mauka* of Malakole, Wai'anae side of the canal. So there's a high likelihood, in addition to cultural resources, if they're still there, high potential of burials within that geographical area. [Shad Kane]

The Past: Post-Contact Kalaeloa

Several themes were discussed with regard to Kalaeloa in the historic era. These include activities of the *ali'i*, ranching, and the military.

Ali'i in Kalaeloa

One of the traditions in the area, I was told, was making charcoal and collecting firewood. That was interesting because there are a lot of *kiawe* in the area. I believe that when the French Catholic priests brought in the *kiawe*, the mesquite, we're talking about the 1800s. Lots of wood that was sold or traded by the *ali'is* came from that area as was told to me. [Glen Kila]

I was also taught that historically the *ali'is* also used the beach in the area because the Hawaiians loved the ocean. Especially the *ali'is* who used areas like Kalaeloa for their residence. An example is Lanikūhonua in Ko Olina where King Kakuhihewa built his winter home during the wet season, what we call the *ho'oilo*. They would come there not only to live because it was cool at the time and had lots of fish, but it's because of the surfing. And so our family talks about the *ali'is* coming to places like Kalaeloa, Pōka'i, Wai'anae, Mākua to actually live there during the wet season because of the surfing, and of course because of the food. [Glen Kila]

Ranching and Sugarcane Cultivation in Kalaeloa

...See cattle walls were not used to contain cattle. Cattle walls were used basically to channel cattle in a certain direction when you need to move 'em around, because a wall that size, these walls are not that substantial. These walls are actually very low walls, and like I said earlier, I used to have horses, and I used to push cows around. I used to help different ranchers move their cows from pastures into pens and branding and all that kind of stuff, so I'm very familiar with how cows move when you push 'em. See you gotta push 'em slow because if you spook cows, they'll just start running, and when they start running, there's nothing that'll stop 'em, these walls, the walls are like nothing. So if at all, it would not have been used as an enclosure. If at all, it would have been used to channel cows within a certain area. [Shad Kane]

Now I could understand these kinds of walls in the areas where cattle were transported, so you would push 'em. Even back in the early 1900s, 1800s, you would move cows from pasture to an area you would transport 'em, in our area, very little transporting of cattle during the time period we're talking about. In our area, Campbell established his ranch in Honouliuli, and he established that slaughterhouse in the area that's no longer there, the Kahua Slaughterhouse. During this period in time, they didn't need cattle walls. What they did is that they pushed cattle within the sugar fields, so that the tall sugar actually act to establish lanes for them to push 'em. So they actually pushed cattle within these lanes, so there would not have been any need for one cattle wall because of agriculture in this particular area. The only place they would probably need a cattle wall

is actually in forested areas such as Kalaeloa, so there is that likelihood that it could have been used for. It could have been that because of the proximity of cultural sites within the area we're talking about, it could have been that they dismantled ---- cowboys ---- it could have been that they dismantled cultural structures and used the same stone to create a wall to help channel cows out of the brush, into the cane fields because it was in the cane fields where they actually moved 'em. But they had to get 'em out of the *kiawe* bush into the cane field to get 'em to Kahua. [Shad Kane]

I've seen those kind of walls. They're about, I would estimate about, 3 to 4 feet high. Many archaeologists erroneously identify those kind of walls as cattle walls. Our *kūpunas* would always remind us that in the cattle ranching, you had only a dozen or more cowboys. And to have those dozen cowboys build miles of 4-foot walls is impossible. [Glen Kila]

The area, I was told also had cattle that was raised there. There were a few cowboys in the area. But when they say that the walls are cattle walls to contain the cattle, our *kūpunas* say that they were not cattle walls because the cattle could jump over the walls because they are low walls. [Glen Kila]

[Ranching activities occurred throughout] pretty much all of Kalaeloa during this period now, prior to 1930 because I think the first military activity was the 'Ewa Marine Corps Airfield. [Shad Kane]

So pretty much all of, prior to that time I'm talking about, just prior to this period and prior to military [1930s], pretty much all of Barbers Point Naval Air Station, the cattle was allowed to roam throughout that whole area, and on the slopes *mauka* of what was once Farrington Highway, *mauka* then was all cattle. So they needed to push 'em from Barbers Point, that area, the *kiawe* bush, they needed to push 'em from the forested area of Kalaeloa-Barbers Point, the forested areas of Makakilo-Kalo'i-all of that, they had to push 'em down into the cane fields. Once they got 'em in the cane fields, all it took was one or two cowboys to push 'em through the cane haul road to the Kahua Slaughterhouse. [Shad Kane]

So in more recent times then, it could have been used for cattle because they took the cattle from up here and took 'em down there. Then the feed lot became the feed lot. That was Hawai'i Meat Company that ran their cattle from up here, and they took 'em down there. So I'm curious about that wall. The wall was beautiful, but it looks like it's definitely post-Contact. When was it made, and what was its function? Was it to keep cows going in the direction they wanted 'em going? Or did it get built after the [adjacent] canal to keep things out of the canal? I wonder. The canal was done with modern equipment, it looks like. And so having the kind hand labor to do the wall, it makes me think that maybe that wall existed before the canal. [McD Philpotts]

Well the canal and that long coral wall, they're parallel to each other. So if you just walk down that canal all the way to the ocean, the feed lot was up against the canal and was up against the ocean. So it is that corner that was there. And before it was a feed lot or called a feed lot, it was listed from Campbell's leases to Hawai'i Meat Company. So Hawai'i Meat Company, maybe they always had some kind of a feed lot there, but they might have also been moving their cattle out from down there. I mean the cattle are up here in the *kuahiwis*. The market doesn't come here; the cows gotta go there. So, I worked at the feed lot for a little while. [McD Philpotts]

When the sugar companies moved in, a lot of things were moved about. People, number one, were one of them, and they had to move away from where the sugarcane was going

to be planted. So I don't believe there's many practices, maybe individuals, but I don't believe there's many practicing *kahus* there in the area. But I think there's several that retain the knowledge, probably from their families, because the sugarcane people that grew it, you know, a lot of the land area was more or less destroyed. A lot of the artifacts were destroyed. [Nettie Tiffany]

Military Activities in Kalaeloa

And [the long wall on the property] could've even been a boundary that was like an '*ili*, or it could've been a boundary that actually determined where the military base footprint was back then. But my overall thing was that there was a lot going on, you know, right up to where we saw people were living there, camping there in more recent times. So I find a lot of it interesting, you know, even the post [post-Contact] stuff is interesting to me to say, "Oh, how did they use this place in 1900, you know?" [McD Philpotts]

...Working with David Tuggle, different archaeological firms, I learned that all of Kalaeloa was formerly a cultural landscape. So various parcels of this landscape had actually been altered by military activities, airport, different facilities, was altered. However, the nature of activity or the military base is that they developed primarily areas that they would use. Areas that they would not use, they served as buffer. So they left substantial parcels within Kalaeloa, Barbers Point Naval Air Station forested, and the forested areas still remain culturally intact in terms of the integrity of cultural structures within Kalaeloa. So all of Kalaeloa was basically a cultural landscape with various levels of cultural levels depending on the military activity within those particular parcels. [Shad Kane]

I think the first military activity was the 'Ewa Marine Corps Airfield. Even before that, the latter part of the 1920s, I'm not sure if it was the Navy or the Army, they tried to establish a, what do they call those airships now? The dirigibles? Or they had a different name for 'em. But they tried to establish a place where, close to where the O'ahu Historic Railway is located today, what they tried to do is start an airship launching area. And right around that time, the Hindenberg caught fire. So the whole concept of using airships to transport all kinda went out the window with the Hindenberg disaster. [Shad Kane]

We're talking about the forested areas in Kalaeloa. The forested areas in Kalaeloa all was fenced in, and all of 'em had signs: "Restricted." You know, so, for example, even if you was a civilian, and you went into Kalaeloa, and you went walk into this bushes, they would've probably come looking for you if you was in there. For example, the Heritage Park property, the one that I'm on right now, and this is typical of all of 'em, I don't want to make it seem like it's just the Heritage Park, see what it was is that the Heritage Park, 77-acre parcel, in the middle of that 77-acre parcel was a tall fence with barbed wire. The surrounding area beyond that is where they kept all the bombs, all restricted areas. So what they would do is that they would, like for example where the race track stay, the bombs used to be kept in these concrete bunkers. They would by forklift, they would go across the street get the bombs, come into the Heritage Park property, go beyond the buffer, the Heritage Park parcel served as a buffer for the activity within the fenced-in area within the Heritage Park. What they used to do is that when there was a plane about ready to take off, they would go get a bomb, bring 'em into the maintenance yard, attach the fuses, take 'em out to the plane, load 'em on the wing, the plane would take off. But the forested area served as a buffer for all military activities in Kalaeloa, every one, every military activity in Kalaeloa surrounding the airport, was buffered by *kiawe* bush. So the whole idea was to keep even military people away. So it was that secure. So civilians could probably go to the residential areas if they were guests, they could probably go to the base exchange if they were with military families and shop, but within the forested areas, where the Hawaiian stuffs are, could not get in there. [Shad Kane]

Today: Kalaeloa and Mana Elua Solar Farm

This section concentrates on the project area today, the effects that solar farm construction might have, as well as recommendations that concern the project.

Potential Effects on Cultural Resources and Access to Cultural Resources

It's important for us to first know about these sites, about its history, about its religious purpose and cultural purposes that we call "*ka'ananiau*"—"managing the beauty of time." I think the closest word for that today is called "traditional cultural properties," or "TCP studies." If we look at the TCP study for the area, we need to recognize that everything impacts something else. So if you go in there and you start taking out the mounds or what we consider burial grounds, that displaces our family to the *'āina*. So we would like to keep it intact. But we, as worshippers of Kanenuiākea, recognize that we can manage the beauty of time with the sun, which in this case is the solar development over there. It is a good development because it uses the sun that our people used many, many years ago. And so if they could develop above ground and we can access the bottom part of the development, that would be good development. Who says that the solar panels cannot be 20 or 10 feet above ground? The bottom part holding the archaeological features can be preserved for people, children, to look at their culture. Having the photo cells above ground, is okay for me. We always look at managing the beauty of time through preserving, protecting areas that have a concentration of sites and burials by landscaping and keeping the place intact and undisturbed. But other areas that have no features can be used for the purpose of energy collection or development. [Glen Kila]

You know, we come from the older religion prior to Kamehameha's Kunuiakea religion, and ours is based on the natural elements. And our *kūpunas* taught us that the resource in Wai'anae, especially in Kalaeloa, was the sun. Using the sun, the solar energy development if done correctly, by not destroying the sites but incorporating them into their design, will enhance our beliefs and values about harnessing the sun and even the wind. [Glen Kila]

I know wind farms, and that's the reason why in the past we've been opposed to wind farms as a source of renewable energy, because of the—I guess I don't know how—it was explained to me in terms of energy flux lines that's generated that's in the air. So they would generally, with the wind farm, they would generally prevent access by fencing wind farms in. I've been somewhat supportive of PV (photo-voltaic) because my understanding is at this point now, I have not had any experience with PV Energy Farm in current use, most of 'em are aware, are in stages of being built, so I don't know the security aspect associated with PV. [Shad Kane]

So the only concern is that, you know, is this renewable energy gonna prevent access to the cultural landscape and whatever practices that's associated with that particular area within Kalaeloa. I don't know. I really haven't seen anything in writing with respect to limitations to access other than fencing properties for security of the value of all the panels and everything to prevent people from going in and stealing and all that kind of stuff. So I can understand restricting access with respect to security issues associated with the panels. I'm hoping that there'll be cultural access on some of these properties if there's cultural resources on those properties. [Shad Kane]

...This area, this the only place you going find this Tahitian association, and that's why access is so important because in order for people to feel the *mana* associated with it, you

actually gotta see it, you actually gotta walk right up to 'em and feel 'em, so access is so critical. So we're hoping that in all this development, that we don't lose that. [Shad Kane]

Comments and Recommendations

Well I think they should go to the people, archaeologists, to check the grounds, to make sure, because with your eyes sometimes you cannot see what is there. I can recall, out of the blue, being called by a homeless man that found a burial site which was close to the water. And the only reason why he knew to call me was he came here to help the landscaper. But in his heart, he knew this was very particular, and yes, it was. They never told me if they identified the *iwi*, but there were three of them. [Nettie Tiffany]

Like I say, take the precautions. Talk to the archaeologists; they should know. And if they don't know, they should ask. And it will be difficult, for these...areas that they want to develop, to find anything, although, not that they won't. I believe they will because we have a lot of burial sites along the ocean. So I think they need to be aware and be very, very careful and respectful. That, to me, is the most important thing. [Nettie Tiffany]

I think most of us out here all in support of renewable energy. I think every one of us want us to be less dependent on other people, other countries. We're an island, you know, we were once self-sufficient at one time. So today we've become so dependent on other places, and fossil fuel is the worst. We gotta somehow, and I'm 100% willing, wanting to get away from all of that. So I think most people in this area are pretty supportive of renewable energy. I'm just hoping that, because not every one of us are like you and I, I'm just hoping there's enough like you and I, Ulukoa, who can make certain that bits and pieces of that ancient past, we can share with our children so they all know where they came from. And I think that's the story. [Shad Kane]

If our interest is preserving the cultural landscape, and when we speak of a cultural landscape, we also need to consider the biological landscape because the biological landscape was shaped by the geology of the region. And the geology of the region actually shaped the manner in which these people lived their subsistence lifestyle. So it's all based on that. *Kiawe* is not native. And actually, *kiawe* has been one of the biggest challenges to Kalaeloa simply because the amount of water that *kiawe* extracts from the coral. It makes it even more difficult for the native biological landscape to survive. So *kiawe* has actually created a problem with respect to the preservation of that biological landscape. So what we've been doing in Kalaeloa, we've been trying to remove, on top of that is the thorns, our ancestors never really wore shoes in this particular area. So they were able to walk safely barefooted throughout this whole region. So in our efforts, for example, the Kalaeloa Heritage Park, we've been trying to remove as much of the *kiawe* as we can with the amount of volunteers that we have. So we're trying to remove all of that, and we're trying to restore that biological landscape associated with Kalaeloa. And we're doing that right now, working with the State of Hawai'i. [Shad Kane]

I am aware of different properties where there were levels of cultural resources on 'em, and I am aware of some farms where they actually saved pieces of it, not all that was once there. So I know that stuff was destroyed. But I know that some properties actually have cultural resources on 'em. And for me, the organization that I'm a part of, is that we use the cultural resources in Kalaeloa as a venue for sharing the cultural past and helping our young children be aware of the rich cultural history associated with Kalaeloa. I'm hoping that access would not be restricted on that kind of level especially because how unique these cultural structures are within Kalaeloa. [Shad Kane]

So I am asking the developer to protect the sites on the property because it is an important part of our history and it's rare to see on the island of O'ahu. [Glen Kila]

...I think that every time we fire up a bulldozer, and I told you I do drive one from time to time, but every time we fire up a bulldozer, and we run it across virgin ground, we should be taking a really good look at what's there before we erase it because that machine and all the other heavy equipment erases stuff permanently. And it's really hard to figure it out. It may be even impossible to figure out the whole story now, but that information's gotta be recorded. So I wouldn't go so far as to say, everything is dynamic, we need certain resources now. We need energy, we need solar energy. So it's all sort of weighing these things. That's kind of being a realist about what things are, but if there are processes that we study, and we understand that it's something we did in the more present time, and we pretty much know what it is, then we can make a judgment call, "Ok let's erase it and put a solar farm..." or whatever it is we are going to do next. But if we don't study it and find out what it is before we erase it, I kind of have a problem with that. I mean, it's more of a personal one, but I just don't think we're moving smartly when we do that. [McD Philpotts]

And if we find out that it is something pre-Contact, then it may fit in the bigger picture and it may have enough value to certain people, maybe not to a developer that is not Hawaiian in origin or really cares about the cultural history, but to a lot of other groups. To me it's not just about having us study it and knowing that it was a Hawaiian fishing site possibly, we study it and it looks like one, and we find fishhooks and all of that so we say, "Ok, that is," so at that point my personal opinion is that I don't think there's enough of that left around here on O'ahu. It's part of a bigger picture on the 'Ewa Plain. Like I said, I think it is an outpost or a component, but is this just about us studying it? Or is it about the next generation of Hawaiian archaeologists or historic study kids, you know. Because we know what it is or we think we know what it is, do we have the right to erase it every time? To me there's a value of just future Hawaiian children being able to look at it, touch it, walk from here to there and say, "I understand. I walk the path of my *kupuna*, and I know what their life was like." And there's a difference, you know, you can look at it on a poster, you can go to the Polynesian Cultural Center, you can study Hawaiian Studies at UH, but when you walk on the land and you sit in the structure that doesn't have *pili* grass over you or anything, but you get it, to me, I've been there, and I've sat there, and I've walked there, and I got it. I have a picture because of that. And so I really value that experience to be able to do that and to have a clear picture in my head, and I would like to know that a hundred years from now, there's people who experience the same things and have the same level of understanding. And I don't think you can if you take every bit of it away. [McD Philpotts]

You know, it's not easy to say, but I think to some degree on the 'Ewa Plain, in a lot of places we've crossed that bridge already. And this site is kind of an example of that. There's remote ones on what was the naval base/air station. They're still there. There's all these little *kīpukas*, and if there's enough of them saved, yeah I think it's important. But you know, in the middle of the heaviest industrial area on O'ahu, you know, is one little one relevant? It is in that sermon that I just gave, you know? [laughing] But outside of that, does everybody? It depends on what lens you're looking from. [McD Philpotts]

I guess in a broader picture I say there's gotta be enough left that you can understand, or the next generation of Hawaiian children can understand who they are. There's great value in being able to see it. You won't understand what it's like to live in a stone structure. I mean, you can go to the Bishop Museum and look at it. But when it's out on the landscape with the wind or the rain or whatever, that gives you an idea of what the life was like. When you live in an apartment, and you're a Hawaiian, you can't get it. And we're the host culture. And we don't know what it was that we did. [McD Philpotts]

I've made comments about the kind of residential development that I've seen because when we're up here, the only lights we saw at night was 'Ewa Beach front lots and 'Ewa Village right down there. [looking out across the 'Ewa Plain at 'Ewa Village and 'Ewa Beach from the *lanai*] And nothing else was here. Makakilo was one street, was just the turn at Palailai and one street *makai* of that. And then of course, Honokai Hale, where you guys were, that's it. Oh and the naval air base, and that's it. So when we did Makakilo [hillside] and then the next one, we cut it. Now they don't do it like they did it in the Ko'olaus. Now they cut the ridge down to make it as wide as possible to put all the houses. Look behind Malama Market. When it rains hard, I don't wanna be in those houses sitting on the edge there. But that's the way. So even there, even if there was not a single cultural site or pathway or anything on that ridge, that ridge is so different from what it used to be. If you did that to every ridge, children 50 years from now would not be able to visualize what the mountain looked like. So I say, "I don't know if we should develop every inch of it." Every little bit that we take away, it's like one of those puzzles that you put together on your table. And if you keep losing the pieces of the puzzle, pretty soon it's not worth trying to put it together. [McD Philpotts]

Well, I've made comments all to the same place. The thing that we're overlooking is that we're erasing, steadily but surely erasing, what's natural and replacing it with our footprint. Our footprint is so much bigger than the ones that came before us. Our machines are bigger. Our development is bigger. It's more total. I think if we think harder about it before we do it and really weigh the consequences, the big picture is if you and I are born in another hundred and fifty years, what are we looking at? You know? I mean, if this has just been a hundred years, you know, most of what's happened here has been in a hundred years. From 1912 or so, this place has changed drastically. And so much is lost, but at this rate. [McD Philpotts]

Well, I feel fortunate to be in an area where there's a buffer around us here, where we're sitting. There's so much around us still, and it's different. So the reality of what most people have in the pace and everything is so different. I don't know, I just want us to think about development. I'm not anti-development; my family is the Campbell's. And they have to take some responsibility. I, we, have to take some responsibility for all of this development. But development happens because of demand. So on the demand side of this equation, we all have to take some responsibility and decide what we need as a community. And how badly do we need an alternative energy source in the case of this thing compared to what will be the consequences of erasing something? I think the consequences of erasing something and you don't really know completely what it is yet, personally is not that wise. Ultimately all I can do is share where I personally come down, but it really is a community picture. [McD Philpotts]

I work with a lot of kids, young guys, a lot of times they tell me, "Eh, Uncle, I wish I was alive one thousand years ago." And I always tell them, you know, "Think twice before you say that because life wasn't that great." So life was tough, you know. Although we struggle with the things that we deal with as cultural practitioners, we're living little bit better today. So I just trying to kind of, the thing is sometimes we just gotta be *maka'ala* to make sure that we're trying to save bits and pieces of the past. We'll never be able to save 'em all, it's almost, the challenge is so overwhelming, so difficult, but the main thing is that we all try to be *maka'ala*, try do what little, do enough what we can, if we all do a little, maybe we can save a big piece of that ancient past. [Shad Kane]

Having people to be able to come there to learn about their culture is very important for us. Even learning about the cattle ranching or collecting of the *kiawe* wood and other trees for trade are all parts of our history and can be preserved if done correctly. [Glen Kila]

I'm concerned about the plants and would like to see studies be done in that area to make sure that any population of the *skottsbergii*, 'akoko, or the *Nototrichium sandwicense*, the *kulu'i*, or any other plants are protected if they found. [Glen Kila]

When we studied with Dr. Alan Ziegler and our traditional *kupuka'āina* or lineal descendants training under Aunty Lei [Fernandez], they recommended that we protect those sinkholes in Kalaeloa because it could: 1) be where the brackish water is, that have the 'ōpae'ula, I'm not sure now, but I did see 'ōpae'ula in certain sinkholes in Kalaeloa, so that has to be examined more closely. [Glen Kila]

I would like to see those places [sinkholes which house diverse set of rare animal remains] really protected. [Glen Kila]

And so for us, seeing a balance of nature and human development working together in this kind of project will enhance the area and make it a better place for everyone. That is a good kind of development rather than building more and more houses that takes more of our resources out of the community. Especially in the area, it has to be protected because it's rare to have these sites still intact. It hasn't been touched since the 1970s when I first went with our *kūpuna* to look at these sites as a place to learn. We also used to go there to run around as a kid but that was different. It is now important to learn about our culture and traditions in the area and that is important why we should keep these areas protected. [Glen Kila]

Like anything else, time moves on, and of course, our numbers of people have increased. So we require more electricity, more flowing water, and I understand that. And I respect that need. But I also would appreciate, if as they go through this transference of growth, that they would respect the land. If they came across something that was very unique, [they would have the respect] to stop, to question. And if it's something important, protect it. If not, go ahead and move on. [Nettie Tiffany]

I think that's been the saddest part because only recently I feel the Hawaiians have had more say in the keeping of our culture, keeping of our things. And there is so much history over here, it's so hard to start. But how do I show a child and say, "This is a sinkhole. Look down in it, and you'll see the 'ōpae. This is where the birdcatchers came to bathe in the fresh water." But there's no spring, there's no pond [anymore]. I cannot say to them, "This is the story; they would come from the mountain, come down here, go in the ocean, swim, enjoy, then take a bath, and go back home up the mountain." [Nettie Tiffany]

...The number of people will grow, or our children will leave Hawai'i because the needs will not be [met] there. We need more electricity. We need more water. That's the part that bothers me, that I have to respect it. But I also hang on to the old because I guess when I was growing up, when it wasn't fashionable to be Hawaiian, we were allowed to be Hawaiian by my mother and my grandmother. So it's a little difficult for me when I drive down the road and see something has been disturbed or just bulldozed down. But I don't think anybody is practicing anything at the moment, not in the lower lands, not where they're looking at to build, maybe up in the mountains we still can protect some places over there. I don't think in the flat land because anything that was flat enough to grow sugarcane was used. [Nettie Tiffany]

And sometimes, even now, here, in Ko Olina, I just walk around to feel the earth and see if there's something that I missed. I would like to be able to do that, to go to these areas that they are building, to walk and see if anything, my own feeling. [Nettie Tiffany]

If they [the developers] just showed the respect for the land, that would make me happy.
[Nettie Tiffany]

Consultant Site Visits

During a field visit to the site of the proposed solar farm, ethnographer Dietrix Ulukoa Duhaylonsod met with Glen Kila and his nephew and *haumana*, Chris Oliveira on May 18, 2013. The three walked along the canal separating Campbell Industrial Park and the former Barbers Point Naval Air Station and entered an area covered with *kiawe* trees. Following a *pule* for thanksgiving and protection, Duhaylonsod pointed out the numerous rock mounds, alignments and sinkholes. Uncle Glen noted nostalgically that it had been decades since he had been in this area with *kūpuna*. He was visibly surprised as he noted that here was a parcel of land with features that had managed to escape destruction while most of the surrounding landscape had been developed. Duhaylonsod pointed out a particular feature that was comprised of several rock alignments some of which formed a narrow ‘walkway’, and Uncle Glen found that odd because he said that Hawaiians wouldn’t normally constrict themselves to such a narrow walkway.

Upon seeing a sinkhole which had been built over and was covered by debris, Uncle Glen and his nephew believed that to be the remnants of a water pumping station that emptied the area of its underground water source. In regards to other sites which may be on the subject property, Uncle Glen expressed the high likelihood that burials were present. He also noted that the long wall along the canal was not a cattle wall, but rather an ‘*ili*’ wall that outlined people’s land.

A site visit was attempted with Nettie Tiffany on July 1, 2013. Duhaylonsod and Auntie Nettie drove to the subject property but were not able to walk the area because Auntie Nettie was recovering from an injury to her foot.

On Wednesday, August 7, 2013, Duhaylonsod met with McD Philpotts for a site visit. McD was quickly taken by the long wall in the project area parallel to the canal. He stopped to open the report and see the map of the area in relation to the entirety of O‘ahu island to see if there were any possible alignments that the wall could be linked to. After spending some time at the wall, they proceeded to walk the forest. McD was shown a sample of the kinds of features in that forested area. He was able to see walls, alignments, enclosures, mounds, and sinkholes, but time did not permit a visit to every feature.

McD pointed out several hidden sinkholes that may have been covered up, either naturally or on purpose, or may have been filled by large trees today. He also spent some time at a certain enclosure remarking that it seemed to be the perfect dimensions for a house site. He showed great interest in this landscape that was very recognizable to what he remembered growing up around.

After accepting some good signs by the *pueo* in the area, they left the area. During the subsequent interview off site, after looking more at the report, McD commented that he wished he saw more of the features listed in the report. Duhaylonsod suggested that perhaps they could go back and visit the project area once again at a later time.

When asked if interested in doing a site visit to the subject property, interviewee Shad Kane declined and generously participated in an interview.

Summary of Ethnographic Survey

A total of four ethnographic interviews were conducted with individuals knowledgeable about Kalaeloa: Shad Kane, Glen Kila, McD Philpotts, and Nettie Tiffany. Consultants consisted of

community members who are knowledgeable of cultural resources as well as traditional practices and beliefs associated with Kalaeloa and the 'Ewa *moku*. The interviewees are also actively involved in the preservation and perpetuation of these resources and of the traditional knowledge passed to them from *kūpuna*.

The interviewees discussed the unique geology of the Kalaeloa area, and how karst systems supplied water to the otherwise dry 'Ewa plain. They noted sinkholes which provided water and a habitat for subsistence agriculture.

With regard to traditional sites in the area and within the subject property, one interviewee noted that there may be areas of importance with no tangible remains left. Others noted the presence of the low-lying walls which, according to one consultant, were used to delineate 'ili boundaries, and/or *kauhale*. Another interviewee was unsure whether the walls were traditionally built, or if they were remnant cattle walls associated with ranching activities. Based on his knowledge of sites and archaeological remains of Hawaiian habitation sites of Kalaeloa, this consultant also noted that the absence of sites should not be interpreted as a lack of pre-Contact habitation of the area. Other sites which may be present in the area of the subject property include human burial sites, which, if encountered during development, should be respected.

Culturally significant sites in the greater area included Pu'u o Kapolei, which was known as a place for learning, and was also a location where the rising and setting of the sun could be tracked. Near Pu'u o Kapolei is noted to be the location of the sun *heiau* within which Kanenuiākea was worshipped as the sun deity. One interviewee mentioned Kualaka'i salt pond, which is at the location of what is now known as the Kalaeloa Heritage Park.

One interviewee noted the connection of the 'Ewa area with Tahiti and recalled the story of the *ali'i* Kaha'i, who was consistently referred to as being Tahitian, even though he was born in Hawai'i. This consultant emphasized this Tahitian-Hawaiian landscape and how one can see this integration of cultures in techniques of wall construction, particularly in dry-stacking, where Tahitians use upright stones and Hawaiians lay rock horizontally.

Traditional gathering practices of Kalaeloa included the collection of *limu*, fishing, as well as a unique method of gathering feathers. According to one of the interviewees, in Kalaeloa, birds were trapped in sinkholes by being covered while eating foods such as *noni*. These birds were then "smoked out" and *kia manu* would gather feathers needed from the bird and later release the live bird.

Presence of *ali'i* in Kalaeloa was also discussed as an area where they frequented various parts of the coastline to surf. Kakuhikewa built a home at the nearby area of Lanikūhonua. And it was noted that *kiawe* wood was gathered in Kalaeloa and sold by *ali'i*.

Historic activities in Kalaeloa include the growing of sugar cane, ranching, and military presence which, in numerous areas, destroyed cultural sites and the natural landscape. Ranching was practiced in Kalaeloa in the early 1900s, and James Campbell established his ranch in Honolulu, as well as Kahua Slaughterhouse. Despite destruction of cultural sites during the historic period, one interviewee did note, however, that buffer zones created for security by the military, also managed to preserve sites in other areas, and within such zones, habitation sites and burials can be found today.

The consultants shared the sentiment that efforts should be made to preserve cultural resources in place for the benefit of future generations. It was also advised that access to such cultural sites should be maintained and not restricted. It was noted that as *kūpuna* also harnessed energy from

the sun, the proposed solar project, if done properly, by preserving sites, would enhance Hawaiian beliefs and values associated with activities which utilized the power of the sun and the wind.

One consultant mentioned that although large expanses of Kalaeloa have been altered by modern development, there are still small areas, or *kīpukas*, that remain, such as the archaeological site on the subject property, and it is important to preserve these areas. Another consultant advised to be *maka'ala*, or alert, when looking for cultural sites within the area, noting that the thick cover of *kiawe* trees can hide much, if not all, of the remaining cultural resources present. One should also be *maka'ala* in efforts to preserve this cultural heritage, and, although not all of the culture can be saved, people should do their best and preserve and perpetuate culture to the best of their abilities. Recommendations were also made that in order to restore the cultural landscape, which is also comprised of the natural landscape, non-native invasive species should be removed, allowing native species to thrive once more. These sentiments were summed up with Nettie Tiffany's statement that, "If they [the developers] just showed the respect for the land, that would make me happy."

CONCLUSIONS

According to the informants, Kalaeloa, with its karst topography, sinkholes, and cultural and natural resources, is a unique place in both the past and present. Solar farm development is an important part of the growth of today's community, and these natural and cultural resources can be protected by incorporating preservation zones within the project area.

Cultural Resources, Practices, and Beliefs Identified

Research and ethnographic survey compiled for the current study revealed that Kalaeloa was a culturally significant area with many of the natural resources which supported traditional subsistence activities such as fishing, the gathering of plants, various shellfish as well as *limu* (seaweed). The geology of Kalealoe, with karst systems and sinkholes, led to the development of practices unique to the area, such as planting within sinkholes and also utilizing sinkholes to trap birds with the goal of gathering feathers.

Historically, the lands of Kalaeloa were cultivated in sugar cane, used for cattle ranching, and most recently, utilized as a military base. As new development of this area occurs, archaeological studies reveal the physical evidence supporting knowledge of the traditional and cultural wealth of Kalaeloa. The identification and dating of floral and faunal material, much of which were recovered from sinkholes, has provided significant data which has afforded archaeologists and scientists the opportunity to explore theories of settlement pattern, as well as the decrease/extinction of native birds and the pre-Polynesian floral landscape.

Ethnographic interviews with community members who are knowledgeable of the cultural resources of Kalaeloa provided their *'ike* which identified places of significance, such as Pu'u o Kapolei and Lanikuhona and cultural practices and beliefs unique to the 'Ewa plain. Interviewees generously shared their personal and *'ohana* connections to this *'āina* as well as their *mana* 'o of the importance of preserving our cultural heritage.

Potential Effects of the Proposed Project

Consultants shared the sentiment that efforts should be made to preserve cultural resources in place for the benefit of future generations. It was also advised that access to such cultural sites should be maintained and not restricted. Noted in the discussion was the idea that *kūpuna* also harnessed energy from the sun, and that the proposed solar project, "if done correctly, by not destroying the sites but incorporating them into their design" would enhance Hawaiian beliefs and values associated with activities which utilized the power of the sun and the wind.

Confidential Information Withheld

During the course of researching the present report and conducting the ethnographic survey program, no sensitive or confidential information was discovered or revealed, therefore, no confidential information was withheld.

Conflicting Information

No conflicting information was obvious in analyzing the gathered sources. On the contrary, a number of themes were repeated and information was generally confirmed by independent sources.

Recommendations/Mitigations

As previously discussed, interviewees in the ethnographic survey stressed the importance of preserving cultural sites. Recommendations were also made that the natural landscape of the area also be restored by removing non-native invasive species, allowing native species to thrive once more. Consultants also asked that the developers show respect for the land.

Background research and oral history interviews reveal that surface properties occur on the area of proposed impact, and it is also likely that subsurface cultural resources may be present as well. Keala Pono recommends that the archaeological resources are preserved in place and that archaeological monitoring is performed during any ground disturbing activity. Given that several organizations and *'ohana* of Kalaeloa have played an integral role in the preservation and care of Kalaeloa's tangible and intangible culture, it is also recommended that Mana Elua continue to consult with the Kalaeloa *'ohana* during various phases of the project's development, should additional cultural resources be encountered.

GLOSSARY

<i>ahu</i>	A shrine or altar.
<i>ahupua‘a</i>	Traditional Hawaiian land division usually extending from the uplands to the sea.
<i>‘akoko</i>	Endemic shrubs and trees of <i>Euphorbia</i> spp., the sap of which was made into a paint for canoes in traditional Hawai‘i.
<i>‘āina</i>	Land.
<i>aku</i>	The bonito or skipjack (<i>Katsuwonus pelamis</i>), a prized eating fish.
<i>akule</i>	Big-eyed or goggled-eyed scad fish (<i>Trachuroops crumenophthalmus</i>).
<i>‘alalā</i>	<i>Corvus tropicus</i> , the endangered Hawaiian crow, formerly found only in forested areas on the island of Hawai‘i. Wild birds are extinct and numbers in captivity are low.
<i>ali‘i</i>	Chief, chiefess, monarch.
<i>‘ama‘ama</i>	The mullet, or <i>Mugil cephalus</i> , a prized indigenous fish.
<i>‘aumakua</i>	Family or personal gods. The plural form of the word is <i>‘aumākua</i> .
<i>‘awa</i>	The shrub <i>Piper methysticum</i> , or <i>kava</i> , the root of which was used as a ceremonial drink throughout the Pacific.
<i>banana</i>	The <i>mai‘a</i> , or <i>Musa</i> sp., whose fruit was eaten and leaves used traditionally as a wrapping for cooking food in earth ovens.
<i>haumana</i>	Student, apprentice.
<i>heiau</i>	Place of worship and ritual in traditional Hawai‘i.
<i>ho‘oilo</i>	Rainy season, winter.
<i>‘ike</i>	To see, know, feel; knowledge, awareness, understanding.
<i>‘ili</i>	Traditional land division, usually a subdivision of an <i>ahupua‘a</i> .
<i>iwi</i>	Bone.
<i>Kahiki</i>	A far away land, sometimes refers to Tahiti.
<i>kalo</i>	The Polynesian-introduced <i>Colocasia esculenta</i> , or taro, the staple of the traditional Hawaiian diet.
<i>kama‘āina</i>	Native-born.
<i>kau</i>	Season, especially summer, period of time; to place, hang, or perch; to ride, mount, or rise up; to place in sacrifice or come to rest.

<i>kauhale</i>	A group of houses that comprise the traditional Hawaiian homestead. Often included are a sleeping house, men's eating house, women's eating house, cooking house, and canoe house.
<i>kia manu</i>	Birdcatcher; using a sticky substance to bird catch.
<i>kia'i</i>	Guard, caretaker; to watch or guard; to overlook, as a bluff.
<i>kiawe</i>	The algarroba tree, <i>Prosopis</i> sp., a legume from tropical America, first planted in 1828 in Hawai'i.
<i>kioea</i>	The bristle-thighed curlew, or <i>Numenius tahitiensis</i> , a large brown bird with a curved beak.
<i>kīpuka</i>	A change in form, such as an area of vegetation in a lava bed.
<i>ko'a</i>	Fishing shrine.
<i>koa haole</i>	The small tree <i>Leucaena glauca</i> , historically-introduced to Hawai'i.
<i>konohiki</i>	The overseer of an <i>ahupua'a</i> ranked below a chief; land or fishing rights under control of the <i>konohiki</i> ; such rights are sometimes called <i>konohiki</i> rights.
<i>kuahiwi</i>	Mountain or high hill.
<i>kuapā</i>	Wall of a fishpond.
<i>kuleana</i>	Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.
<i>kulu'i</i>	<i>Nototrichium</i> spp., an endemic small tree or shrub.
<i>kumu hula</i>	Hula teacher.
<i>kupekala</i>	A bivalve of Pearl Harbor, possibly <i>Chama</i> spp.
<i>kupua</i>	Demigod, hero, or supernatural being below the level of a full-fledged deity.
<i>kupuna</i>	Grandparent, ancestor; <i>kūpuna</i> is the plural form.
<i>lehua</i>	The native tree <i>Metrosideros polymorpha</i> , the wood of which was utilized for carving images, as temple posts and palisades, for canoe spreaders and gunwales, and in musical instruments.
<i>limu</i>	Refers to all sea plants, such as algae and edible seaweed.
<i>līpoa</i>	The brown seaweeds (<i>Dictyopteris plagiogramma</i> and <i>D. australis</i>), highly prized as a delicacy.
<i>lo'i, lo'i kalo</i>	An irrigated terrace or set of terraces for the cultivation of taro.
<i>loko, loko i'a</i>	Pond, lake, pool, fishpond.

<i>lua</i>	The ancient style of fighting involving the breaking of bones, dislocation of joints, and inflicting pain by applying pressure to nerve centers.
<i>mahalo</i>	Thank you.
<i>mahamoe</i>	Sleek, as a plump animal, attractive; smooth; also the name of an edible bivalve.
<i>Māhele</i>	The 1848 division of land.
<i>maka‘ala</i>	Watchful, vigilant, alert.
<i>makai</i>	Toward the sea.
<i>makana</i>	Gift, reward, prize.
<i>māmaki</i>	<i>Piptarus spp.</i> , a small native tree. Fiber from its bark was used to make a kind of coarse tapa. Sometimes spelled <i>mamake</i> in old texts.
<i>mana</i>	Divine power.
<i>mana‘o</i>	Thoughts, opinions, ideas.
<i>ma‘o</i>	<i>Gossypium sandvicense</i> , or native cotton, a shrub in the hibiscus family that bears yellow flowers and seed cases containing brown cotton.
<i>mauka</i>	Inland, upland, toward the mountain.
<i>mele</i>	Song, chant, or poem.
<i>mō‘ī</i>	King.
<i>moku</i>	District, island.
<i>mo‘olelo</i>	A story, myth, history, tradition, legend, or record.
<i>nehu</i>	The anchovy, <i>Stolephorus purpureus</i> , used for eating and as a chum for bonito.
<i>noni</i>	<i>Morinda citrifolia</i> , the Indian mulberry, a tree or shrub known for its medicinal value in traditional Hawai‘i.
<i>‘ohana</i>	Family.
<i>‘ō‘io</i>	Ladyfish, bonefish (<i>Albula vulpes</i>).
<i>‘ōkupe</i>	A method of digging holes using a stick, to prod the earth aside, as for taro; to stumble or trip; err or go astray morally; the name for the bivalve <i>Spondylus tenebrosus</i> .
<i>oli</i>	Chant.
<i>olonā</i>	The native plant <i>Touchardia latifolia</i> , traditionally used for making cordage.
<i>‘ō‘ō</i>	<i>Moho nobilis</i> , the extinct Black honey eater. Its black and yellow feathers were used in featherworking.

‘ōpae	Shrimp.
‘ōpae‘ula	Red shrimp.
‘owā‘owaka	A bivalve, possibly of the family <i>Isognomonidae</i> .
paepae	House foundation, support, or pavement.
paniolo	Cowboy.
papa	Flat surface, reef, table, level, class, rank.
pāpa‘i	General term for crabs.
pāpaua	The clam <i>Isognomon</i> , a bivalve.
pau	Finished.
pili	A native grass, <i>Heteropogon contortus</i> .
pipi	<i>Pinctada radiata</i> , the Hawaiian Pearl Oyster. In songs this is referred to as the <i>i‘a hāmau leo o ‘Ewa</i> , or ‘Ewa’s silent sea creature, as it was believed that speaking would cause a breeze to ripple the ocean and scare the <i>pipi</i> .
pueo	The Hawaiian short-eared owl, <i>Asio flammeus sandwichensis</i> , a common ‘aumakua.
pule	Prayer; to pray.
pu‘uone	Pond near the seashore, as at the end of a stream.
Thambetochen	An extinct large, flightless duck, the <i>moa nalo</i> , one species of which lived on O‘ahu, and the other on Maui, Moloka‘i, and Hawai‘i islands.
‘ulu	The Polynesian-introduced tree <i>Artocarpus altilis</i> , or breadfruit.
wao	A general term for inland areas, usually forested and uninhabited.
wai	Water or liquid other than salt water.
wauke	The paper mulberry, or <i>Broussonetia papyrifera</i> , which was made into tapa cloth in traditional Hawai‘i.
yam	<i>Dioscorea alata</i> , known as <i>uhi</i> in Hawaiian, commonly grown for food.

REFERENCES

- Alexander, W.D.
1873 *Map of Honouliuli, Oahu*. Hawaiian Government Survey Map. Scale: 2,000 feet = 1 inch.
- Andrews, L.
1865 *A Dictionary of the Hawaiian Language*. Henry M. Whitney, Honolulu.
- Barrera, W.
1975 *A Report on the Archaeological Reconnaissance Survey of the Proposed Barbers Point Harbor Area*. MS. on file, Department of Anthropology, Bishop Museum, Honolulu.
- Beardsley, F.
2001 *Phase II – Intensive Survey and Testing Naval Air Station Barbers Point Land of Honouliuli, ‘Ewa District, Island of O‘ahu Contract No. N62742-93-D-0502 Delivery Orders No. 7 and No. 19*. Prepared for Commander Pacific Division, Naval Facilities Engineering Command by International Archaeological Research Institute, Inc., Honolulu.
- Beckwith, M.
1970 *Hawaiian Mythology*. University of Hawaii Press, Honolulu.
- Boelen, J.
1988 *A Merchant’s Perspective: Captain Jacobus Boelen’s Narrative of his visit to Hawai‘i in 1828*. The Hawaiian Historical Society, Honolulu.
- Burgett, B. and P.H. Rosendahl
1992 *Archaeological Inventory Survey Contaminated Soil Stockpile Remediation Facility, Naval Air Station, Barbers Point, Oahu, Hawaii (TMK 9-1-13)*. Prepared for Helber Hastert & Fee by PHRI, Hilo, Hawai‘i.
- Campbell, A.
1819 *Voyage Round the World from 1806–1812*. New York.
- Charvet-Pond, A. B.D. Davis, L.S. Cummings, Linda, L. Kalima, J. Hummert, H. Wong, D. Trembly, A. Ziegler, S.T. Goodfellow, R. Cowie
1991 *Volume I: Archaeology And Palaeoecology at Ko Olinā, Barbers Point, Land of Honouliuli, ‘Ewa District, Island of O‘ahu Summary and Synthesis West Beach Data Recovery Program. Phase IV -Arch. and Palaeontological Excavations*. Prepared by PHRI, Hilo, Hawai‘i.
- Cleghorn, P. and B. Davis (editors)
1990 *Archaeological and Paleontological Investigations at the Barbers Point Deep Draft Harbor, ‘Ewa, O‘ahu*. Prepared for the Department of the Army, Pacific Ocean Division, Corps of Engineers by the Applied Research Group of the B.P. Bishop Museum, Honolulu.
- Cleghorn, P.L. and E.L. Kahahane
2008 *Archaeological Assessment of the Proposed Ke Kama Pono Facility at the Yorktown Road Site at Kalaeloa, O‘ahu, Hawai‘i (TMK (1) 9-1-13:24)*. Prepared for The Louis Berger Group by Pacific Legacy, Inc., Kailua, Hawai‘i.
- Corbin, J., T. Dye and M. Jourdan
1996 *Field Reconnaissance—Laulaunui Island and Fishpond*. Prepared by Hawai‘i State Historic Preservation Division, Honolulu.

- Cordy, R.H.
1993 *The Rise and Fall of the O'ahu Kingdom; A Brief Overview of O'ahu's History*. Typescript, Hawai'i State Historic Preservation Division, Honolulu.
- Davis, B.D., J. Allen, J. Simons, C. Christensen, T. Bennett, S. Collins, M. Riford, and P. Cleghorn,
1995 *Archaeological and Paleontological Investigations at the Barbers Point Deep Draft Harbor, 'Ewa District, Honouliuli, Ahupua'a, O'ahu Island, Hawai'i*. Prepared by B.P. Bishop Museum, Honolulu.
- Davis, B.D. and L. McGerty
2002 *An Assessment of Archaeological and Cultural Resources Along the Proposed Honolulu Bus Rapid Transit Primary Corridor Honolulu, Hawaii*. Prepared by Scientific Consultant Services, Honolulu.
- Dega, M., R. Ogg, and L. Benson
1998 *An Archaeological Inventory Survey of The University of Hawai'i, West O'ahu Campus, District of 'Ewa, Island of O'ahu, Hawai'i (TMK 9-2-02:01, 9-2-02:03, 9-2-02:05)*. Prepared by Scientific Consultant Services, Honolulu.
- Denham, T. and J. Kennedy
1992 *Archaeological Preservation Plan for the Ewa Beach International Golf Club Located at TMK: 9-1-01:27 & 6, Honouliuli Ahupua'a, Ewa District, on the Island of O'ahu*. Prepared for Sogo Hawaii, Inc. by Archaeological Consultants of Hawaii, Inc., Haleiwa, Hawai'i.
- Dye, T.S.
1995 *Burial Report: Inadvertent Discovery of Human Remains at Barbers Point Naval Air Station (Nimitz Beach)*. Hawai'i State Historic Preservation Division, Honolulu.
- Dye, T.S., K.M. Macak and E.H.R. Jourdane
2008 *Historic Properties Assessment for the Pearl Harbor National Wildlife Refuge: Waiawa, Honouliuli and Kalaeha Units, Waiawa and Honouliuli Ahupua'a, 'Ewa District, O'ahu Island TMK:(1) 9-6-001:001, 9-1-010:004, 9-1-017:012, and 9-1-013:030*. Prepared by T.S. Dye & Colleagues, Archaeologists, Inc. for SWCA Environmental Consultants, Honolulu.
- Erkelens, C.
1992 *DRAFT Interpretive Trail Development Study, NAS Barbers Point, Archaeological Survey of Site 1719*. Prepared for Belt Collins & Associates by International Archaeological Research Institute, Inc. (IARII), Honolulu.
- Evans, T.
1933 *Honouliuli-Ewa Road Realignment*. Reg. Map 2950. Scale: 40 feet = 1 inch.
- Folk, W.H. II
1991 *Archaeological Reconnaissance of a Proposed Drainage Channel: Supplement to an Archaeological Assessment for the Proposed Kapolei Business/Industrial Park, Honouliuli, 'Ewa, Oahu*. Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 1992 *Archaeological Subsurface Testing of a Beach Berm within the Proposed Barbers Point Drainage Channel*. Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- Foot, 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.
 1918 *Fornander Collection of Hawaiian Antiquities and Folk-Lore, Vol. V.* Bishop Museum Press, Honolulu.
- 1919 *Fornander Collection of Hawaiian Antiquities and Folk-Lore, Vol. VI.* Bishop Museum Press, Honolulu.
- 1996 *Ancient History of the Hawaiian People to the Times of Kamehameha I.* Mutual Publishing, Honolulu.
- Franklin, L.J. and S.T. Goodfellow
 1995 *Final Report Phase II Data Recovery Archaeological Mitigation Program Ewa Marina Community Project.* Prepared by PHRI, Hilo, Hawai'i.
- Goodfellow, S., A. Dunn, L.S. Cummings, and D. Trembly
 1998 *Archaeological Data Recovery at West Loch Estates Residential Increment I, and Golf Course and Shoreline Park.* Prepared by PHRI, Hilo, Hawai'i.
- Goodman, W., H. Jayatilaka, T. Patolo, B. Nakamura, R. Nees, and B. Dixon
 1993 *An Archaeological Reconnaissance of a Proposed 20-Acre Commercial Project, Honouliuli, 'Ewa, O'ahu.* B.P. Bishop Museum, Honolulu.
- Gosser, D., P. Titchenal, S. Collins, S.D. Clark, R. Nees
 2011 *DRAFT A Supplemental Archaeological Inventory Survey for the Kalaeloa Solar One and Kalaeloa Solar Two Projects, Honouliuli Ahupua'a, District of 'Ewa, Island of O'ahu (TMK: [1] 9-1-013:28(Por.)).* Prepared for Kalaeloa Solar One, LLC and SunPower Systems by Pacific Consulting Services, Inc., Honolulu.
- Hammatt, H.H.
 1984 *Reconnaissance and Evaluation of Archaeological Sites in the Proposed Ewa Marina Community, 'Ewa, O'ahu, Hawai'i.* Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 1994 *Burial Treatment Plan Hawaiian Burial Cave Situated at Estate of James Campbell Lands Honouliuli, 'Ewa, O'ahu.* Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 1997 *Archaeological Inventory Survey of a 0.8-Study Area Within the Ewa High Frequency Transmitter Station Site at Pu'uloa, Honouliuli Ahupua'a O'ahu.* Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- Hammatt, H. and R. Chiogioji
 1997 *Archaeological Reconnaissance Survey of a 4.5 Kilometer (14,730-FT) Long Land Corridor Within Honouliuli Ahupua'a, 'Ewa District, O'ahu Island.* Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- Hammatt, H.H. and W.H. Folk
 1981 *Archaeological and Paleontological Investigation at Kalaeloa (Barbers Point), Honouliuli, 'Ewa, O'ahu: Federal Study Areas 1a and 1b and State of Hawai'i Optional Area 1.* Prepared for the US Army Corps of Engineers by Archaeological Research Center Hawai'i, Lawa'i, Hawai'i.
- Hammatt, H.H. and D. Shideler
 1999 *An Archaeological Inventory Survey for the Waimanalo Gulch Sanitary Landfill Project Site, Honouliuli, 'Ewa, O'ahu.* Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.

- 2012a *Archaeological Field Inspection and Literature Review for the Kalaeloa Life Safety Improvements Project, Honouliuli Ahupua'a, 'Ewa District, Island of O'ahu TMK: [1]9-1-013: (Coral Sea Road Intersections and Roosevelt Ave. at Philippine Sea Rd. Intersection.* Prepared for R.M. Towill Corporation by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 2012b *Archaeological Assessment and Cultural Resource Assessment Survey (CRAS) Phase I: Background Research and Surface Survey for the Hawaii Army National Guard Kalaeloa Facility, Former NAS Barbers Point, Kapolei, Honouliuli Ahupua'a, 'Ewa District, O'ahu Island TMK: [1]9-1-013:045, 046, 032 por.* Prepared for the State of Hawai'i Department of Defense by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- Hammatt, H.H., J.J. Robins, M. Stride, M.J. McDermott
1991 *An Archaeological Inventory Survey for the Maka'iwa Hills Project Site, Honouliuli, 'Ewa, O'ahu.* Prepared for William E. Wanket Inc. by Cultural Surveys Hawaii, Kailua, Hawai'i.
- Hammatt, H.H., D.W. Shideler, M. Heidel, and M. Stride
1994 *Archaeological Inventory Survey of the Proposed Barbers Point Harbor Expansion.* Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- Handy, E.S.C. and E.G. Handy (with the collaboration of M.K. Pukui)
1991 *Native Planters in Old Hawaii, Their Life, Lore, and Environment.* Revised Edition. Bishop Museum Press, Honolulu.
- Haun, A.E.
1991 *An Archaeological Survey of the Naval Air Station, Barbers Point, O'ahu, Hawai'i.* Prepared for Naval Facilities Engineering Command by the Applied Research Group of Bishop Museum, Honolulu.
- Hawaiian Historical Society
2003 *Buke Mele Lahui.* Facsimile of original printed in 1895 by Francisco Jose Testa. Hawaiian Historical Society, Honolulu.
- Hawai'i Community Development Authority
2012 <http://hcdaweb.org/kalaeloa>. Accessed 6/5/2012.
- I'i, J.P.
1959 *Fragments of Hawaiian History* (Puku'i Translation). Bishop Museum Press, Honolulu.
- Jackson, G.
1884 *Barbers Point, Oahu.* Hawaiian Government Survey Map. Scale: 500 feet = 1 inch.
- Jensen, P.M., and J. Head
1997 *Phase I Archaeological Reconnaissance Survey Naval Magazine Lualualei NAVMAG-West Loch.* Prepared by PHRI, Inc., Hilo, Hawai'i.
- Jones, B.A.
1993 Letter Report for the Phase I Archaeological Inventory Survey at Barbers Point Naval Air Station, dated January 27, 1993. Prepared by International Archaeological Research Institute, Inc. for Belt Collins Hawaii.
- Jourdane, E.
1995 *Inadvertent Discovery of Human Remains at Paradise Cove, Honouliuli, 'Ewa, O'ahu.* Prepared by the Hawai'i State Historic Preservation Division.

- Juvik, S.P. and S.O. Juvik
1998 *Atlas of Hawaii*. Third Edition. University of Hawai'i Press, Honolulu.
- Kamakau, S.M.
1991 *Ka Po'e Kahiko, The People of Old*. Bishop Museum Press, Honolulu.
- Kane, S.
2011 *Cultural Kapolei*. Shad Kane, Kapolei.
- Kaneshiro, R. and A.J. Schilz
1994 *Base Realignment and Closure (BRAC) III Actions and the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program at 13 Sites within the Naval Air Station, Barbers Point, Oahu*. Prepared by Ogden Environmental, Inc.
- Kelly, M.
1991 *Notes on the History of Honouliuli, Appendix A in A.E. Haun 1991, An Archaeological Survey of the Naval Air Station, Barbers Point, O'ahu, Hawai'i*. Prepared by the Department of Anthropology, B.P. Bishop Museum, Honolulu.
- Kikuchi, W.
1959 Oahu Sites folder 01.1 and Site Card in Department of Anthropology, B.P. Bishop Museum, Honolulu.
- Lewis, E.
1970 The Campbell Project, a Preliminary Report. MS. on file, Department of Anthropology, B.P. Bishop Museum, Honolulu.
- Magnuson, C.M.
1999 *Final Cultural and Historic Resources: Archaeological Reconnaissance Survey of Farrington Highway Expansion, 'Ewa Plain, O'ahu*. Prepared by International Archaeological Research Institute, Inc., Honolulu.
- Magnuson, C.M., and M.J. Tomonari-Tuggle
2002 *Historical and Archaeological Assessment for the Proposed Waiau Fuel Pipeline, 'Ewa District, Island of O'ahu*. Prepared by International Archaeological Research Institute, Inc., Honolulu.
- McAllister, J.G.
1933 *Archaeology of O'ahu*. Bishop Museum Bulletin 104. B.P. Bishop Museum, Honolulu.
- McDermott, M., O.L. O'Leary, T. Tulchin, and D.W. Shideler
2006 *Archaeological Inventory Survey for the Proposed 345-Acre Kapolei Harborside Center, Honouliuli Ahupua'a, 'Ewa District, O'ahu Island*. Prepared for Group 70 International, Inc. by Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- McDermott, M., D. Shideler, and J. Winieski
1999 *Archaeological Data Recovery Report for the Arch. Sites in the Proposed Barbers Point Harbor Expansion Area, Kalaeloa, Ahu-pua'a of Honouliuli, District of 'Ewa, Island of O'ahu*. Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- McElroy, W.K. and M.E. Elison
2013 *REVISED DRAFT—Archaeological Inventory Survey for a Proposed Solar Farm in Kalaeloa, Honouliuli Ahupua'a, 'Ewa District, Island of O'ahu TMK: (1)9-1-013:001*. Prepared for Mana Elua by Keala Pono Archaeological Consulting, Kaneohe, Hawai'i.

- McIntosh, J. and P.L. Cleghorn
2003 *Archaeological Survey for the Proposed 'Ewa Gentry Makai Development 'Ewa District, Ahupua'a of Honouliuli, Island of O'ahu*. Prepared by Pacific Legacy, Kailua, Hawai'i.
- Monsarrat, M.D.
1878 *Map of Honouliuli Taro Land*. Scale: 1:2400.
- 1881 *Coast of Oahu from Windmill at Puuloa to Waimanalo*. Hawaiian Government Survey Map. Scale: 1:24000.
- 1913 *Oahu Fisheries Honolulu Section*. Scale: 1000 feet = 1 inch.
- Nakamura, B.S., J. Pantaleo, and A. Sinoto
1993 *Archaeological Inventory Survey of Proposed Development Parcels D and D-1 Makakilo, Honouliuli, 'Ewa, O'ahu Island*. Prepared by Aki Sinoto Consulting, Honolulu.
- Nakuina, M.K.
1902 *Moolelo Hawaii o Pakaa a me Ku-a-Pakaa*. Kalamakū Press, Honolulu.
- 1990 *The Wind Gourd of La'amaomao*. Kalamakū Press, Honolulu.
- O'Hare, C.R. and H.H. Hammatt
2003 *Archaeological Assessment of the Kalaeloa Campsite Bathhouse Area Honouliuli Ahupua'a, 'Ewa District, Island of O'ahu (TMK: 9-1-13:72)*. Prepared for Engineering Solutions, Inc. by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- Ostroff, B., M. Elmore, and J. Kennedy
2001 *DRAFT: An Inventory Survey at Pu'u Kapolei/Fort Barrette TMK: 9-1-16:02, 21 and 22, Honouliuli Ahupua'a, Ewa District, Island of O'ahu*. Archaeological Consultants of the Pacific, Inc., Haleiwa, Hawai'i.
- Pacific Legacy, Inc.
2009 *Proposed Ke Kama Pono Program Facility, Kalaeloa, Oahu, Final Archaeological Monitoring Report*. Prepared for The Louis Berger Group, Inc. by Pacific Legacy, Inc., Kailua, Hawai'i.
- Pukui, M.K.
1983 *'Ōlelo No 'eau: Hawaiian Proverbs & Poetical Sayings*. Bishop Museum Press, Honolulu.
- Pukui, M.K., S.H. Elbert, and E.T. Mookini
1974 *Place Names of Hawaii*. University of Hawai'i Press, Honolulu.
- Rosendahl, P.H.
1997 *Ewa Marina Community Project, Monitoring of Grubbing and Grading for Fence in area of Wetlands, and Flagging of Specified Preservation Sites, Land of Honouliuli, Ewa District, Island of Oahu*. Prepared by PHRI, Inc., Hilo, Hawai'i.
- Schilz, A.J. and J. Landrum
1996a *Archaeological Test Excavations at the Shipboard Electronic Systems Evaluation Facility (SESEF) Shorebased Site, MILCON P-369 U. S. Coast Guard Station Barbers Point, 'Ewa District, O'ahu, Hawai'i*. Prepared by Ogden Environmental, Honolulu.
- 1996b *Archaeological Monitoring of Construction Excavation at Nimitz Beach, Naval Air Station, Barbers Point, O'ahu*. Prepared by Ogden Environmental, Honolulu.

- Sinoto, A.
 1976 *A Report on Cultural Resources Survey at Earbers Point, Island of Oahu*. MS. on file, Department of Anthropology, B.P. Bishop Museum, Honolulu.
- 1978 *Archaeological and Palaeontological Salvage at Barbers Point, Oahu*. MS. on file, Department of Anthropology, B.P. Bishop Museum, Honolulu.
- 1979 *Cultural-Resources Survey of New Dredged Material Disposal Sites at Barbers Point, O'ahu, Hawai'i*. MS. on file, Department of Anthropology, B.P. Bishop Museum, Honolulu.
- Sinoto, A. and P. Titchenal
 2002 *An Archaeological Inventory Survey of the Proposed Desalination Facility Barbers Point, Honouliuli, 'Ewa, O'ahu (TMK 9-1-31:28)*. Prepared by Aki Sinoto Consulting, Honolulu.
- Soehren, Lloyd
 1962 *Burial Documentation*. Bishop Museum Site Files, Honolulu.
- Spear, R.L.
 1996 *Letter Report: A Cultural Resources Review of Properties Considered for Development at Kapolei*. Prepared by Scientific Consultant Services, Inc., Honolulu.
- Sterling, E.P. and C.C. Summers
 1978 *Sites of Oahu*. Bishop Museum Press, Honolulu.
- Stokes, J.F.G.
 1909 "Walled fish traps of Pearl Harbor." B.P. Bishop Museum, Occasional Papers, vol. 4, no. 3.
- Titcomb, M.
 1972 *Native Use of Fish in Hawai'i*. University of Hawaii Press, Honolulu.
- Tome, G. and R.L. Spear
 2010 *An Archaeological Monitoring Report for the Construction of the Kalaeloa Airport T-Hangers, Honouliuli Ahupua'a, Ewa District, Island of O'ahu, Hawai'i [TMK (1) 9-1-013:Portion of 032]*. Prepared for 57 Builder's Ltd. By Scientific Consultant Services, Inc., Honolulu.
- Trembly, D.
 1995 *Osteological Report on Human Skeletal Remains at Site 2220*. Prepared by Paul H. Rosendahl, Inc., Hilo, Hawai'i.
- Tuggle, H.D.
 1983 *NAS BARPT Runway 11, Clear Zone, Outlease Parcel Archaeological Survey Report*. Prepared by PACNAVFACENGCOM (09P3). MS. on file, Planning Division, PACNAVFACENGCOM, Honolulu.
- 1995 *Archaeological Inventory Survey for Construction Projects at Naval Air Station Barbers Point, O'ahu, Hawai'i*. Prepared for Belt Collins Hawaii by International Archaeological Research Institute, Inc., Honolulu.
- Tuggle, H.D. and M.J. Tomonari-Tuggle
 1994 *Cultural Resources of Naval Air Station, Barbers Point: Summary, Assessment, and Inventory Research Design: Archaeological Research Services for the Proposed Cleanup, Disposal and Reuse of Naval Air Station, Barbers Point, O'ahu, Hawai'i (Task 1b)*. Prepared for Belt Collins Hawaii by International Archaeological Research Institute, Inc., Honolulu.

- 1995 *Prefinal: A Cultural Resource Inventory of Naval Air Station, Barbers Point, O'ahu, Hawai'i: Part I: Phase I Survey and Inventory Survey*. Prepared by International Archaeological Research Institute, Inc., Honolulu.
- 1997 *Synthesis of Cultural Resource Studies of the 'Ewa Plain. Task 1a: Archaeological Research for the Proposed Cleanup, Disposal and Reuse of Naval Air Station Barbers Point, O'ahu, Hawai'i*. Prepared by International Archaeological Research Institute, Inc., Honolulu.
- Tulchin, T., D.W. Shideler, and H.H. Hammatt
 2001 *Archaeological Inventory Survey in Support of the Proposed 'Ewa Shaft Renovation Project, Honouliuli Ahupua'a, 'Ewa District, Island of O'ahu, (TMK 9-2-01*. Prepared by Cultural Surveys Hawai'i, Kailua, Hawai'i.
- Vancouver, Captain George
 1801 *A Voyage of Discovery to the North Pacific Ocean and Round the World*. 6 vols., London.
- Wickler, S., H.D. Tuggle and G. Murakami
 1996 *A Cultural Resource Inventory of Naval Air Station Barbers Point, O'ahu, Hawai'i; Part II: Phase II Inventory Survey of Selected Sites*. Prepared by International Archaeological Research Institute, Inc., Honolulu.
- Wolforth, T.
 2001 *Charting the Changing Shoreline at West Loch of Pearl Harbor Over 6,000 Years: Evidence from the Prehistoric Archaeological Record*. Prepared by Scientific Consultant Services, Hilo, Hawai'i.
- Wulzen, W. and P. Rosendahl
 1995 *Pre-Final Report: Archaeological Assessment of Seven BRAC 93 Project Areas at Lualualei Naval Weapons Magazine West Loch Station, NAS Barbers Point and MCBH, Kaneohe Bay*. Prepared by PHRI, Inc., Hilo, Hawai'i.
- 1998 *Boundary Assessment and Limited Data Collections at the Nimitz Beach Site (SIHP Site 50-80-12-2220) Naval Air Station Barbers Point*. Prepared by PHRI, Inc., Hilo, Hawai'i.

APPENDIX A: AGREEMENT TO PARTICIPATE

Agreement to Participate in the Kalaeloa Solar Farm Cultural Impact Assessment
Dietrix Duhaylonsod Ethnographer, Keala Pono Archaeological Consulting

You are invited to participate in a Cultural Impact Assessment (CIA) of the Kalaeloa Solar Farm Project (TMK: [1]9-1-013:001) in Kalaeloa, on the island of O‘ahu (herein referred to as “the Project”). The Project is being conducted by Keala Pono Archaeological Consulting (Keala Pono), a cultural resource management firm, on behalf of Mana Elua. The ethnographer will explain the purpose of the Project, the procedures that will be followed, and the potential benefits and risks of participating. A brief description of the Project is written below. Feel free to ask the ethnographer questions if the Project or procedures need further clarification. If you decide to participate in the Project, please sign the attached Consent Form. A copy of this form will be provided for you to keep.

Description of the Project

This CIA is being conducted to collect information about Kalaeloa and the subject property in the *ahupua‘a* of Honouliuli, ‘Ewa District on the island of O‘ahu, through interviews with individuals who are knowledgeable about this area, and/or about information including (but not limited to) cultural practices and beliefs, *mo‘olelo*, *mele*, or *oli* associated with this area. The goal of this Project is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources, or traditional cultural practices on the current subject property. This Assessment will also attempt to identify any affects that the proposed development may have on cultural resources present, or once present within the Project area.

Procedures

After agreeing to participate in the Project and signing the Consent Form, the ethnographer will digitally record your interview and it may be transcribed in part or in full. The transcript may be sent to you for editing and final approval. Data from the interview will be used as part of the ethno-historical report for this project and transcripts may be included in part or in full as an appendix to the report. The ethnographer may take notes and photographs and ask you to spell out names or unfamiliar words.

Discomforts and Risks

Possible risks and/or discomforts resulting from participation in this Project may include, but are not limited to the following: being interviewed and recorded; having to speak loudly for the recorder; providing information for reports which may be used in the future as a public reference; your uncompensated dedication of time; possible misunderstanding in the transcribing of information; loss of privacy; and worry that your comments may not be understood in the same way you understand them. It is not possible to identify all potential risks, although reasonable safeguards have been taken to minimize them.

Benefits

This Project will give you the opportunity to express your thoughts and opinions and share your knowledge, which will be considered, shared, and documented for future generations. Your sharing of knowledge may be instrumental in the preservation of cultural resources, practices, and information.

Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected upon request. You may request, for example, that your name and/or sex not be mentioned in Project material, such as in written notes, on tape, and in reports; or you may request that some of the information you provide remain off-the-record and not be recorded in any way. To ensure protection of your privacy, confidentiality and/or anonymity, you should immediately inform the ethnographer of your requests. The ethnographer will ask you to specify the method of protection, and note it on the attached Consent Form.

Refusal/Withdrawal

At any time during the interview process, you may choose to not participate any further and ask the ethnographer for the tape and/or notes. If the transcription of your interview is to be included in the report, you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

APPENDIX B: CONSENT FORM

I, _____, am a participant in the Kalaeloa Solar Farm Project Cultural Impact Assessment (herein referred to as "Project"). I understand that the purpose of the Project is to conduct oral history interviews with individuals knowledgeable about the subject property and Kalaeloa, in the 'Ewa District on the island of O'ahu. I understand that Keala Pono Archaeological Consulting and/or Mana Elua will retain the product of my participation (digital recording, transcripts of interviews, etc.) as part of their permanent collection and that the materials may be used for scholarly, educational, land management, and other purposes.

_____ I hereby grant to Keala Pono and Mana Elua ownership of the physical property delivered to the institution and the right to use the property that is the product of my participation (e.g., my interview, photographs, and written materials) as stated above. By giving permission, I understand that I do not give up any copyright or performance rights that I may hold.

_____ I also grant to Keala Pono and Mana Elua my consent for any photographs provided by me or taken of me in the course of my participation in the Project to be used, published, and copied by Keala Pono and Mana Elua and its assignees in any medium for purposes of the Project.

_____ I agree that Keala Pono and Mana Elua may use my name, photographic image, biographical information, statements, and voice reproduction for this Project without further approval on my part.

_____ If transcriptions are to be included in the report, I understand that I will have the opportunity to review my transcripts to ensure that they accurately depict what I meant to convey. I also understand that if I do not return the revised transcripts after two weeks from the date of receipt, my signature below will indicate my release of information for the draft report, although I will still have the opportunity to make revisions during the draft review process.

By signing this permission form, I am acknowledging that I have been informed about the purpose of this Project, the procedure, how the data will be gathered, and how the data will be analyzed. I understand that my participation is strictly voluntary, and that I may withdraw from participation at any time without consequence.

Consultant Signature

Date

Print Name

Phone

Address

Thank you for participating in this valuable study.

APPENDIX C: TRANSCRIPT RELEASE

Transcript Release

I, _____, am a participant in the Kalaeloa Solar Farm Cultural Impact Assessment (herein referred to as “Project”) and was interviewed for the Project. I have reviewed the transcripts of the interview and agree that the transcript is complete and accurate except for those matters delineated below under the heading “CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS.”

I agree that Keala Pono Archaeological Consulting and/or Mana Elua may use and release my identity, biographical information, and other interview information, for the purpose of including such information in a report to be made public, subject to my specific objections, to release as set forth below under the heading “OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS.”

CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS:

OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:

Consultant Signature

Date

Print Name

Phone

Address

APPENDIX D: INTERVIEW WITH SHAD KANE

TALKING STORY WITH

Shad Kane [SK]

Oral History of the Kalaeloa Solar Farm by Dietrix J. Ulukoa Duhaylonsod (DD)
May 11, 2013

DD: Okay, Uncle, we're on. Aloha, today is Saturday, May 11, 2013. We're at the Kapolei golf course restaurant, once again touching bases with Uncle Shad Kane. I'd like to *mahalo* him for taking time out of his busy schedule to talk story with us. Today we'll be talking about a site in Kalaeloa. Okay, Uncle, if we could start with your name, where/when you were born, where you grew up, where you went to school, please?

SK: My name is Shad Kane. I was born February 23, 1945. I'm 68 years old. At that time, my parents were living at Pearl City peninsula. Today it's a military property, but that time there were civilians living at Pearl City peninsula. Subsequent to December 7, 1941, in an effort to establish a buffer between the civilian community and the activities of Pearl Harbor, the Navy bought out all of the local residents living in Pearl City peninsula. Of course, my parents were amongst them. With that money, my parents bought a house up in Wahiawa Heights, so I spent most of my childhood years living up in Wahiawa Heights. We eventually moved to Kalihi through my elementary school [years]. I went to St. Anthony School and Pu'u hale. Subsequent to St. Anthony's, my dad and my mom actually got divorced when we were young. At that point, through my high school years, my mom had married my stepdad. And so during the latter part of my elementary school years, we moved to Chicago. Dad went to school in Chicago, so we all went, myself and my two brothers, spent a year and a half, two years in Chicago, returned, and lived for a while in Waipi'o Acres in the area where Mililani is today. At that time Mililani was all sugarcane, but we lived in Waipi'o Acres, attended Kamehameha School, during a period when my parents moved several times, moved from Waipi'o Acres to the area where the stadium is today, and subsequent, to Salt Lake. So I went to Kamehameha. Subsequent to Kamehameha, I went to Utah, spent two years in Utah state, and I quit school at that time, joined the Navy, 4 years, returned, joined the police department in '71, returned to UH, graduated from UH in 1976, earned my Master's. I got my Bachelor's in Business, earned my Master's through Central Michigan University when I was working as a policeman, graduated in 1981 with a Master's in Public Administration. And for the most part, most of my life was as a policeman. In more recent years I became, as I had more time, became more involved in our Hawaiian culture.

DD: Thank you. We're gonna go to the Kalaeloa area, the place that we're looking at for this solar farm project. Could you share your *mana'o* of cultural associations with the Kalaeloa area, any personal anecdotes, *mo'olelo*, *mele*, *oli*, place names, *'aumakua*. You know, we're talking about the parcel of land near the entrance of Campbell Industrial Park between Kalaeloa Boulevard and the paintball range. These lands are covered with *kiawe* and have a number of rock alignments and mounds. What are your thoughts?

SK: Okay, during the whole base closure process, Barbers Point Naval Air Station, President Clinton at that time signed an executive order to close a number of bases back in the early 1990s, amongst them was the Barbers Point Naval Air Station. So at that time, I actually was more involved, I had horses at that time, and the horses were stabled at Barbers Point stables. So during that period in time, pre-base closure, I spent a lot of time riding my horse in different areas within Kalaeloa, very aware of structures, not so much in the area we're talking about right now, but structures similar to structures that may have been in the area of the Kalaeloa solar farm. So I was kind of familiar, somewhat familiar to those during the latter part of the 1980s, early 1990s, prior

to base closure. So during base closure, the Hawaiian Civic Clubs decided to charter the Kapolei Hawaiian Civic Club. The O'ahu Council of Hawaiian Civic Clubs decided to charter a brand new club, the Kapolei Hawaiian Civic Club. They were chartered in 1993 at a convention in Las Vegas, and my wife and I became charter members at that time. And the reason why the civic club started this brand new civic club is simply because the civic club, although I really wasn't that involved in Hawaiian culture, the civic club was aware of the ancient cultural history associated with the area we refer to as 'Ewa, today Kapolei.

So the civic club was actually established, the Kapolei Hawaiian Civic Club was established by the civic clubs in an effort to establish a cultural presence in this new area in light of the many changes: one was the shutting down of O'ahu Sugar, Campbell Estate moving to a different direction in development, and Department of Defense shutting down a number of bases to include Barbers Point. So what it did is that it allowed the civic clubs to play a role in the restoring of not so much the cultural landscape, but to preserve what was left of a cultural landscape and restore the ancient Hawaiian names rather than allowing foreign names to become a part of this new city. So that's how the civic club got started.

So at that time, although I was more involved in horseback riding in Barbers Point, my wife and I became members. One of the first things that I was given was that the civic club again made it to play a part in this whole base closure and evolution within the area. So on the federal level they established BRAC which is the Base Realignment and Closure which provided money for closures. On the state level, the State of Hawai'i established the Barbers Point Redevelopment Commission, and they had monthly meetings within Kalaeloa. Kapolei Hawaiian Civic Club asked me at that time if I would sit on one of their task forces. The task force I was asked to sit on was the Public Facilities and Parks and Recreation Task Force as part of that whole base closure. So I represented the Kapolei Hawaiian Civic Club in that whole process of base closure. What that basically did, it put me in touch with different archaeological firms. It put me in touch with all the stakeholders involved in that process to include community people, our legislators, Hawaiian Home Lands, a whole bunch of different federal agencies. So it allowed me to establish a relationship with different archaeological firms and the military navy region.

And so initially Belt Collins was contracted to do the environmental impact statement. Belt Collins hired International Archaeological Research Institute, and David Tuggle, who's a former professor up at UH archaeology, and his wife Myra, I got to know them on a personal level. He was basically contracted by Belt Collins to do an inventory of previous archaeological surveys within former Barbers Point Naval Air Station to include the surrounding areas, but the focus was within military property. And he contracted Rubellite Johnson to provide him with the cultural interpretation of his archaeological work. My part in this whole thing is simply as part of this task force, the focus of this task force was to identify future re-use of all these potential park properties and other similar kinds of properties that would ultimately be conveyed by the Navy to other agencies, city, state, and even private. So different parcels within Kalaeloa, to include the parcel that we are talking about today, were all subject to conveyance, and as part of that conveyance, the Navy had to identify the archaeological cultural resources on the different properties.

My interest at that time as part of the civic club was really narrow and specific to primarily the cultural landscape as part of this future land use. So I learned as part of my involvement from working with David Tuggle, different archaeological firms, I learned that all of Kalaeloa was formerly a cultural landscape. So various parcels of this landscape had actually been altered by military activities, airport, different facilities, was altered. However, the nature of activity or the military base is that they developed primarily areas that they would use. Areas that they would not use, they served as buffer. So they left substantial parcels within Kalaeloa, Barbers Point Naval Air Station forested, and the forested areas still remain culturally intact in terms of the integrity of

cultural structures within Kalaeloa. So all of Kalaeloa was basically a cultural landscape with various levels of cultural levels depending on the military activity within those particular parcels.

So anyway, as part of my involvement, I was able to establish that relationship with all the people involved and was able to kind of learn a little bit of those cultural resources on those properties. Keep in mind that Dave Tuggle's contract was simply to do an inventory of previous surveys. What he did within each historic survey, he did a sample survey within each of these particular areas, but he was limited to the budget, so he did not do, in his opinion, because the budget was limited, he could only work within the budget to satisfy requirement. So in summary from my relationship with Dave Tuggle is that much more work needs to be done. At the time of base closure, much more work needs to be done in terms of identifying all of the cultural resources in Kalaeloa. Basically he said that there were more undocumented cultural structures within Kalaeloa simply because of the limitations set on the budget with respect to base closure.

Within the area that this interview is meant to cover, with respect to what I had access to, on the *mauka* side of Malakole, Wai'anāe side of the canal that butts right up against Campbell Industrial Park, the *mauka* side of Malakole just outside the fence-line is the subject property. My knowledge of this area with respect to my participation in the base closure process is that there were substantial both documented and more so undocumented cultural structures within this geographical area to include known burials. The significance of known burials within this geographical area, I can best represent that by saying this: I'm the facilities manager, Board of Directors, in the Kalaeloa Heritage and Legacy Foundation. Working with the state, we're leasing a 77-acre parcel in Kalaeloa that cannot be used other than as a heritage park. We've cleaned up just 3 acres of the 77-acre parcel, just 3 acres of the 77 we've claimed. Within those 3 acres were three known burials. Within that three areas we found an additional 4 undocumented burials. That is typical of all the properties in the former naval air station of Barbers Point, to include the Kalaeloa Solar Energy Farm *mauka* of Malakole, Wai'anāe side of the canal. So there's a high likelihood, in addition to cultural resources, if they're still there, high potential of burials within that geographical area.

DD: Did you say Tuggle? t-u-g-g-l-e?

SK: Yeah, I don't know, he uses his initial, H. David Tuggle, T-u-g-g-l-e, and he used to be the professor of anthropology at the University of Hawai'i, I think in the early '90s, latter '80s, around that time.

DD: Ok, and the other you mentioned, was it Bell College?

SK: Belt Collins was contracted.

DD: Belt?

SK: B-e-l-t, and they're still in business today, and the last name is Collins, C-o-l-l-i-n-s, Belt Collins was contracted to do the environmental impact statement as part of base closure. So any time you have, as part of Section 106 of the National Historic Preservation Act of 1966, any time you have a military construction project, or any type of project that requires spending of federal monies, it requires consultation, in this particular case, consultation with native Hawaiians, so that was the part of our involvement in this whole thing.

DD: Okay, adjacent to that long canal is a very long stone wall. You have any thoughts on what that might have been used for?

SK: Yeah, actually the last time I was there, I want to be completely honest, the last time I was there actually was I would say probably around 2004 or 5. It was awhile ago. I know since then that there's been a lot of activity in that area. So I don't know the level of activity. But that time, I'm familiar with that wall, and I'm actually familiar with other walls in that particular area. And I think at that time when we were having discussions regarding that wall, there was a lot being said that it may have been a cattle wall. So it's really hard for me to say with certainty that it was a Hawaiian wall because there's still that possibility. However the reason why I kind of feel that it's more like a Hawaiian [wall] is because of its association and close proximity to known burials and known cultural sites. When I say cultural sites, I'm talking about house sites. I'm talking about rectangular enclosures, L-shaped, C-shaped structures that were used as temporary structures, house sites. So this wall, and it's typical of every property in Kalaeloa, this wall is actually in association with these cultural structures, so it leaves it open to question. It could be either Hawaiian, or it could be a cattle wall.

DD: But many times too, it could have been used initially and then re-used during the cattle time.

SK: Yeah, so oftentimes what happens is, see cattle walls were not used to contain cattle. Cattle walls were used basically to channel cattle in a certain direction when you need to move 'em around, because a wall that size, these walls are not that substantial. These walls are actually very low walls, and like I said earlier, I used to have horses, and I used to push cows around. I used to help different ranchers move their cows from pastures into pens and branding and all that kind of stuff, so I'm very familiar with how cows move when you push 'em. See you gotta push 'em slow because if you spook cows, they'll just start running, and when they start running, there's nothing that'll stop 'em, these walls, the walls are like nothing. So if at all, it would not have been used as an enclosure. If at all, it would have been used to channel cows within a certain area.

Now I could understand these kinds of walls in the areas where cattle were transported, so you would push 'em. Even back in the early 1900s, 1800s, you would move cows from pasture to an area you would transport 'em, in our area, very little transporting of cattle during the time period we're talking about. In our area, Campbell established his ranch in Honouliuli, and he established that slaughterhouse in the area that's no longer there, the Kahua Slaughterhouse. During this period in time, they didn't need cattle walls. What they did is that they pushed cattle within the sugar fields, so that the tall sugar actually act to establish lanes for them to push 'em. So they actually pushed cattle within these lanes, so there would not have been any need for one cattle wall because of agriculture in this particular area. The only place they would probably need a cattle wall is actually in forested areas such as Kalaeloa, so there is that likelihood that it could have been used for. It could have been that because of the proximity of cultural sites within the area we're talking about, it could have been that they dismantled --- cowboys --- it could have been that they dismantled cultural structures and used the same stone to create a wall to help channel cows out of the brush, into the cane fields because it was in the cane fields where they actually moved 'em. But they had to get 'em out of the *kiawe* bush into the cane field to get 'em to Kahua.

DD: So do you know where would have been some of the major areas where cattle would have been kept in this area?

SK: Yeah, actually pretty much all of Kalaeloa during this period now, prior to 1930 because I think the first military activity was the 'Ewa Marine Corps Airfield. Even before that, the latter part of the 1920s, I'm not sure if it was the Navy or the Army, they tried to establish a, what do they call those airships now? The dirigibles? Or they had a different name for 'em. But they tried to establish a place where, close to where the O'ahu Historic Railway is located today, what they tried to do is start an airship launching area. And right around that time, the Hindenberg caught fire. So the whole concept of using airships to transport all kinda went out the window with the Hindenberg disaster. So pretty much all of, prior to that time I'm talking about, just prior to this period and prior to military, pretty much all of Barbers Point Naval Air Station, the cattle was allowed to roam throughout that whole area, and on the slopes *mauka* of what was once Farrington Highway, *mauka* then was all cattle. So they needed to push 'em from Barbers Point, that area, the *kiawe* bush, they needed to push 'em from the forested area of Kalaeloa-Barbers Point, the forested areas of Makakilo-Kalo'i-all of that, they had to push 'em down into the cane fields. Once they got 'em in the cane fields, all it took was one or two cowboys to push 'em through the cane haul road to the Kahua slaughterhouse.

DD: Wow, that's interesting.

SK: Yeah, that's how they did it.

DD: Ok, so wondering if you could talk about some of the traditional practices. You know you mentioned some of the cowboy/*paniolo* period, any other traditional practices both past and recent or ongoing that you can mention about this Kalaeloa area?

SK: One that Kalaeloa is anciently known for, and I think today to a certain level not everyone, was actually *limu* gathering. And what made this whole area unique, as compared to anywhere else in the Hawaiian Islands, as compared to anywhere else on the island of O'ahu, was *limu lipoa*. This is one of the places where *limu lipoa* was abundant, that's not to say they didn't have 'em anywhere else, but in other places *limu lipoa* was pretty much restricted to just river areas where the river entered the ocean, so in that immediate area you would have *limu lipoa*. Along this whole area, *limu lipoa* thrived, all the way from, probably all the way from Honolulu all the way to Wai'anae, all the way actually to Kahe Point. Once you get around Kahe Point, it was not as abundant, so it was really abundant right in our area. So historically, *limu* gathering in our area was a major manner in which these people sustained themselves. And what it also did is it gave the '*ō'io* a special flavor because of the *limu lipoa* that the '*ō'io* used to feed on. So during this period of transition, the latter part of the 1800s, early 1900s, the price of '*ō'io* that was caught in our area, because of the *limu lipoa*, actually commanded a higher price than '*ō'io* from any other area.

And the whole reason for that is the fact that this area was completely unique in terms of its geology. For example, Hawai'i Island, you have basalt and lava rock on top of coral. Same situation in Maui, you got basalt on top of coral. In 'Ewa, you have coral on top of basalt, nowhere else. At other points in history, other places may have had that condition, but in our point in time as contemporary people, this is unique for our time. And the significance of that is understanding the nature of water. The water passes over coral or through coral. Coral is porous. As fresh water passes over coral, it dissolves the limestone and creates a whole series of caves and currents. During the period of exploration, most people, most explorers after having been on the sea for months and months, the thing that they'd be looking for is water. So normally they would land in a place of rivers. Traditional river runs from the highest elevation to the lower elevations, and as water is traveling from the higher elevations it's

moving fast and it carries with it all its nutrients, organic matter. And as soon as it hits the flat land, whether you're talking about Hawai'i, whether you're talking about the United States, as soon as it hits the flat land the water slows down, and it drops all your fertile soil, so that's your agricultural lands, no matter where you're talking about, it could be Israel, it could be Asia or anywhere else. Same thing happens with respect to the water in our area. The only difference is you cannot see it.

So the water in our area travels from the higher elevations, from the Wai'anae Mountains to the shoreline, in the same manner, it travels within a depression hole, you cannot see it. As water travels from the higher elevations, it's carrying all its soils, and as it hits the flat land, Kalaeloa, it deposits all those soils. What it does, the water makes itself known in sinkholes in our area, so anciently it was in sinkholes. So that's what makes this place unique. And again, the water, although you cannot see it, it travels in the same manner, it travels within a depression. And the center of the river, although you cannot see it, is your clean water. So within Kalaeloa, within the area we're talking about today, although there may not be any today, there would have been water there. So the significance of a house site means people lived there. If people lived there, that means they had water. So the typical situation would be, people needed drinking water, so the middle of that river, that you cannot see it, that's where they would place their water sinkholes because that would be your cleanest water. They would not be drinking standing water. They would not be drinking stagnant water. So the water would have to be moving. As you move away from that water sinkhole, on the banks of that river that you cannot see is where all your fertile soil would be. So as the water's traveling underground, the fastest water in the river underground is in the center, your drinking water. The water on the banks of the river is where it's being slowed down by the banks of the river, so it causes the water to slow down, it causes the river to deposit all the soil.

So within Kalaeloa, within the area we're talking about, there may have been agricultural sinkholes on those banks that would determine the manner in which they lived their subsistence lifestyle, the type of foods they grew, the manner in which they lived their lives, the things that they needed to clothe themselves with, was not on the surface like any other place in Hawai'i. It was within sinkholes. What I'm sharing with you, it's being supported by other properties within Kalaeloa. The property that we're talking about, I'm not sure if there's still cultural structures there, but according to documented archaeological surveys, that there once was cultural structures in that area. I want to make sure I'm clear. There are archival information that documents, or previous surveys that document some cultural structures on this particular parcel, and in every situation where there's known cultural sites, there's also a history of undocumented sites. So [it] would've been fishing, would've been farming, people living in this particular area all depended on, all structured, the manner in which they lived their subsistence lifestyle was unique in the sense the manner in which water traveled [here].

DD: So this is very interesting because you're pointing out geologically, this area is unique in the whole archipelago, and specifically you're pointing out sinkholes and underground water sources. Is there any other way or any other thing you'd like to add to that as to how the lifestyle was unique here in Kalaeloa and why that would be special?

SK: There are. With respect to practices, for example, there's another example, there's several, for example with respect to feather gathering, amongst the stories associated with cultural practitioners anciently associated with this specific geographical region was that of the *kia manu*. The *kia manu* is the bird-feather gatherer. The manner in which he gathered feathers is different from anywhere else in the Hawaiian Islands. In the traditions, most people

are familiar with the *kia manu* gathering feathers by snaring, by trapping birds, by using that sticky - I cannot think of the name - but there's actually a native Hawaiian plant where they used to take the seeds, pods, where there was like a sticky substance, and the *kia manu* would place that sticky substance on a branch where the birds would normally land, so he normally lived out in the forest, but he's very familiar with trees that birds would frequent. So he would actually use this sticky substance.

However, in Kalaeloa, his manner of gathering feathers was totally different. And it was based on, it grew out of, the manner in which water traveled in Kalaeloa. And it grew out of its geology. Rather than using these other methods that he may have, but the traditions associated with the *kia manu* makes reference to him smoking. The smoking is the result of him smoking birds within a sinkhole because amongst the birds that he used to smoke was the black bird with the yellow feather, the *manu* 'ō'ō. So that particular bird used to feed on *noni*. In Kalaeloa, a lot of the *noni* actually grew out of sinkholes. Today, to this very day, in Kalaeloa, there's *noni* growing inside sinkholes. So the birds would actually fly down into the sinkholes, it's actually rooted within the sinkholes, as the *noni* gets big, the branches actually reach for the sun out of the hole, but it's actually firmly planted inside the hole, the *noni*. So the birds would actually fly down into the sinkhole, and the *kia manu* would somehow seal the entrance to the hole with whatever branches and palms, whatever. And he would actually smoke the birds within the sinkhole, to basically, the word they used in English, I don't know what the Hawaiian word was, he dazed 'em. He dazed the birds with smoke. Then he would retrieve the 'ō'ō, recover whatever yellow feathers he wanted, and release the bird. So it's unique. Nowhere else in the Hawaiian Islands did they smoke birds in the manner the *kia manu* did in Kalaeloa. So that makes it different and unique in the sense of the cultural past associated with the sinkholes in Kalaeloa.

DD: Ho, that's unreal, wow, thank you, Uncle. Okay, we're staying on cultural resources and practices, any other resources/practices which are threatened or have already been adversely impacted by land use and development in Kalaeloa, especially where we're talking about, any other cultural practices/traditions have been impacted?

SK: In terms of practices, we do know that large numbers of cultural structures have been destroyed. And most of the destruction has actually been happening since base closure. So since 1999, there's been more cultural structures destroyed within Barbers Point Naval Air Station than anywhere else in 'Ewa, almost all of 'em been right in there. And, you know, it's hard to really criticize 'cause all too often the sad thing is that in most cases these guys when they did it, they really didn't know what was in there. So that's why it makes it important for people such as us, Ulukoa, to be *maka'ala*, to kinda help them, because the thing is, beneath all these *kiawe* trees, there's a cultural landscape, and there's cultural structures in there. If you stand out in the street on Coral Sea Road, and you look into the *kiawe* bush, you would never imagine what's underneath all that *kiawe* trees. So it's hard to be totally critical, but then again there's situations where the process has been violated with respect to agencies to keep their cost down on projects, and they just move on different things without the proper permits.

In terms of practices, I guess other than what I just shared, that the ancient practice of the *kia manu*, the practice of feather gathering, and all aspects of traditional Hawaiian culture, gathering of the different types of cultural resources, whether it's the gathering of shells, either for decorations, or shell food for eating, all of that had been compromised as we become a more modern people. So like I said, you know, I work with a lot of kids, young guys, a lot of times they tell me, "Eh, Uncle, I wish I was alive one thousand years ago." And I always tell

them, you know, “Think twice before you say that because life wasn’t that great.” So life was tough, you know. Although we struggle with the things that we deal with as cultural practitioners, we’re living little bit better today. So I just trying to kind of, the thing is sometimes we just gotta be *maka‘ala* to make sure that we’re trying to save bits and pieces of the past. We’ll never be able to save ‘em all, it’s almost, the challenge is so overwhelming, so difficult, but the main thing is that we all try to be *maka‘ala*, try do what little, do enough what we can, if we all do a little, maybe we can save a big piece of that ancient past. But other than what I just shared, with respect to Kalaeloa, I cannot really think of anything else other than that that makes us unique.

DD: You know, we know the significance of some of these structures, whatever is left of them, but let’s look at the natural landscape, we have forests of *kiawe*, we also have the sinkholes as you mentioned, what’s the significance of these forests and/or the sinkholes and to what extent should they be preserved?

SK: If our interest is preserving the cultural landscape, and when we speak of a cultural landscape, we also need to consider the biological landscape because the biological landscape was shaped by the geology of the region. And the geology of the region actually shaped the manner in which these people lived their subsistence lifestyle. So it’s all based on that. *Kiawe* is not native. And actually, *kiawe* has been one of the biggest challenges to Kalaeloa simply because the amount of water that *kiawe* extracts from the coral. It makes it even more difficult for the native biological landscape to survive. So *kiawe* has actually created a problem with respect to the preservation of that biological landscape. So what we’ve been doing in Kalaeloa, we’ve been trying to remove, on top of that is the thorns, our ancestors never really wore shoes in this particular area. So they were able to walk safely barefooted throughout this whole region. So in our efforts, for example, the Kalaeloa Heritage Park, we’ve been trying to remove as much of the *kiawe* as we can with the amount of volunteers that we have. So we’re trying to remove all of that, and we’re trying to restore that biological landscape associated with Kalaeloa. And we’re doing that right now, working with the State of Hawai‘i.

DD: Thank you, almost *pau*, Uncle. Do you think future development of Kalaeloa lands would affect a place of cultural significance or access to a place of cultural significance?

SK: It depends on the activity. I know wind farms, and that’s the reason why in the past we’ve been opposed to wind farms as a source of renewable energy, because of the—I guess I don’t know how—it was explained to me in terms of energy flux lines that’s generated that’s in the air. So they would generally, with the wind farm, they would generally prevent access by fencing wind farms in. I’ve been somewhat supportive of PV (photo-voltaic) because my understanding is at this point now, I have not had any experience with PV Energy Farm in current use, most of ‘em are aware, are in stages of being built, so I don’t know the security aspect associated with PV.

So the only concern is that, you know, is this renewable energy gonna prevent access to the cultural landscape and whatever practices that’s associated with that particular area within Kalaeloa. I don’t know. I really haven’t seen anything in writing with respect to limitations to access other than fencing properties for security of the value of all the panels and everything to prevent people from going in and stealing and all that kind of stuff. So I can understand restricting access with respect to security issues associated with the panels. I’m hoping that there’ll be cultural access on some of these properties if there’s cultural resources on those properties.

I am aware of different properties where there were levels of cultural resources on 'em, and I am aware of some farms where they actually saved pieces of it, not all that was once there. So I know that stuff was destroyed. But I know that some properties actually have cultural resources on 'em. And for me, the organization that I'm a part of, is that we use the cultural resources in Kalaeloa as a venue for sharing the cultural past and helping our young children be aware of the rich cultural history associated with Kalaeloa. I'm hoping that access would not be restricted on that kind of level especially because how unique these cultural structures are within Kalaeloa. Most everybody associates this area as a place of Hawaiian cultural past, and it's not. There's a strong Tahitian association within our geographical area. Why is it so strong? I don't know if I can answer that question. All I can say is that I know there's a strong, nowhere else in the Hawaiian Islands, you not going find it on Kaua'i, you not going find it on the Big Island, you going find 'em only right here in 'Ewa/Honokai Hale/Makakilo, this area, this the only place you going find this Tahitian association, and that's why access is so important because in order for people to feel the *mana* associated with it, you actually gotta see it, you actually gotta walk right up to 'em and feel 'em, so access is so critical. So we're hoping that in all this development, that we don't lose that.

What it does is that amongst the recent surveys they were able to get a carbon-14 date from 1400 associated with these Tahitian structures. I should also say that Hawaiian dry stacking, they take stones, primarily basalt, and you lay 'em horizontally or flat. Tahitian dry stacking, what they did is that they integrate a lot of tall upright stones, so they use upright stones, and they kind of stand 'em up, wide at the bottom, narrow at the top, and they just filled it. So you find that repeated in every structure, you find 'em in their walls, you find 'em in their house sites, you find 'em in their *ahus*, all aspects of construction, you find this integration of Tahitian. So 1400, plus or minus 150 years, tells us that within this Hawaiian-Tahitian landscape, it could be as old as 1250 to as recent as 1550. And most of us struggle, getting a sense on how long these people were traveling back and forth between the southern latitudes and the northern latitudes. We're all aware that the major Tahitian migrations occurred, on this island O'ahu, around 400 AD. The big question mark is how long did they travel back and forth. Kalaeloa has that answer.

And one of the stories associated with Kalaeloa regarding this unique Tahitian aspect is associated with a chief by the name of Kaha'i. The name was Kaha'iaho'okamali'i, he was the son of Ho'okamali'i, he was the grandson of Mo'ikeha. Mo'ikeha was the grandson of Maweke. Well, Kaha'i in the traditions associated with Kalaeloa, Barbers Point Naval Air Station, is referred to as Tahitian although he was born in Hawai'i, born in Hawai'i, five generations, he was not Hawaiian. He called himself Tahitian. So what that tells us is that perhaps as recent as 15—1600, that people still had that connection with the southern latitudes. So they were not calling themselves Hawaiians, they were calling themselves other than Hawaiians.

So the big question that the properties we're talking about, the Kalaeloa solar farm is this: How long does it take a migrating people to see themselves other than their place of origin? How long does it take us to do that? A good example is my wife and I. My wife joined ancestry.com to find out what her Portuguese ancestry was, so she did. So she wanted me to do a DNA analysis like her. And I told her, "I don't need it." I know I'm half Hawaiian, quarter German, quarter Portuguese. So I went ahead and submitted it. I did a cotton, I did a saliva swab, and then she sent it in for a DNA analysis, and the interesting thing is, okay, we're talking about how long does it take a migrating people to see themselves other than their place of origin. That's what we're talking about. So when the cotton swab came back with my

DNA, the most interesting thing is this, I always thought I was 50% Hawaiian, the cotton swab, the DNA analysis said that I was 76% East Asian, specifically Mongolian. Well, there's an answer for that. The other one was that I was only 17% Polynesian, and the rest was European.

Now the reason for that DNA analysis, now don't forget we're talking about how long does it take a migrating people to see themselves other than who you are, what you call yourself, what you call yourself, we're talking about blood now, so the DNA, the reason for that is that, 76% Mongolian simply because Mongolia ruled all China, all of Russia, portions of Asia, portions of Europe, and much of southeast Asia. So they ruled this huge continent for long periods of time. And these people eventually moved out into the Pacific. The reason why Polynesians are so small is because Polynesians are the youngest group. Now when I talk about Polynesia now, we're not just talking Hawaiian, we're talking about everybody in the Pacific, everybody, including Filipinos. Filipinos all from the same bloodline that moved off the continent and decided to live out their lives on the sea. So that's the reason why every one of us in the Pacific have east Asian blood. So how long does it take? So it's really a story of migration. It's really a story of travel, where we all came from hundreds of thousands of years ago, where we all came from. So if DNA is accurate, now the thing to keep in mind now, you can get the gas chamber based on your DNA, you know, so that's how accurate they feel it is. So based on that, it's the story of travel.

DD: I wanna try that cotton swab thing now.

SK: Blew my mind away.

DD: Ancestry.com?

SK: Yeah, ancestry.com, but the thing about that is that everything you ask them to do, you gotta pay you know, you know that ah? I had to quit already, was costing me some bucks! 'Nuff already. *[laughing]*

DD: *[laughing]*

SK: But you know if you willing to spend the money and get all this stuff, blow your mind away you know, DNA, yeah.

DD: Interesting, yeah. DNA, yup.

SK: Anyway that's pretty much what I...

DD: I like that. Yeah, I wanna try that. I wanna see.

SK: Eh, all of us in the Pacific Ocean related, all of us.

DD: 'Kay, Uncle, are there any other cultural concerns that the community might have about this parcel of land, the development of it?

SK: I think most of us out here all in support of renewable energy. I think every one of us want us to be less dependent on other people, other countries. We're an island, you know, we were once self-sufficient at one time. So today we've become so dependent on other places,

and fossil fuel is the worst. We gotta somehow, and I'm 100% willing, wanting to get away from all of that. So I think most people in this area are pretty supportive of renewable energy. I'm just hoping that, because not every one of us are like you and I, I'm just hoping there's enough like you and I, Ulukoa, who can make certain that bits and pieces of that ancient past, we can share with our children so they all know where they came from. And I think that's the story.

DD: *Mahalo* Uncle. Is there anything else you'd like to share regarding this place?

SK: No, I think pretty much said the stuff of significance. The last thing I'll share is that, actually I gotta meet, one of the meetings I got today, is I gotta go deliver some books. I just wanted to show you this, everything I shared with you is out of this book, and I'm delivering it to some guys, you can actually get 'em at ancestry.com, but this is a book that I wrote, and so everything that I recalled now is actually within this book. So you know, you might wanna go talk to Windy, this book was actually written, actually for land developers and state and city planners with respect to all the stuffs I just shared about. And so the reason why I share that, you know, what I try to do, and that's why I do these, I sit down with you, I sit down with Maria Orr because this is my little way of being able to do what I think is important for the future. So you might wanna go, and you can get that book actually from Amazon or google.com, so if you just check "cultural Kapolei," it's there. Other than that, what I haven't shared with you is probably in the book, but I think that's pretty much it.

DD: Would you recommend I talk to any other *kupuna*, any other?

SK: Within Kalaeloa, I don't know. I serve as the cultural for all of Navy properties. I also serve as a cultural monitor for all of Hunt, all Hunt projects in Kalaeloa. And I'm not aware of anybody else that does it on the level that I do. There may be. I don't know. You know, different developers and contractors talk to different people, but I work with the Navy, and I work with Hunt. Other than that, the only other guys I know are the guys that work with me, like all the Na Koas, Bob Alaka'i is one of our Na Koas, he's been there a long time, he's actually from Honokai Hale. I don't know if you ever met Alaka'i.

DD: Yeah, they're an old family from La'aloa.

SK: That's right, that's right. So he can share a little bit, not so much with Kalaeloa, I think he's more *ma'a* to *mauka* of Farrington Highway, he used to hike up in Palehua, that area there. At that time, I don't think it, because when it was a military base, the access to Kalaeloa was really restricted. The information I was able to share, the access that I have actually came out of our civic club, you know. I don't want to make it seem like it was because of me, but really the civic club that allowed me to participate in this whole activity. If wasn't for the Kapolei Hawaiian Civic Club, or the civic club's relationship as a broad statewide native Hawaiian organization, I probably never would've been involved in it because it would have been difficult as an individual. But as part of a statewide native Hawaiian organization, because of Section 106, it created an opportunity for me to participate. I'm not aware of anybody else who did other than OHA, OHA was involved, but I cannot remember who the representative was, she was probably not from this particular area. I don't know who else.

DD: So Kalaeloa was restricted at one time?

SK: Barbers Point, when it was a naval air station.

DD: What about that Kalaeloa area going in? Was that ever restricted, too, the Kalaeloa Boulevard going in?

SK: Yeah all, you know, see we're talking about the forested areas.

DD: Right, right, right, okay.

SK: We're talking about the forested areas in Kalaeloa. The forested areas in Kalaeloa all was fenced in, and all of 'em had signs: "Restricted." You know, so, for example, even if you was a civilian, and you went into Kalaeloa, and you went walk into this bushes, they would've probably come looking for you if you was in there. For example, the Heritage Park property, the one that I'm on right now, and this is typical of all of 'em, I don't want to make it seem like it's just the Heritage Park, see what it was is that the Heritage Park, 77-acre parcel, in the middle of that 77-acre parcel was a tall fence with barbed wire. The surrounding area beyond that is where they kept all the bombs, all restricted areas. So what they would do is that they would, like for example where the race track stay, the bombs used to be kept in these concrete bunkers. They would by forklift, they would go across the street get the bombs, come into the Heritage Park property, go beyond the buffer, the Heritage Park parcel served as a buffer for the activity within the fenced-in area within the Heritage Park. What they used to do is that when there was a plane about ready to take off, they would go get a bomb, bring 'em into the maintenance yard, attach the fuses, take 'em out to the plane, load 'em on the wing, the plane would take off. But the forested area served as a buffer for all military activities in Kalaeloa, every one, every military activity in Kalaeloa surrounding the airport, was buffered by *kiawe* bush. So the whole idea was to keep even military people away. So it was that secure. So civilians could probably go to the residential areas if they were guests, they could probably go to the base exchange if they were with military families and shop, but within the forested areas, where the Hawaiian stuffs are, could not get in there.

DD: And where's this Kapolei Heritage Park? Kalaeloa?

SK: Actually, that's where I initially suggested. It's actually, if you go into the former main gate, Fort Barrette Road, that first intersection is Roosevelt, if you take a left of Roosevelt, traveling as if you're going to 'Ewa Beach, you're following the fence line on the left headed to 'Ewa Beach, midway across is Coral Sea Road. Coral Sea Road is the road that takes you to the beaches, the ocean, White Plains Beach, as you're going across, on the right hand side, you're gonna see the airport, goes through a series of S-turns, right after you come out of the S-turns, the road goes straight again, short distance down, the right hand side, right opposite the racetrack, that's why we've been opposed to the racetrack from the very beginning, because the racetrack is sitting on cultural landscape. So on the right hand side, opposite the racetrack, is a 77 acre parcel. It also includes the Kualaka'i salt pond. The Kualaka'i salt pond was used by this village in this area. There's over 200 structures and archaeological sites in there, and it's all, a lot of it is houses, all house sites. Right on the 3 acres that we've cleaned up right now there's seven houses, two is in excellent shape, the rest, the other five is kind of remnants of a house site. So you can actually see the structure, but it's not as well-defined as the two of 'em. So substantial numbers in that area. So it's along that road. Whenever you wanna come Ulukoa, you just let me know.

DD: Ok, sounds good, sounds good.

SK: This is where I spend all my time.

DD: Yeah, I'd like to come down Uncle.

SK: Let me know.

DD: Ok, I will, *mahalo*, always good talking story with you, always good talking story with you Uncle. Thank you ah, *mahalo* for your time.

SK: Thank you for the *makana*.

APPENDIX E: INTERVIEW WITH GLEN KILA

TALKING STORY WITH

Glen Kila [GK]

Oral History of the Kalaeloa Solar Farm by Dietrix J. Ulukoa Duhaylonsod (DD)

May 18, 2013

DD: Aloha, today is Saturday, May 18. We're sitting at the Kapolei Golf Club restaurant with Uncle Glen Kila and Uncle Keoki. It's a beautiful day, and anyways, we're gonna talk story little while. I'd like to thank Uncle Kila for taking the time to talk story with us. So we going be talking about the parcel of land in Kalaeloa that we went to visit several weeks ago. Before we begin, do you mind sharing your name, where/when you were born, where you grew up, where you went school, anything about your family background you'd like to share?

GK: My name is Glen Makakauali'i Kila, and I am a *kupuka'aina*. That means that my family are descendants of the aboriginal families of Wai'anae. I grew up in Wai'anae my entire life, as my parents and grandparents before me. My ancestors originally lived at Nene'u (Pōka'i Bay) and Makua, Waianae, but later settled all over the *moku* from Ka'ena Point to Kalaeloa. Traditionally Kalaeloa was part of the *moku*, and my family lived in the area called Pu'u Palailai by Honokai Hale. That family name is the Haulele.

DD: Thank you, Uncle, thank you for sharing that.

Talking about Kalaeloa, would you like to share more about how specifically you got to become acquainted with and know the land of Kalaeloa?

GK: As a fisherman, my father used to go pole fishing and dive off shore along Kalaeloa. More importantly is that in the 1970s, I was selected by Auntie Lei Fernandez, who was the *kumu* of the Kalaeloa area to be her *haumana*. She was the most knowledgeable person about the history and the religion of the area. I was her only student that she taught the traditions of the Wai'anae Moku.

When we talk about Wai'anae today, people define Wai'anae as from Nānākuli to Ka'ena Point. But in the traditional *kupuka'aina* or aboriginal district, the *moku* is from Ka'ena Point to Honouliuli. We got our *moku* district boundary from our *ali'i* of the Manuia clan. Our *moku* also extended from the Wai'anae Mountain Range to Ka'aumakua in the Ko'olaus. This is the lands of Wahiawa and Waianae uka. For the *kupuka'aina* families, the sun was very important, as well as the rains and life. Our religion was based on Kanenuiākea, the Creation God. We lived by the seasons, and we looked at nature. The specific place in Kalaeloa that we visited was part of a place of learning near Pu'u o Kapolei. Near the site was the sun *heiau*, in which Kanenuiākea, was worshipped as the sun deity. Kapolei was selected because the rising and setting of the sun could be tracked from Pu'u o Kapolei. We learned this from our *kūpuna*, my parents, grandparents, from Auntie Lei, and all the *kūpunas* that came from Kalaeloa.

I want to make a special note that during the Ku'e Petition asking that the United States return our kingdom, one of the leaders in the Ku'e Petition was Mrs. Kuaihelani Campbell. Mrs. Campbell listed her residence in the Ku'e Petition as Wai'anae. Her residence was at the time was Lanikūhonua, Ko Olina. That tells you that our *ali'is* recognized Kalaeloa as part of Wai'anae. There's a lot of records that tell us that that Kalaeloa is part of Wai'anae, such as the Catholic Church. The Wai'anae Catholic Church records were held where the Bishop lived in 'Ewa (Honouliuli). I am quoting this because I want to be sure that everyone knows that Kalaeloa was connected to the families of Wai'anae.

Auntie Lei took me to those sites back in the 1970s and '80s. We met certain scientists like Dr. Alan Ziegler, who was an ornithologist that had connections with the Smithsonian Institute. He

shared with us about the birds, animal and human remains that were in the caves at Kalaeloa. Secondly, my aunt took Dr. Horace Clay there, and he was the botanist professor for Leeward Community College. She taught Dr. Clay how to propagate the native plants in the area like the 'akoko. The 'akoko was *Euphorbia skottsbergii* which was a very rare plant that they were trying to protect. There were a lot of different plants that came from that area. I'm concerned about the plants and would like to see studies be done in that area to make sure that any population of the *skottsbergii* 'akoko or the *nototrichium sandwicense*, the *kulu'i*, or any other plants are protected if they found. We also went with Dr. Aki Sinoto, an archaeologist back in 1978 to look at some of the water caves in the area. I'm very familiar about the Kalaeloa places because I went with my *kupuna* there.

DD: Thank you Uncle, that's awesome.

You mentioned some traditional practices - fishing, diving. Are there any other traditional practices connected to this parcel Kalaeloa, both in the olden days and also in more recent history? Any other practices that you'd like to share?

GK: Well Kapolei, that was traditionally the home of Kapo, which was Pele's sister. And also it was the home of Kamapua'a's grandmother. The reason for that is because of the flooding in the Kapolei area. Kamapua'a was in Wai'anae, as the 'aumakua that brought in the rains, the heavy rains that destroyed land. Like Pele that destroyed land, she also rebuilt the land with the volcano lava flows. Kamapua'a too, destroyed many of the *lo'is*, but also brought in soil down from the mountainside and most of all the valuable fresh water. So that was a tradition in Wai'anae in understanding the seasons, that we call "*ka'ananiau*," "managing the beauty of time." This was practiced as part of our Kane religion that recognizes the seasons, the drought, sun time, the hot time, as well as the wet time or the wet season.

So given that as a background for our tradition, fishing was very important because Kalaeloa was a large area that had good fishing like for *kala* and so forth. But growing up in Wai'anae, one of the things about that area was its lack of water. Water was found in certain water caves that we became familiar with, some caves actually had plants, sweet potato, ti leaves that were grown in the sinkholes and so forth.

One of the traditions in the area, I was told, was making charcoal and collecting firewood. That was interesting because there are a lot of *kiawe* in the area. I believe that when the French Catholic priests brought in the *kiawe*, the mesquite, we're talking about the 1800s. Lots of wood that was sold or traded by the *ali'is* came from that area as was told to me.

The area, I was told also had cattle that was raised there. There were a few cowboys in the area. But when they say that the walls are cattle walls to contain the cattle, our *kūpunas* say that they were not cattle walls because the cattle could jump over the walls because they are low walls. There were some cattle walls, but most of the walls that you see there we were told to be '*ili* walls. '*Ili* meaning, boundary walls that were separating different *kauhales* or villages or family units from other family units when clearing the land.

Some of those unusual features that you see there were, to my understanding, from the *kūpuna*, used for worshipping, for burials, and marking places where water was located. And where the potable waters were, that's where they built the houses or their religious structures. We call those house foundations "*paepae*" in Wai'anae. So when we look at these mounds, we see *paepae* or house foundations or burial sites. The sites can be researched but we would like the people who study there, not to go into those burial grounds. We know those sites are burials even if we don't see what's under the stones. We know that's a burial and we want that to be respected.

DD: Thank you Uncle. Do you think that future development of this proposed solar farm, this proposed area, how do you think that would affect these cultural practices, these cultural sites, and also, access to these sites? What are your thoughts on that?

GK: It's important for us to first know about these sites, about its history, about its religious purpose and cultural purposes that we call "*ka'ananiau*"—"managing the beauty of time." I think the closest word for that today is called "traditional cultural properties," or "TCP studies." If we look at the TCP study for the area, we need to recognize that everything impacts something else. So if you go in there and you start taking out the mounds or what we consider burial grounds, that displaces our family to the *'āina*. So we would like to keep it intact. But we, as worshippers of Kanenuiākea, recognize that we can manage the beauty of time with the sun, which in this case is the solar development over there. It is a good development because it uses the sun that our people used many, many years ago. And so if they could develop above ground and we can access the bottom part of the development, that would be good development. Who says that the solar panels cannot be 20 or 10 feet above ground? The bottom part holding the archaeological features can be preserved for people, children, to look at their culture. Having the photo cells above ground, is okay for me. We always look at managing the beauty of time through preserving, protecting areas that have a concentration of sites and burials by landscaping and keeping the place intact and undisturbed. But other areas that have no features can be used for the purpose of energy collection or development. Having people to be able to come there to learn about their culture is very important for us. Even learning about the cattle ranching or collecting of the *kiawe* wood and other trees for trade are all parts of our history and can be preserved if done correctly.

DD: *Mahalo* Uncle. There are two specific things I'd like to hear your thoughts on. One was if you'd like to share your thoughts on the sinkholes, and also, there's that one really long wall alongside the road. You have any further thoughts on that one long wall and the sinkholes, any significance?

GK: I've seen those kind of walls. They're about, I would estimate about, 3 to 4 feet high. Many archaeologists erroneously identify those kind of walls as cattle walls. Our *kūpunas* would always remind us that in the cattle ranching, you had only a dozen or more cowboys. And to have those dozen cowboys build miles of 4-foot walls is impossible.

Those walls were created prior to cattle [ranching]. It was what we call *'ili* walls. In Wai'anae, we do not use the term [*ahupua'a*], at that time, before Kamehameha, we used the term *'ili*. *'Ili* was an *ahupua'a* in our vocabulary. And so these walls I've seen in Wai'anae --- including Wai'anae town and in the valley were *'ili* walls similar to that in Kalaeloa. Some five to six foot walls called *pa'eke* were constructed to keep cattle in were built but more importantly they were constructed to move rocks away for planting and as boundary walls. When I looked at those walls, I do see that some may have been used for keeping certain animals out just as a deterrent. But we knew that if the cattle --- wants to jump over, they're going to jump over those low walls. Or cattle will rub their backs against those kinds of walls and knock the walls down easily. So they're just a barrier to let people know this is my property. That came after the Europeans coming to Hawai'i.

I see those walls also marking a village.

We were taught that wherever there is a concentration of features, you must have water in those kind of dry areas, like Kalaeloa. So when we saw the walls, the first thing I looked for was the water source. Later Ulukoa took us to the place where there was an old well feature. We believe they built the well over the same traditional water source in the area. These water sources and features need to be protected because they are remnants of the village.

DD: Thank you Uncle. Do you see the sinkholes as needing any kind of protection also and/or preservation? To what extent should we be mindful of the sinkholes?

GK: When we studied with Dr. Alan Ziegler and our traditional *kupuka‘āina* or lineal descendants training under Auntie Lei, they recommended that we protect those sinkholes in Kalaeloa because it could: 1) be where the brackish water is, that have the ‘*ōpae‘ula*, I’m not sure now, but I did see ‘*ōpae‘ula* in certain sinkholes in Kalaeloa, so that has to be examined more closely.

The sinkholes were also burial grounds where I went with our *tūtū*s to certain sinkholes or caves that held the *iwi* of our *kūpuna*.

I also know that those sinkholes held a lot of history and a lot of rare *iwi* or skeletal remains of animals ---- bats, birds, like the *Chaetoptila*, which is a flightless bird called the *kioea*. We also saw the *Thambetochen*, which is the flightless duck or goose, and the crow, [which is] the ‘*alalā*, and all sorts of other animals that could should be left in place in the sink holes as a repository place for these animal remains. I would like to see those places really protected.

DD: Thank you Uncle. Are there any other community concerns that come to mind that we haven’t mentioned that you’d like to bring up? Any concerns of the community regarding Kalaeloa, regarding this area, regarding cultural practices and other traditions?

GK: You know, we come from the older religion prior to Kamehameha’s Kunuiakea religion, and ours is based on the natural elements. And our *kūpunas* taught us that the resource in Wai‘anae, especially in Kalaeloa, was the sun. Using the sun, the solar energy development if done correctly, by not destroying the sites but incorporating them into their design, will enhance our beliefs and values about harnessing the sun and even the wind.

That area was known, not only for the sun, but also for the winds that come from the mountains above. And so for us, seeing a balance of nature and human development working together in this kind of project will enhance the area and make it a better place for everyone. That is a good kind of development rather than building more and more houses that takes more of our resources out of the community. Especially in the area, it has to be protected because it’s rare to have these sites still intact. It hasn’t been touched since the 1970s when I first went with our *kupuna* to look at these sites as a place to learn. We also used to go there to run around as a kid but that was different. It is now important to learn about our culture and traditions in the area and that is important why we should keep these areas protected.

DD: Thank you Uncle. When we look at the geography/geology of our islands, when we look at Kalaeloa in particular, could you share some *mana‘o* on the uniqueness, if at all, about this place?

GK: Kalaeloa’s uniqueness is the clouds’ pattern. We’re taught by our *kupunas*, especially studied by my nephew Chris Oliveira who is a brilliant Hawaiian *kupuka‘aina* observer. In growing up, he used to observe the clouds in Kalaeloa. The wind pattern will take the clouds to the Wai‘anae Mountains, and would bypass Kalaeloa. So Kalaeloa is a very dry and arid area because of the air current. The wind current blows all of the wet, rain-laden clouds away from the area. So the environment over in Kalaeloa is very dry except during what we call the Kona weather.

It was all coral, what we call *papa* or reef. And the livelihood came from these small sinkholes that had water. I remember back in the ‘70s that my students and I found a large water cavern, and we jumped inside, and we swam. We estimated the depth of that fresh water to be 30 feet deep. So that’s an important geological feature because it has lots of underground water. When we went into these sites, we noticed we could find water just below the surface. And this was fresh water that we could drink. The fishermen also used to drink from these water sinkholes as long as there were mosquito larvae in them.

The land was dry, but it had lots and lots of fresh water underneath. I was also taught that historically the *ali*'s also used the beach in the area because the Hawaiians loved the ocean. Especially the *ali*'s who used areas like Kalaeloa for their residence. An example is Lanikūhonua in Ko Olina where King Kakuhihewa built his winter home during the wet season, what we call the *ho'oilo*. They would come there not only to live because it was cool at the time and had lots of fish, but it's because of the surfing. And so our family talks about the *ali*'s coming to places like Kalaeloa, Pōka'i, Wai'anae, Mākua to actually live there during the wet season because of the surfing, and of course because of the food.

DD: So would it be safe, Uncle, to say that because of the uniqueness of the geology and the geography and the unique history that this unique place led to, that even more so it makes it important to preserve what we can of the area?

GK: You know, in my lifetime, I've seen a lot of places just taken out and disturbed or destroyed. If you look at the present make-up of this area, it's mostly housing and golf courses with many of the archaeological features of our *kūpuna* destroyed. This place we've visited is very unique because it hasn't been destroyed at all. I could not believe that some of the walls that I've seen back in the mid-1970s, have not been touched. And I'm happy because other areas have been totally destroyed, even by the City and County when they built Kalaeloa Beach Park. Many walls and native plant areas were destroyed by that development. So it's not just the developers, but also our state, city and federal government that are destroying our cultural sites.

So I am asking the developer to protect the sites on the property because it as an important part of our history and it's rare to see on the island of O'ahu.

DD: That's awesome, Uncle, thank you so much. Wow, that's so much that we discussed, and thank you so much for sharing this, so very valuable. Before we close, is there anything else you'd like to --- what would you like to see happen? Any other thoughts, any *mana'o* that you'd like to share before we close?

GK: First of all, I'd like to thank Ulukoa for taking me back to a place that was part of my training under Auntie Lei; and two: I also want to recognize the importance of having an archaeologist and researcher like Ulukoa, who knows the ancient *olis* and dances of our Waianae-Kaua'i *mo'olelo* to conduct the researches in Waianae. We need *kumu hula*'s from our *'āina* to teach our kids about the history and traditions of the sun and about the elements which we again call *ka'ananiau*. This was the land system that we had here in Wai'anae and Kaua'i, which is different from the *ahupua'a* culture. People need to understand that the *ahupua'a* culture from the Big Island had a more stable environment because they had a larger land mass in which people could reside in the area or *kīpuka* for generations. In Wai'anae, we didn't have that *ahupua'a* system because during the dry or *kau* season families moved towards the mountain or down the coast like Honouliuli from Kalaeloa.

One special note too is that some of the plants, such as a special type of *kalo* was brought over by our family from Tahiti specifically for Pele. This taro was grown in Honouliuli when they brought it over during the migration time. Some of these plants were transplanted in Wai'anae Valley for safe keeping by the families who knew the genealogy of this taro. The *'ulu* was also transplanted from Honouliuli. There's lots of history that is still part of our tradition in Waianae.

Thank you everyone, *mahalo*. *Mahalo* Ulukoa. Aloha.

DD: *Mahalo, mahalo* Uncle, thank you for your time. Kep, *aloha*.

APPENDIX F: INTERVIEW WITH MCD PHILPOTTS

TALKING STORY WITH

McD Philpotts [MP]

Oral History of the Kalaeloa Solar Farm by Dietrix J. Ulukoa Duhaylonsod (DD)

August 7, 2013

DD: Today is Wednesday, August 7, 2013. We're sitting up at Palehua in Honouliuli, 'Ewa, and we'd like to say *mahalo* to McD Philpotts for taking time out of his very busy schedule to talk story with us. We're gonna be talking story about some lands in Kalaeloa that are slated for development. Earlier today we visited where the solar farm is proposed to be developed.

MP: Aloha, my name is McD Philpotts, and I'm part-Hawaiian, and I was born here in the Territory of Hawai'i in 1958. I grew up at what is now Paradise Cove and Lanikūhonua. My 'ohana is Campbell. So Kamokila Campbell was my great-grandma, and that's where I grew up until the time that we lost the lease there in the late '60s. 1970, we got this place up at Palehua. 1980, I came back from college, and my wife and I have been here since 1980. We've raised our boys here. Our boys are now the 6th generation on this 'Ewa Ahupua'a.

Today, visiting the proposed solar site, I have to say that I think there was many different layers of development, you know, from very recent to, I suspect, pre-Contact. But you know, I don't think it's so evident. But it could be if further exploration of some of the sites were done.

DD: Ok, *mahalo*. *Mahalo* for sharing that.

I know you mentioned that your knowledge of this place is from growing up over here. Would you like to share your *mana'o/ike* of traditional practices either past or ongoing associated with this Kalaeloa area, specifically in the area we visited? You saw those rock alignments and mounds; what are your thoughts?

MP: Well, we're surrounded up here at Palehua with all of that. Probably the greatest population of the concentration of this *ahupua'a* was up here at Palehua. But all of the resources to exist out here are spread from the ocean to the top of the mountain. And to me, my *mana'o* is that the key ingredients for life is the one thing that never changes, and that's the *wai*.

Water was more plentiful up here. We have a lot of springs and perched water up here. On the 'Ewa Plain, you know, water isn't like in Kane'ohe. So, you know, knowledge is key. And there is water. And I think perhaps the one sinkhole that sort of looks like it's been filled with trash out there, to me looks like once upon a time it was deep enough to be a dangerous situation, they tried to cover it, but it looks like it had an opening in the center of it, and that it might have actually served as a well or something back far enough. So if we go back to pre-Contact and how that might be part of the population out here on the 'Ewa Plain, if that once was a fresh water resource, and we have other evidence in the immediate area actually very close, you know, going towards the harbor and also going towards the naval base area, there's fresh water. So that could have been a fishing site. And it looked like that one structure was a house site, the geometry of the three walls anyway, look like that, and that's only a few yards from that sinkhole we're talking about.

So in more recent times then, it could have been used for cattle because they took the cattle from up here and took 'em down there. Then the feed lot became the feed lot. That was Hawai'i Meat Company that ran their cattle from up here, and they took 'em down there. So I'm curious about that wall. The wall was beautiful, but it looks like it's definitely post-Contact. When was it made, and what was its function? Was it to keep cows going in the direction they wanted 'em going? Or

did it get built after the [adjacent] canal to keep things out of the canal? I wonder. The canal was done with modern equipment, it looks like. And so having the kind hand labor to do the wall, it makes me think that maybe that wall existed before the canal.

And it could've even been a boundary that was like an *'ili*, or it could've been a boundary that actually determined where the military base footprint was back then. But my overall thing was that there was a lot going on, you know, right up to where we saw people were living there, camping there in more recent times. So I find a lot of it interesting, you know, even the post [post-Contact] stuff is interesting to me to say, "Oh, how did they use this place in 1900, you know?"

DD: Yes.

Well you mentioned the feed lot. Just for clarification, in relation to where we were at, right now we're at Palehua, and the site we were visiting, you mentioned about driving the cattle, could you kind of clarify for the listener to know where the feed lot was in relation to this?

MP: Well the canal and that long coral wall, they're parallel to each other. So if you just walk down that canal all the way to the ocean, the feed lot was up against the canal and was up against the ocean. So it is that corner that was there. And before it was a feed lot or called a feed lot, it was listed from Campbell's leases to Hawai'i Meat Company. So Hawai'i Meat Company, maybe they always had some kind of a feed lot there, but they might have also been moving their cattle out from down there. I mean the cattle are up here in the *kuahiwis*. The market doesn't come here; the cows gotta go there. So, I worked at the feed lot for a little while.

DD: Well thank you for clarifying.

MP: Yeah, it's on the way.

DD: Moving on down, I like how you mentioned that everything on the landscape is connected. Before we go to the following question, is there anything else you want to add when looking at the landscape holistically, any other cultural matters that you'd like to add?

MP: I think that this area out here, it wasn't because it had abundant resources that the population came here. It was because there was enough resources and there were other strategic things that made this place desirable to a certain population. The views had a lot to do with that, you know, this is the place that you can see all the islands. And there's a lot of *mana* here. There's a lot of *mo'olelo*, from Hi'iaka [for example], there's a lot still on the ground up here. There's a school in the area of the *pa*, 40 children, that's written, approximately that number of children were going to the school. So all those things to me seem interesting, to create that picture of what the population looked like, and then looking at the sites around, how did it function.

So it's kind of a visual thing, to me you gotta picture it. You know, picture how far would they go to go fishing. So you ask...how does this site in pre-Contact system, to this population, how does it fit? I think like, when I saw the shape of the walls and what I think might be a sinkhole that had fresh water, I mean if it doesn't then I don't know how this could be pre-Contact, but my hunch is that it is. I told you, "Oh, ok, here we see the *pueo* again," and everything, but aside from that, there's enough physical stuff on the ground there that I think that it is.

DD: *Mahalo* for that. Interesting.

Do you think that any of the cultural resources or practices of the Kalaeloa area have been adversely impacted, or do you think they're currently threatened by land use and development, specifically we're talking about where we went for the solar farm.

MP: Resources, you mean cultural resources? You mean resources like water? What do you mean, impact of resources?

DD: Well for cultural resources, we're looking at certain sites, and then yes, water could be included as part of the resources.

MP: Ok, well, I think that every time we fire up a bulldozer, and I told you I do drive one from time to time, but every time we fire up a bulldozer, and we run it across virgin ground, we should be taking a really good look at what's there before we erase it because that machine and all the other heavy equipment erases stuff permanently. And it's really hard to figure it out. It may be even impossible to figure out the whole story now, but that information's gotta be recorded. So I wouldn't go so far as to say, everything is dynamic, we need certain resources now. We need energy, we need solar energy. So it's all sort of weighing these things. That's kind of being a realist about what things are, but if there are processes that we study, and we understand that it's something we did in the more present time, and we pretty much know what it is, then we can make a judgment call, "Ok let's erase it and put a solar farm..." or whatever it is we are going to do next. But if we don't study it and find out what it is before we erase it, I kind of have a problem with that. I mean, it's more of a personal one, but I just don't think we're moving smartly when we do that.

And if we find out that it is something pre-Contact, then it may fit in the bigger picture and it may have enough value to certain people, maybe not to a developer that is not Hawaiian in origin or really cares about the cultural history, but to a lot of other groups. To me it's not just about having us study it and knowing that it was a Hawaiian fishing site possibly, we study it and it looks like one, and we find fishhooks and all of that so we say, "Ok, that is," so at that point my personal opinion is that I don't think there's enough of that left around here on O'ahu. It's part of a bigger picture on the 'Ewa Plain. Like I said, I think it is an outpost or a component, but is this just about us studying it? Or is it about the next generation of Hawaiian archaeologists or historic study kids, you know. Because we know what it is or we think we know what it is, do we have the right to erase it every time? To me there's a value of just future Hawaiian children being able to look at it, touch it, walk from here to there and say, "I understand. I walk the path of my *kupuna*, and I know what their life was like." And there's a difference, you know, you can look at it on a poster, you can go to the Polynesian Cultural Center, you can study Hawaiian Studies at UH, but when you walk on the land and you sit in the structure that doesn't have *pili* grass over you or anything, but you get it, to me, I've been there, and I've sat there, and I've walked there, and I got it. I have a picture because of that. And so I really value that experience to be able to do that and to have a clear picture in my head, and I would like to know that a hundred years from now, there's people who experience the same things and have the same level of understanding. And I don't think you can if you take every bit of it away.

DD: Wow, thank you. It's nice to hear that you champion the careful study of all of our lands and the things on it before we build anything. So specifically with the Kalaeloa lands, do you think future development would affect any particular culturally significant place or access to such a place?

MP: You know, it's not easy to say, but I think to some degree on the 'Ewa Plain, in a lot of places we've crossed that bridge already. And this site is kind of an example of that. There's remote ones on what was the naval base/air station. They're still there. There's all these little *kīpukas*, and if

there's enough of them saved, yeah I think it's important. But you know, in the middle of the heaviest industrial area on O'ahu, you know, is one little one relevant? It is in that sermon that I just gave, you know? [laughing] But outside of that, does everybody? It depends on what lens you're looking from.

I guess in a broader picture I say there's gotta be enough left that you can understand, or the next generation of Hawaiian children can understand who they are. There's great value in being able to see it. You won't understand what it's like to live in a stone structure. I mean, you can go to the Bishop Museum and look at it. But when it's out on the landscape with the wind or the rain or whatever, that gives you an idea of what the life was like. When you live in an apartment, and you're a Hawaiian, you can't get it. And we're the host culture. And we don't know what it was that we did.

DD: It's interesting that you talk about little *kīpukas*, it's interesting you say that if we have enough of 'em, then it becomes more significant, so even though those *kīpukas* might be small, when taken together collectively they offer a better picture, and so maybe it would be better to spare those from development?

MP: Yeah, what I'm saying is that there is value. When we walked in there today, it was hot. The *kukus* were everywhere, right? I don't know, I picked out about a hundred out of my boots, I don't know what you got.

DD: [laughs]

MP: [laughs] So yeah it's tough. But you can't see the park [Campbell Industrial Park] around you. You have no idea where you are [from within that *kīpuka*]. It's like a little time warp. And the *kiawe* is not an indigenous thing, but still, you're in the wilds in that little environment right there. So in a way, if you can see that those are all around the land, from Barbers Point to One'ula to Honouliuli down here, you know, you can see that there was *kalo*, and you read the history books, you can put the package together. You can see what it is.

I've made comments about the kind of residential development that I've seen because when we're up here, the only lights we saw at night was 'Ewa Beach front lots and 'Ewa Village right down there. [looking out across the 'Ewa Plain at 'Ewa Village and 'Ewa Beach from the *lanai*] And nothing else was here. Makakilo was one street, was just the turn at Palailai and one street *makai* of that. And then of course, Honokai Hale, where you guys were, that's it. Oh and the naval air base, and that's it. So when we did Makakilo [hillside] and then the next one, we cut it. Now they don't do it like they did it in the Ko'olaus. Now they cut the ridge down to make it as wide as possible to put all the houses. Look behind Malama Market. When it rains hard, I don't wanna be in those houses sitting on the edge there. But that's the way. So even there, even if there was not a single cultural site or pathway or anything on that ridge, that ridge is so different from what it used to be. If you did that to every ridge, children 50 years from now would not be able to visualize what the mountain looked like. So I say, "I don't know if we should develop every inch of it." Every little bit that we take away, it's like one of those puzzles that you put together on your table. And if you keep losing the pieces of the puzzle, pretty soon it's not worth trying to put it together.

DD: Are you aware of any other cultural concerns the community might have related to these matters affected by development here?

MP: [laughs] That's a big question, huh?

DD: [laughs] Is there anything we're overlooking?

MP: Well, I've made comments all to the same place. The thing that we're overlooking is that we're erasing, steadily but surely erasing, what's natural and replacing it with our footprint. Our footprint is so much bigger than the ones that came before us. Our machines are bigger. Our development is bigger. It's more total. I think if we think harder about it before we do it and really weigh the consequences, the big picture is if you and I are born in another hundred and fifty years, what are we looking at? You know? I mean, if this has just been a hundred years, you know, most of what's happened here has been in a hundred years. From 1912 or so, this place has changed drastically. And so much is lost, but at this rate.

DD: Yes. Wow, well we're nearing the end of the interview. Is there anything else that you'd like to share that we never talked about concerning Kalaeloa?

MP: Well, I feel fortunate to be in an area where there's a buffer around us here, where we're sitting. There's so much around us still, and it's different. So the reality of what most people have in the pace and everything is so different. I don't know, I just want us to think about development. I'm not anti-development; my family is the Campbell's. And they have to take some responsibility. I, we, have to take some responsibility for all of this development. But development happens because of demand. So on the demand side of this equation, we all have to take some responsibility and decide what we need as a community. And how badly do we need an alternative energy source in the case of this thing compared to what will be the consequences of erasing something? I think the consequences of erasing something and you don't really know completely what it is yet, personally is not that wise. Ultimately all I can do is share where I personally come down, but it really is a community picture.

DD: Right. Do you know of any other *kupuna*, *kama'āina*, *'ohana* who might be willing to share their *mana'o*/*'ike* of this area Kalaeloa?

MP: Hmm, I'm trying to think of who else might have been here early on. If you go to Honouliuli, there's still a few older folks in there. And in Honokai Hale, there's still *kupuna* in there that have some *mana'o* of seeing it. I mean, your job is very similar to Kehau Souza's, like you gotta go and meet these people, and that question is a very important one. I'm sure there are, but for me, I can't send you in any particular direction, maybe it's part of the curse of being way out here.

DD: No, it's all good, it's all good.

MP: You know, 20 years ago, there was a ton of 'em.

DD: Yeah.

Ok, well with that, we end our talk story here. Once again, *mahalo* to McD for spending time out of his busy day and also for letting me see this unbelievable view. If this was a video recording, my goodness, this is an awesome view. Ok, so *mahalo*. Aloha.

MP: Aloha

APPENDIX G: INTERVIEW WITH NETTIE TIFFANY

TALKING STORY WITH

Nettie Tiffany [NT]

Oral History of the Kalaeloa Solar Farm by Dietrix J. Ulukoa Duhaylonsod (DD)

August 10, 2013

DD: Ok, aloha.

NT: Aloha.

DD: Today is Saturday, August 10, 2013. We're sitting at Lanikūhonua, happy to be talking story with Aunty Nettie Tiffany, taking time out of her very busy schedule to talk story with us here. Today we're gonna be talking about two areas within the Kalaeloa lands. Specifically, there's a section near the beginning of Campbell Industrial Park where they want to build a solar farm... And so, we're gonna talk story today, and ok, Aunty Nettie, aloha.

NT: Aloha.

DD: If we could start, if you wouldn't mind telling us your name, where/when you were born, where you grew up and where you went to school.

NT: Ok, sure. My name is, my real name is Lynette Pualani Fernandez Tiffany. Nettie is really a nickname. I was born on the island of O'ahu, and I went to school at St. Francis. And then my last year we moved to Kailua, so I went to Kailua High School, graduated from there. And my family, actually it's my mother who was very much involved in Hawaiian culture when it wasn't fashionable to be Hawaiian. I was fortunate that my mother and my grandmother, they retained that.

DD: Thank you Aunty. Thank you for sharing that.

Ok, so going to the Kalaeloa lands that we visited, could you share how you acquired knowledge about these places?

NT: A lot of the information was given to me by my mother. She spent a lot of time with elders from the area, and of course, also shared from my grandmother, the history. And she's the only one that I really learned quite a bit from.

DD: Ok, thank you.

We're gonna turn now to talk about traditional practices, both past and ongoing, associated with the Kalaeloa area. Could you share any *mana'o* about these practices that are connected with this area?

NT: I'm really not sure about ongoing. I know what my responsibilities are, but Kalaeloa? When the sugar companies moved in, a lot of things were moved about. People, number one, were one of them, and they had to move away from where the sugarcane was going to be planted. So I don't believe there's many practices, maybe individuals, but I don't believe there's many practicing *kahus* there in the area. But I think there's several that retain the knowledge, probably from their families, because the sugarcane people that grew it, you know, a lot of the land area was more or less destroyed. A lot of the artifacts were destroyed.

DD: Right, Aunty, right. And is there anything that you'd like to point out distinctly...?

NT: Today, there aren't any markers or specific things that you could see with your eyes. A lot of it has to do with what you feel. And there were places down there, when we were [visiting] down there, that sometimes I felt very uncomfortable because it's like, some beautiful things were destroyed. But to see with my eyes, when we were walking about, I really couldn't see anything, you know, particular like a rock formation. All that was removed. A lot has been removed.

I remember as a child seeing trucks piling up the stones. There would be maybe like a circle of rocks. I never really got close when they were moving things about, I don't know, but it could have been a place to pray, it could have been a *heiau*, but they were moving it, just piling it up, so they could plant sugarcane.

DD: Yes, Aunty.

And I should add that when we visited the parcel where the solar farm is to be, there was a fence there, and so we could not go up into the forest there....So we really didn't get to see from where we were standing at.

NT: Which is so unfortunate because I believe there were some beautiful things. I mean, it has to be in the eyes of the beholder. What I would say is beautiful, others may not. But part of our culture, you know, underground springs and rock formations, those were just removed or covered up, which is sad, because that would have been wonderful to have been able to introduce that to our children.

DD: I agree, Aunty, I agree.

Before we move on further down, are there any other cultural matters associated with this area --- personal anecdotes, *mo'olelo*, *mele*, place names --- anything else you would like to share?

NT: Yes, but...

DD: It's ok, Aunty.

NT: Just say it?

DD: [nodding]

NT: I apologize, because there are certain things that were told to me by my mother, and sorry, I can't share them.

DD: That is totally understandable, Aunty. [smiling] Thank you.

NT: Sorry. [light laugh]

DD: [laughs] Ok, so now regarding the cultural resources or practices of Kalaeloa, you have already stated that they have been adversely impacted.

NT: Mm hmm.

DD: Do you think at this time that any resources or practices are currently threatened by land use and development in this area?

NT: There's always that possibility. There's always that one *iwi* that was left there from the old days. There's always a gathering spot for praying. There's also a gathering spot for healing, but, as I said, so much has been disturbed that it's very difficult to say, "Oh it's right here," or, "It's right there," or, "Please don't do this because under here is where they would come for the healing," or maybe, "Watch at night for the fireballs."

DD: Yes, Aunty, I understand.

We're painting the picture of this piece of land that has been extremely disturbed, and so it's understandable that the spirit of the place has been moved about. Yeah, thank you for sharing that.

Regarding future development of these lands, do you think it would affect any culturally significant place or access to such a place? It kind of like those questions before, but looking at future development.

NT: Like anything else, time moves on, and of course, our numbers of people have increased. So we require more electricity, more flowing water, and I understand that. And I respect that need. But I also would appreciate, if as they go through this transference of growth, that they would respect the land. If they came across something that was very unique, [they would have the respect] to stop, to question. And if it's something important, protect it. If not, go ahead and move on.

I think that's been the saddest part because only recently I feel the Hawaiians have had more say in the keeping of our culture, keeping of our things. And there is so much history over here, it's so hard to start. But how do I show a child and say, "This is a sinkhole. Look down in it, and you'll see the *'ōpae*. This is where the birdcatchers came to bathe in the fresh water." But there's no spring, there's no pond [anymore]. I cannot say to them, "This is the story; they would come from the mountain, come down here, go in the ocean, swim, enjoy, then take a bath, and go back home up the mountain."

If they [the developers] just showed the respect for the land, that would make me happy.

DD: I agree, Aunty, thank you, those are definitely words of wisdom.

Are you aware of any other cultural concerns that the community at large might have related to cultural matters affected by this land development here?

NT: I can't say that I know of anything at the moment. I know people are aware, and I think they'll be watching, as myself, to see what happens, the development. You know, there's good, and there's bad. And like I said earlier, the number of people will grow, or our children will leave Hawai'i because the needs will not be [met] there. We need more electricity. We need more water. That's the part that bothers me, that I have to respect it. But I also hang on to the old because I guess when I was growing up, when it wasn't fashionable to be Hawaiian, we were allowed to be Hawaiian by my mother and my grandmother. So it's a little difficult for me when I drive down the road and see something has been disturbed or just bulldozed down. But I don't think anybody is practicing anything at the moment, not in the lower lands, not where they're looking at to build, maybe up in the mountains we still can protect some places over there. I don't think in the flat land because anything that was flat enough to grow sugarcane was used.

DD: That makes a lot of sense. Before we go to the next question, you talked about understanding the need for development, but that the developers show respect, you know, if they come across

things. What kind of precaution would you suggest for the developer as they're going through with this or planning this so that the proper respect is given?

NT: Well I think they should go to the people, archaeologists, to check the grounds, to make sure, because with your eyes sometimes you cannot see what is there. I can recall, out of the blue, being called by a homeless man that found a burial site which was close to the water. And the only reason why he knew to call me was he came here to help the landscaper. But in his heart, he knew this was very particular, and yes, it was. They never told me if they identified the *iwi*, but there were three of them.

Like I say, take the precautions. Talk to the archaeologists; they should know. And if they don't know, they should ask. And it will be difficult, for these two areas that they want to develop, to find anything, although, not that they won't. I believe they will because we have a lot of burial sites along the ocean. So I think they need to be aware and be very, very careful and respectful. That, to me, is the most important thing.

DD: Right, respect. Thank you, Aunty, thank you for that. Is there anything else that you would like to share?

NT: No, I just appreciate being asked. And sometimes, even now, here, in Ko Olina, I just walk around to feel the earth and see if there's something that I missed. I would like to be able to do that, to go to these areas that they are building, to walk and see if anything, my own feeling.

DD: Right, Aunty. There are some stories that I know. Between me and you and...

NT: [laughs]

DD: [laughs] Thank you so much, Aunty.

NT: You're very welcome.

DD: So lastly, would you suggest, or are there any other *kupuna*, *kama'āina*, *'ohana* that you would say that we should talk to?

NT: Well there's a young gentleman, and he happens to be related to me, but I don't know how much Doug knows. But he spent a lot of time, when I was away, with my mother. And they spoke about things, Hawaiian things. And he may be a person, his name is Doug Tolentino, that maybe you could sit down and talk for a little bit. I'd make that arrangement.

DD: Ok, Aunty [laughing] if we have a further extension.

NT: [laughs]

DD: Once again, we'd like to thank you for your time.

NT: You're very welcome.

DD: It's always a pleasure just seeing you and talking story with you. And thank you for sharing things regarding this for Keala Pono. Ok, so have a nice weekend, and enjoy the rest of your Saturday. Aloha.

NT: Aloha.

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