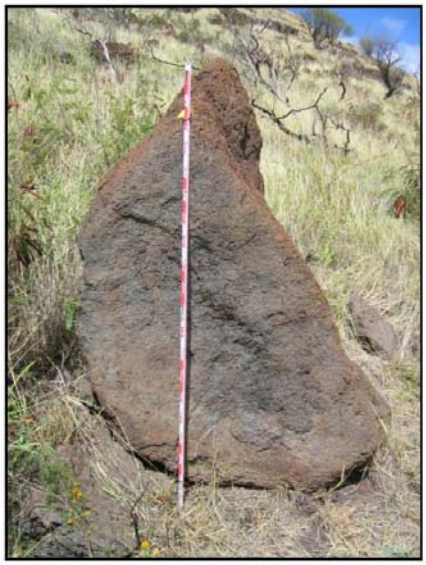

Figure 5. SIHP # 50-80-12-6903 Feature A, Photograph of face of rock upright, view to the north

Figure 6. SIHP # 50-80-12-6903 Feature A Photograph of side profile of rock upright, view to the south

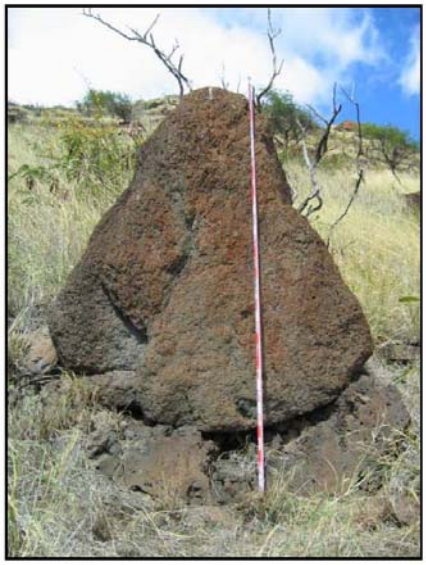

Figure 7. SIHP # 50-80-12-6903 Feature B, Photograph of face of rock upright, view to the northwest

Figure 8. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the south

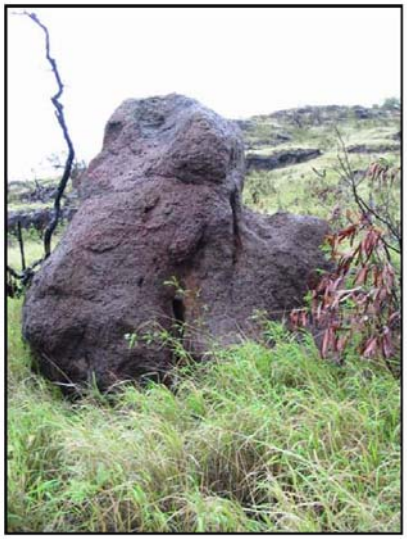

Figure 9. SIHP # 50-80-12-6903 Feature C, Photograph of side profile of rock upright, view to the west

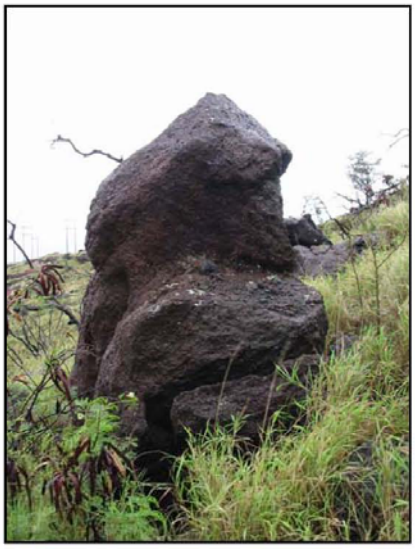

Figure 10. SIHP # 50-80-12-6903 Feature B, Photograph of side profile of rock upright, view to the southwest

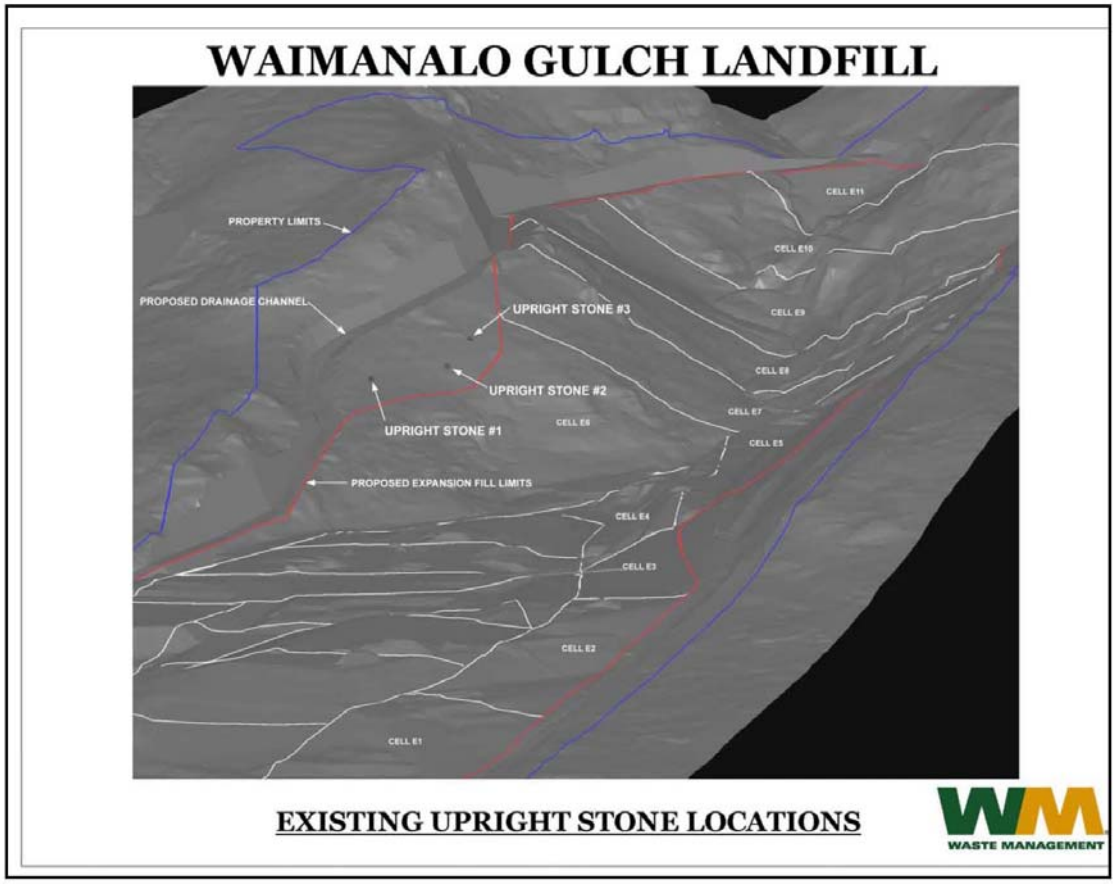

Figure 11. Three-dimensional graphic showing the proposed landfill expansion in relation to the three stones of SIHP # 50-80-12-6903. Note the large drainage channel upslope of the stones and the cell E6 immediately down slope

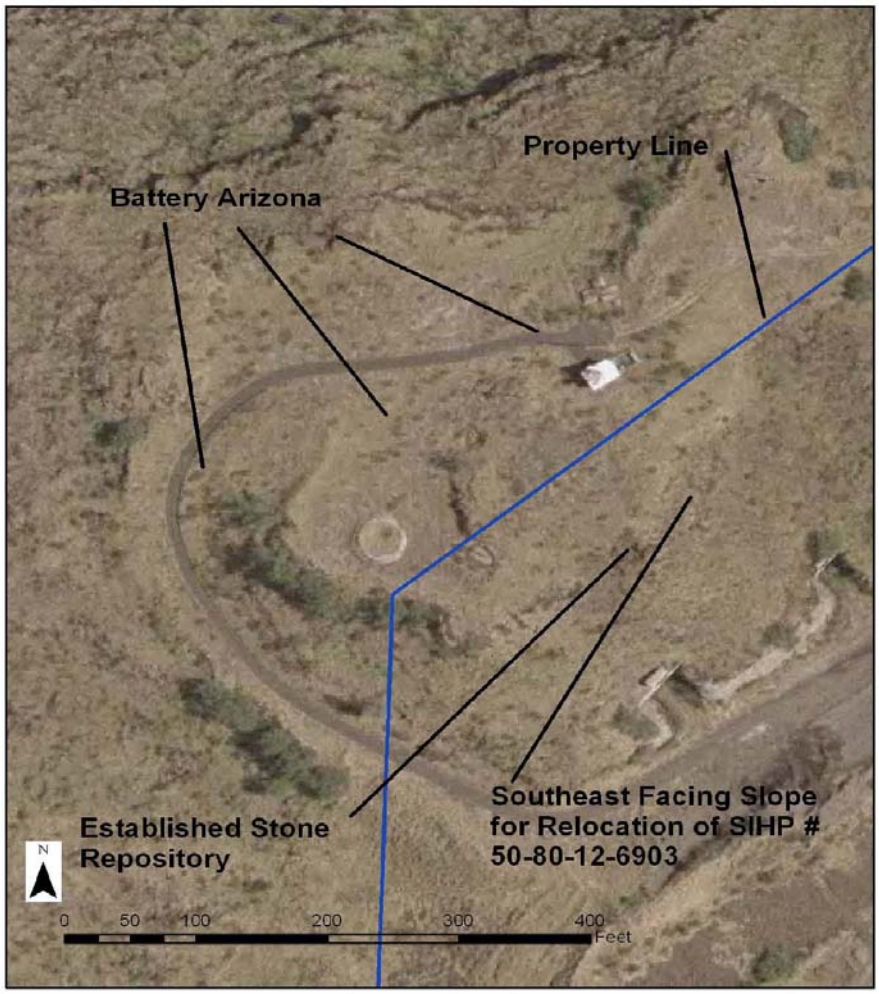

Figure 12. Aerial photograph of Battery Arizona, refer to Figure 1 for its location within the project area, showing the established stone repository and the proposed relocation area for SIHP # 50-80-12-6903

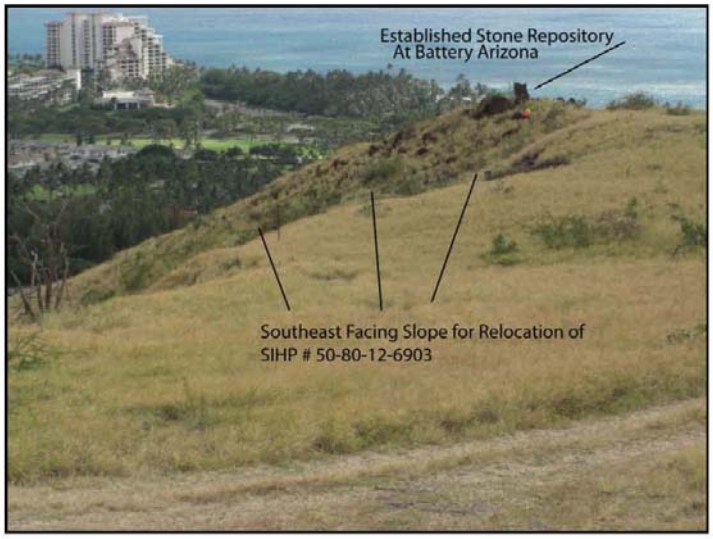

Figure 13. Photograph, view to the south, of the proposed relocation area at Battery Arizona for SIHP # 50-80-12-6903

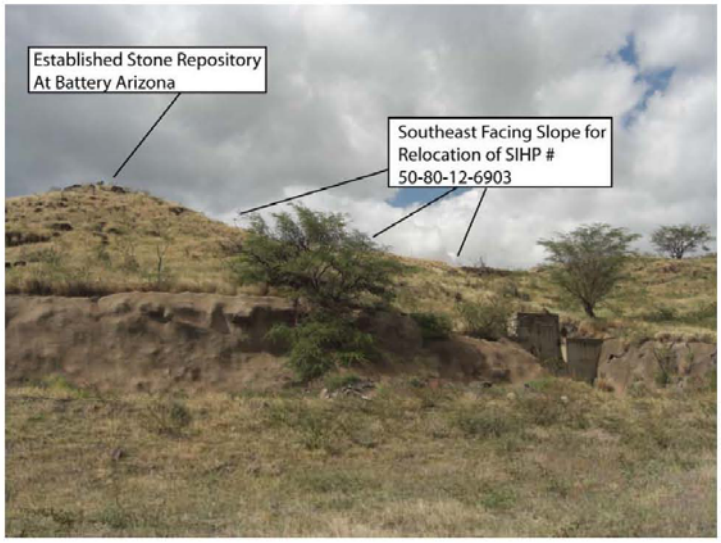

Figure 14. Photograph, view to the north, of the proposed relocation area at Battery Arizona for SIHP # 50-80-12-6903

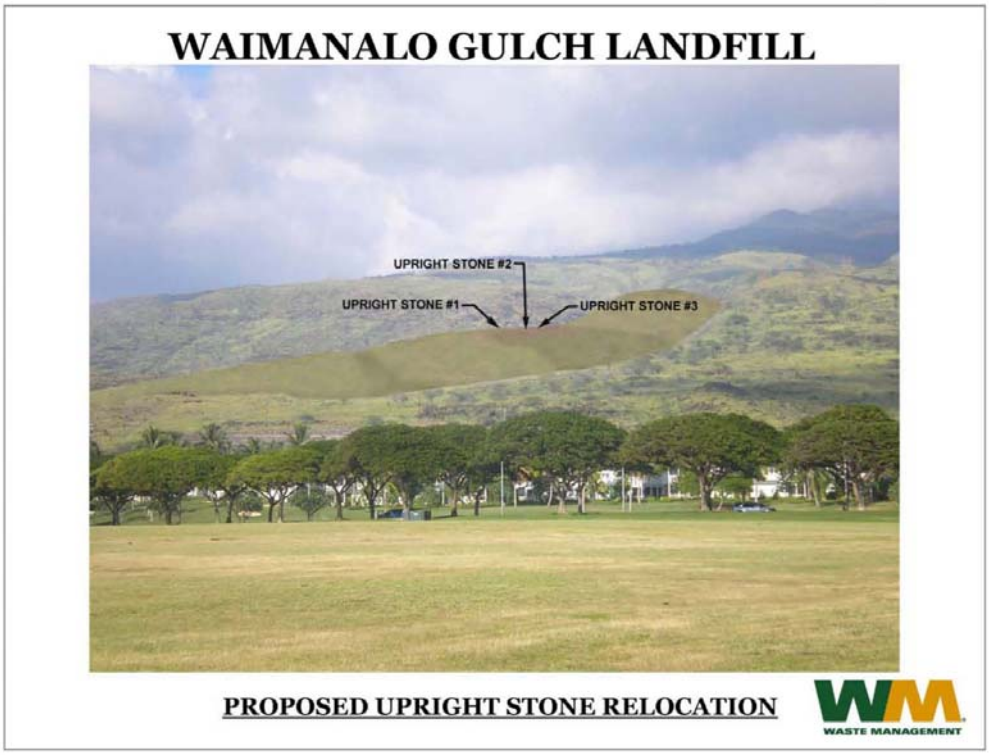

Figure 15. Altered photograph showing the planned landfill surface topography in 15 years. The potential SIHP # 50-80-12-6903 relocation site, on top of the new landfill surface, is shown

Proposed historic property treatment/mitigation for the Waimānalo Gulch Sanitary Landfill Expansion Project, Honouliuli Ahupua‘a, ‘Ewa District, Island of O‘ahu TMK: [1] 9-2-003:073 por.

Appendix H

Cultural Impact Assessment
Waimānalo Gulch Landfill Expansion Project, 2008

A Cultural Impact Assessment for the Waimānalo Gulch Landfill Expansion Project Waimānalo ʻIli, Honoʻuliʻuli Ahupuaʻa, ʻEwa District TMK: [1] 9-2-003:073 por.

Prepared for

R. M. Towill Corporation

Prepared by

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Management Summary

Reference	Cultural Impact Assessment for the Waimānalo Gulch Sanitary Landfill Expansion Project, Hono'uli'uli Ahupua'a, 'Ewa District, Island of O'ahu (TMK: [1] 9-2-003:073 por.) (Souza, Uyeoka, Shideler and Hammatt 2008)
Date	April 2008
Project Number(s)	HONOU 7 (and companion Archaeological Inventory Survey HONOU 6)
Project Location	The proposed project area is located *mauka* (inland) and northeast of the existing Waimānalo Gulch Sanitary Landfill, just inland of Farrington Highway; between the Honokai Hale residential subdivision and Ko Olina Resort to the southeast, and the Kahe Power Plant to the northwest. This area is depicted on the 1998 'Ewa USGS 7.5 minute topographic quadrangle.
Land Jurisdiction	City and County of Honolulu
Agencies	City and County Department of Environmental Services, State Historic Preservation Division (SHPD)
Project Description	The proposed landfill expansion is meant to increase the capacity and lifespan of the existing Waimānalo Gulch Sanitary Landfill. Planned construction includes: major grading and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; and filling of the expansion area with refuse material.
Project Acreage	Approximately 90 acres, of which approximately 36 acres will be used as the actual foot print of the landfill cells used for refuse.
Document Purpose	This project requires compliance with the State of Hawai'i environmental review process [Hawai'i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project's effect on cultural practices. At the request of R.M. Towill Corporation, CSH undertook this Cultural Impact Assessment (CIA). Through document research and cultural consultation efforts this document provides information pertinent to the assessment of the proposed project's impacts to cultural practices (per the OEQC's Guidelines for Assessing Cultural Impacts). The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-8 and Hawai'i Administrative Rules (HAR) Chapter 13-275.
Consultation Effort	Twenty-one (21) Hawaiian organizations, agencies and community members contributed specific knowledge of and / or concerns about the project area and vicinity. The organizations consulted included the State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), the O'ahu Island Burial Council (OIBC), Wai'anae Neighborhood Board, The Cultural Learning Center at Ka'ala, Wai'anae Elders and Nānāikapono Hawaiian Civic Club. Site visits were conducted with McD Philpotts, Shad Kane, William Ailā and Eric Enos. Seventeen (17) individuals contributed specific information via formal interviews, informal "talk story" discussion and / or email. One person (McD Philpotts) was formally interviewed for this project (see Appendix B). One person (Shad Kane) was previously interviewed during a prior (2002) CIA for an earlier version of the subject project (see Appendix A, used with permission from Shad Kane).

Cultural Impact Results	Background research for this CIA yielded the following results: (1) The nearest main settlement areas in pre-Contact and early historic times were located *makai* (seaward) of the project area along the coast at Ko'olina and Kalaeloa. The project area is a transitional zone between the *mauka* (upland) resources of the mountains and the *makai* resources of the coast and ocean; and it also marks the boundary between Wai'anae and 'Ewa Moku (traditional districts). The main trail from Pu'uloa (Pearl Harbor area) to Wai'anae runs just below the project area near the existing Farrington Highway. Other trails followed the ridges defining either side of Waimānalo Gulch. (2) The subject project area is associated with numerous named *pu'u* (hills and mountains) in the general vicinity, all of which are associated with specific *mo'olelo.* (3) There are a few specific *mo'olelo* (oral histories) about Waimānalo 'Ili dealing with the marking of the boundary between Wai'anae and 'Ewa at Pili o Kahe. (4) There are dozens of specific *mo'olelo* about Hono'uli'uli Ahupua'a dealing with gods and demi-gods such as Kāne, Kanaloa, Pele, Pele's sister Hi'iaka, Pele's sister Kapo (as in Kapo-lei), Māui, Kamapua'a (pig god), Maunauna (shark deity), Ka'ahupāhau, and Palila; with chiefly lineages and references to the ruling chiefs Hilo-a-Lakapu, Kūali'i, and Kākuhihewa; and with connections to other parts of O'ahu (e.g., Wai'anae). Community consultation yielded the following results: (1) Many participants talked about the project area as a pathway for *huaka'i pō* (the night marchers) as they move between the mountains and the sea; preservation of the view plane of this pathway from *mauka* to *makai* is important to many people. (2) Several participants made site visits to a group of several large *pōhaku* (stones) located in the project area (designated State Inventory of Historic Properties [SIHP] No. 50-80-12-6903); although no specific cultural information or associated *mo'olelo* was shared by participants about this site at this time, there is general agreement that the *pōhaku* should be protected from harm. (3) At least one participant is concerned about several caves and rock overhangs located in the northwest portion of the project area (documented in detail by Dalton and Hammatt 2008), although archaeological investigations of these by CSH indicated they contain no cultural materials, burials, or human remains. (4) Participants provided new *mo'olelo* about Waimānalo Gulch for which no previous written documentation has been found, including stories and legends about the Spirits *('Uhane*), the "Legend of the Slain Girl," the "Legend of Two Giants," and associations with the Pueo 'Aumakua (Owl Family Deity).

Cultural Impact Recommendations	Based on the results of this CIA, CSH recommends the following actions in order to address the concerns raised by community members: (1) Should removal of the *pōhaku* designated SIHP # 50-80-12-6903 be necessary, it should be conducted in a culturally sensitive manner with a cultural monitor given the opportunity to carry out appropriate protocols. Several participants agree the *pōhaku* should be removed from their original locations during construction, then later reunited with their former locations and preserved in place. A preservation plan should guide all aspects of the movement of these *pōhaku*, as well as their temporary storage and care, and return to their original locations. Community members should be involved in this process. (2) The traditional view of the Hawaiian landscape as a continuum should be taken into consideration during the planning process. (3) Several community members believe it is important to keep the pathway of the *pōhaku* (night marchers) clear of visual and / or structural blockage from *mauka* to *makai* on the east ridge of Waimānalo Gulch. CSH recommends this topic should be addressed in greater detail through further consultation with the community. (4) Six caves and rock overhangs in the northwestern portion of the project area documented by CSH during archaeological inventory survey (Dalton and Hammatt 2008) yielded no significant cultural material. However, at least one community participant (see Table 2) has voiced concerns about possible disturbances to burials in these caves. CSH recommends cultural monitoring of any proposed disturbance to these caves by qualified native Hawaiians familiar with the project area. (5) Although the land has been dramatically altered, there remains a possibility that burials and other archaeological sites may be present in and around the proposed project area. Efforts need to be made to insure adequate archaeology and cultural monitoring are conducted at this project site. In addition to this cultural impact assessment, CSH is conducting an Archaeological Inventory Survey for this project area that was ongoing at the time of this report's completion (Dalton and Hammatt 2008); its findings and recommendations should be faithfully carried out in accordance with applicable laws and administrative rules governing historic preservation work in the State of Hawai'i. (6) CSH recommends that consultation with community members continue throughout the planning process. Addressing these cultural concerns is part of the City and County of Honolulu's "good faith" effort to minimize the impact of the proposed project on Hawaiian culture, its practices and traditions. (7) The consultation results contained in this CIA, which refer specifically to the 36-acre area of the landfill proper, will be augmented and expanded prior to preparation of the Final Environmental Impact Statement. The individuals and agencies listed in Table 2 will be contacted again with the new information about the larger project area.

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Section 1 Introduction

1.1 Project Background

At the request of R.M. Towill Corporation, on behalf of the City and County of Honolulu Department of Environmental Services/Refuse Division, Cultural Surveys Hawai'i Inc. (CSH) conducted a Cultural Impact Assessment (CIA) of the Waimānalo Gulch Sanitary Landfill Expansion Project, Waimānalo 'Ili, Hono'uli'uli Ahupua'a, 'Ewa District, O'ahu (TMK: 9-2-003: 073). The purpose of the CIA is to assess potential impacts to cultural practices and resources resulting from the future development of the proposed Landfill Expansion Project, which is intended to increase the capacity and lifespan of the existing Waimānalo Gulch Sanitary Landfill.

The proposed landfill expansion area is located immediately *mauka* (inland) and northeast of the existing Waimānalo Gulch Sanitary Landfill (Figures 1-4). Waimānalo Gulch is generally located immediately inland of Farrington highway, roughly between the Honokai Hale residential subdivision and Ko Olina Resort to the southeast, and the Hawaiian Electric Co.'s (HECO) Kahe Power Plant to the northwest. This area is depicted on the 1998 'Ewa USGS 7.5 minute topographic quadrangle.

The Waimānalo Gulch Sanitary Landfill was established in 1989; is owned by the City and County of Honolulu under the jurisdiction of the Department of Environmental Services/Refuse Division, and operated by Waste Management of Hawai'i. The landfill currently takes in roughly 500,000 tons of waste per year.

The project area is comprised of approximately 90 acres of currently undeveloped land within the Waimānalo Gulch Landfill property. The proposed landfill expansion area—that is, the total area to be used for the disposal of municipal refuse—comprises an approxiamtly 36-acre portion of the total 90-acre area. Portions of the remaining area outside of the 36-acre landfill site proper will be modified for drainage improvements, roads, and stockpile areas needed for continued use of the landfill. Minimally, land disturbing activities associated with the landfill expansion project would include: major grading and excavation of the base and walls of Waimānalo Gulch to prepare the expansion area for landfill use; grading for a perimeter road around the expansion area; excavations for stockpiling of sediment for use as cover material; excavations for associated landfill infrastructure; and filling of the expansion area with refuse material.

When the expansion project's CIA consultation was initiated, communication with the project proponents indicated that the proposed expansion area would be 36 acres—the same 36 acres that the project proponents were having surveyed as part of the project's archaeological inventory survey of the expansion area. For this reason, the initial project consultation letters describe the expansion area as approximately 36 acres. It was only later that CSH learned that the expansion area was actually approximately 90 acres. The 36 acres corresponds with the actual foot print of the landfill cells that will be created and used for refuse. Portions of the remaining approximately 90-acre expansion area will be used for the aforementioned appurtenances. Therefore, although the foot print of the proposed area to be disturbed is larger than the 36 acres indicated in the initla CIA consultation, the actual portion of the gulch to be used specifically as a landfill (36 acres) has not changed. The consultation results contained in

this CIA, which refer specifically to the 36-acre area of the landfill proper, will be augmented and expanded prior to preparation of the Final Environmental Impact Statement, as described and discussed in Section 5 (Results of the Community Contact Process).

1.1.1 Archaeological Inventory Survey

An archaeological inventory survey including a 100% coverage pedestrian inspection of the project area and limited subsurface testing at select locations is being conducted for the project area. The results of the archaeological study will be presented in a companion report titled, "Archaeological Inventory Survey for the Waimānalo Gulch Sanitary Landfill Expansion Project, Hono'uli'uli Ahupua'a, 'Ewa District, Island of O'ahu, TMK: [1] 9-2-003:073 por." (Dalton and Hammatt 2008).

1.2 Document Purpose

The purpose of this CIA is to consider the effects the proposed expansion of the Waimānalo Gulch Sanitary Landfill may have on traditional cultural practices and resources. The Hawai'i State Constitution, Article XII, Section 7 protects "all rights" of native Hawaiians that are "customarily and traditionally exercised for subsistence, cultural and religious purposes".

In 1997, the Office of Environmental Quality Control (OEQC) issued Guidelines for Assessing Cultural Impacts. The Guidelines discuss the types of cultural practices and beliefs that might be assessed.

> The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs. The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man-made and natural, including submerged cultural resources, which support such cultural practices and beliefs.

Most recently, H. B. No. 2895 was passed by the 20th Legislature, and approved by then Governor Cayetano as Act 50 on April 26, 2000. The bill acknowledges that:

> . . the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

This bill issues a directive that " . . . environmental assessments or environmental impact statements should identify and address effects on Hawai'i's culture, and traditional and customary rights." The process for evaluating cultural impacts is constantly evolving. There continue to be gray areas and unresolved issues pertaining to traditional access and gathering rights. Act 50 is an attempt to balance the scales between traditional lifestyles and development and economic growth.

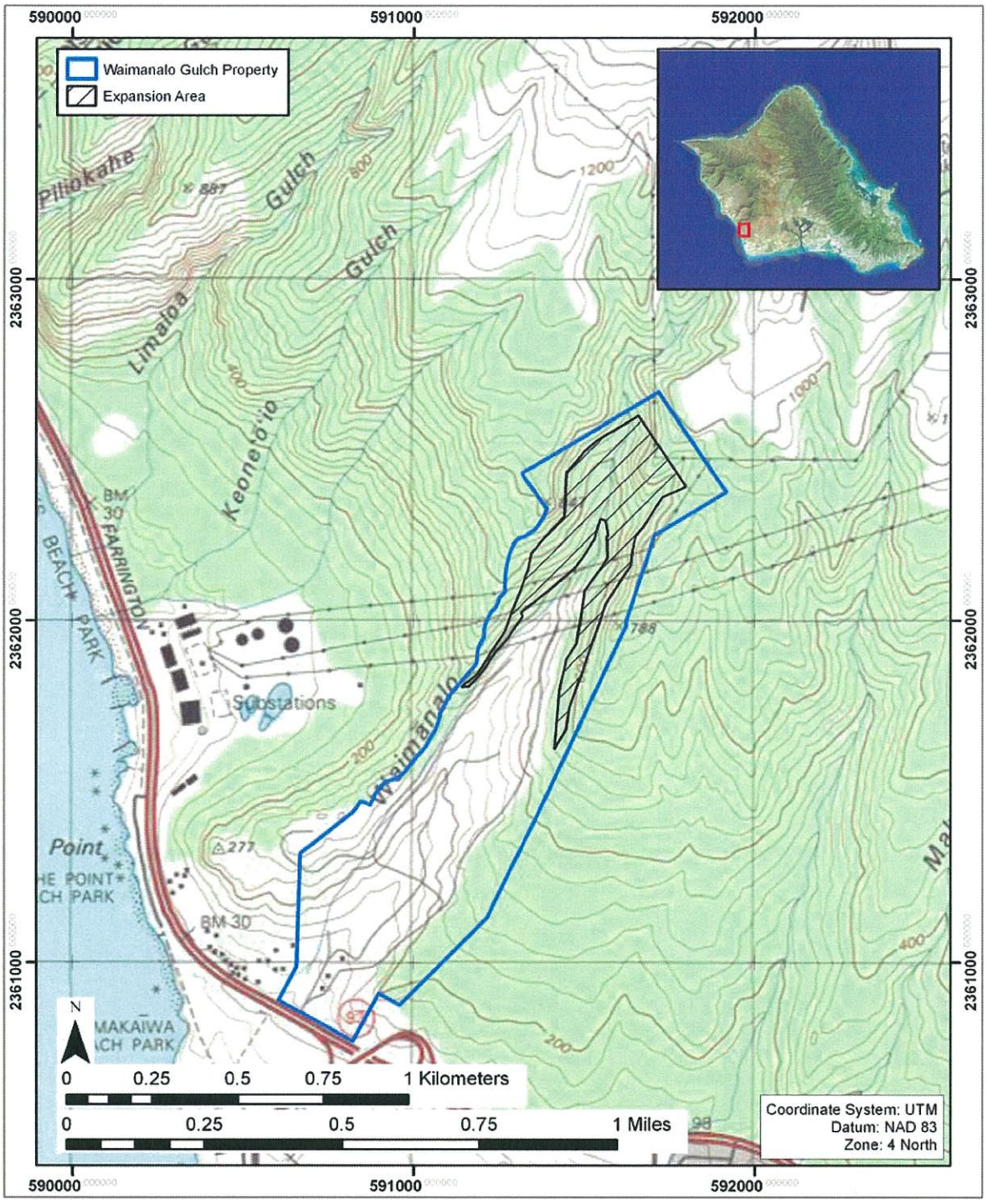

Figure 1. USGS 7.5 Minute Series Topographic Map, Ewa Quadrangle (1998), showing the location of the Waimānalo Gulch Sanitary Landfill property and the proposed expansion project area

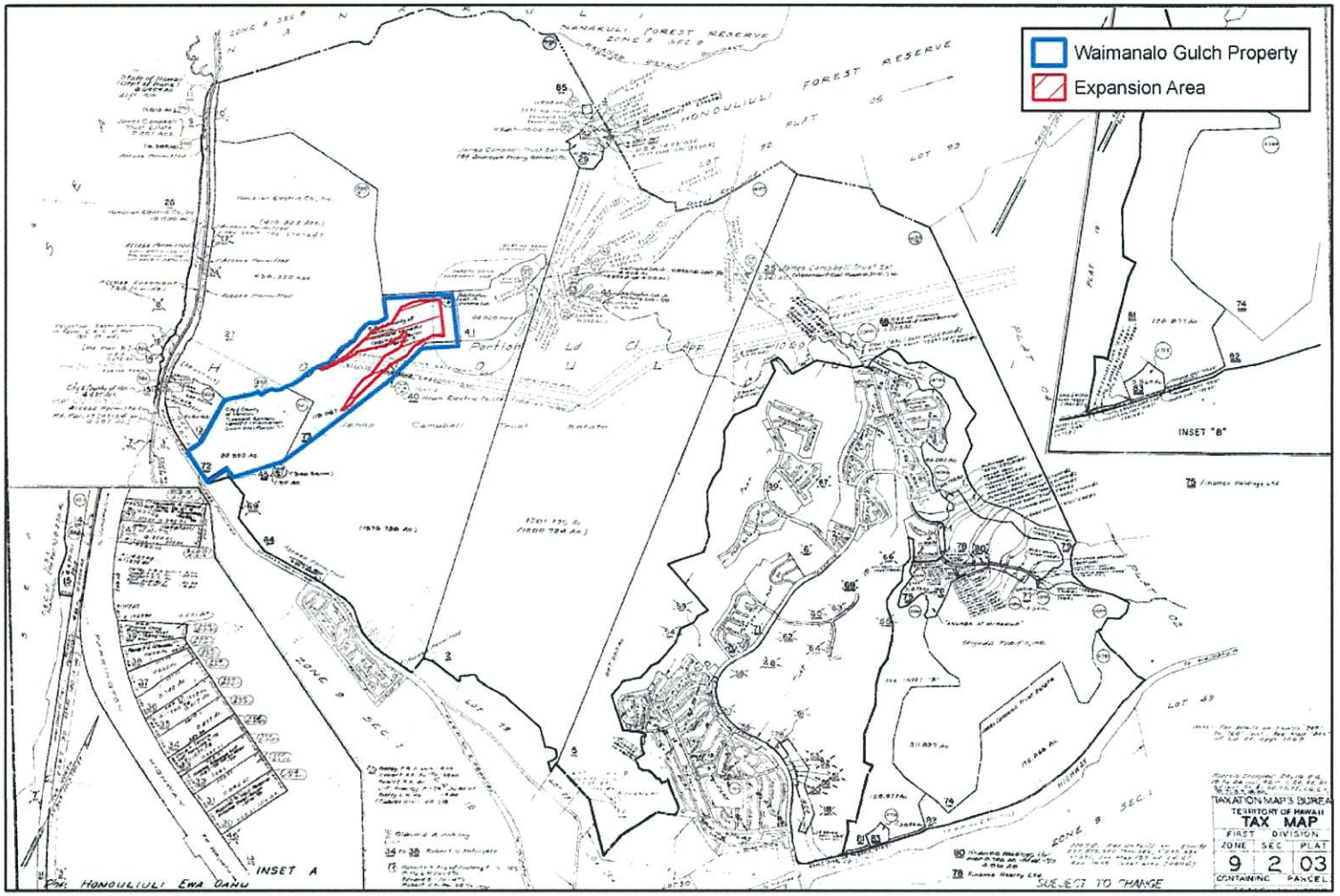

Figure 2. TMK 9-2-03 showing the location of the Waimānalo Gulch Sanitary Landfill property and the proposed expansion project area

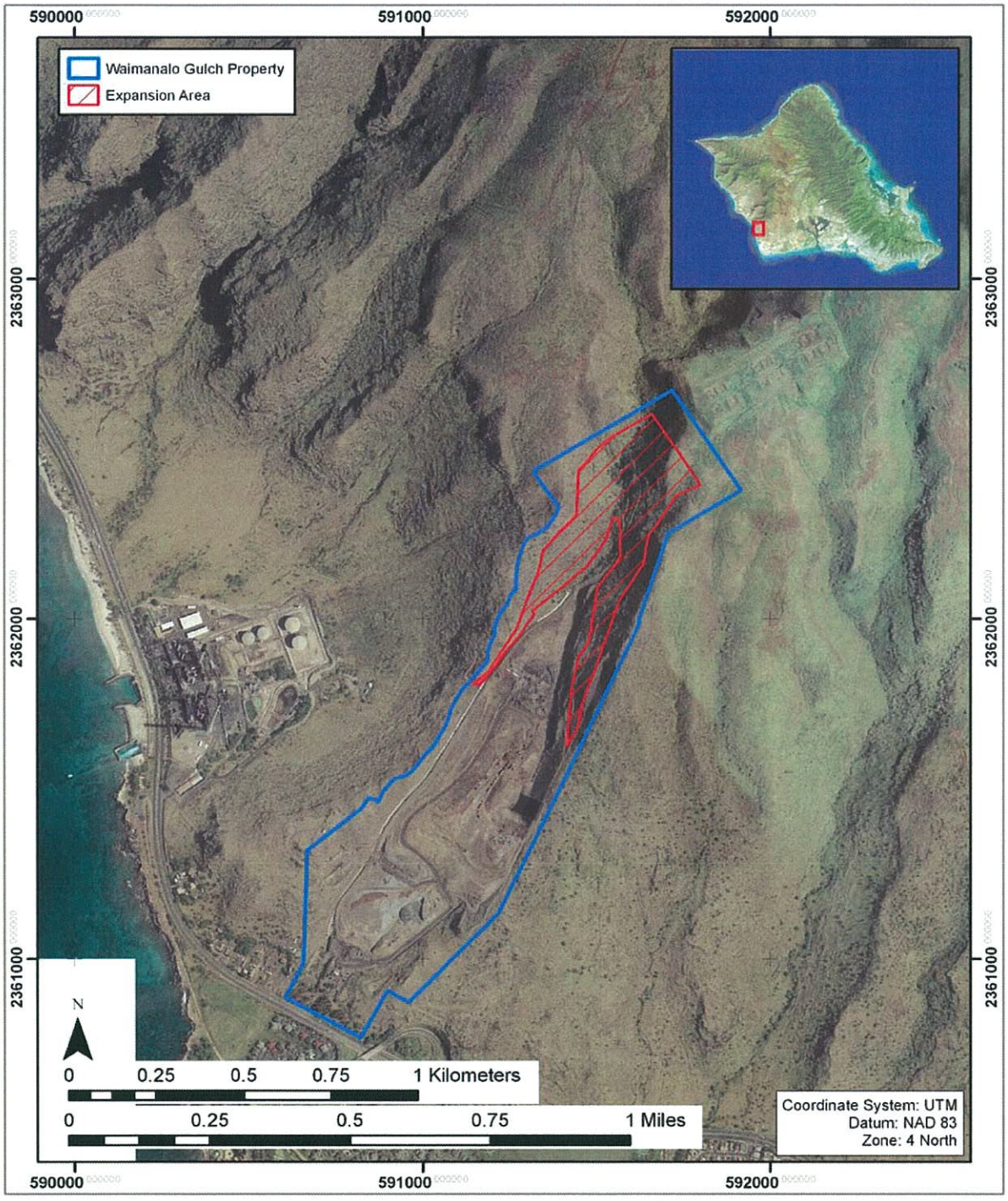

Figure 3. Aerial photograph showing the location of the Waimānalo Gulch Sanitary Landfill property and the proposed expansion project area (USGS Orthoimagery 2005)

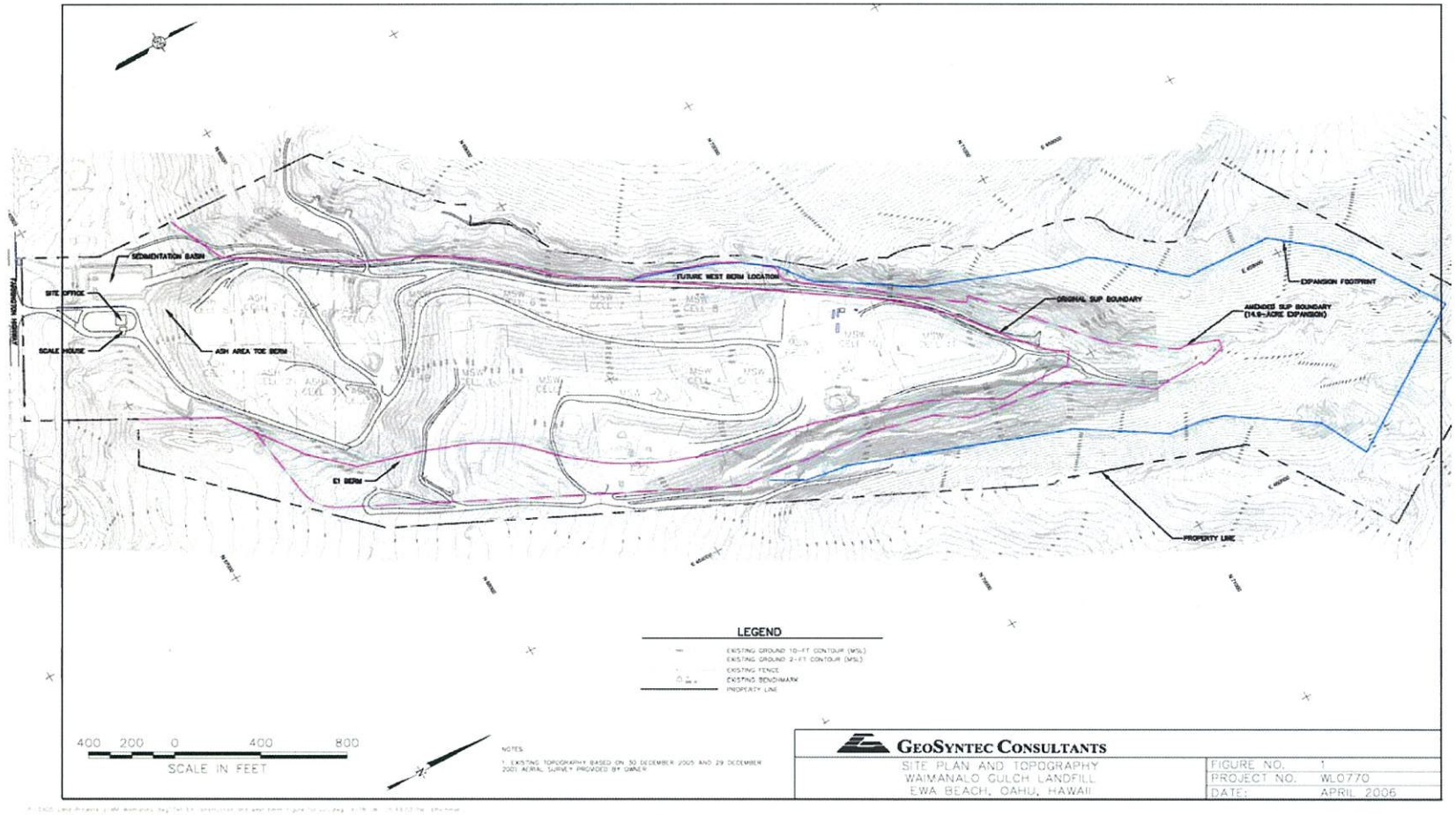

Figure 4. Site plan for the proposed Waimānalo Gulch Landfill Expansion project, showing the location of the existing landfill and proposed expansion area

This project requires compliance with the State of Hawai'i environmental review process [Hawai'i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project's effect on cultural practices. At the request of R.M. Towill Corporation, CSH undertook this CIA. Through document research and cultural consultation efforts this document provides information pertinent to the assessment of the proposed project's impacts to cultural practices (per the OEQC's Guidelines for Assessing Cultural Impacts). The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-8 and Hawai'i Administrative Rules (HAR) Chapter 13-275.

1.3 Scope of Work

The scope for the CIA includes:

1. Examination of historical documents, Land Commission Awards, and historic maps with the specific purpose of identifying Hawaiian activities including gathering of plant, animal and other resources or agricultural pursuits as may be indicated in the historic record.
2. A review of the existing archaeological information pertaining to the sites on the property as they may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices and beliefs associated with the parcel and identify present uses, if appropriate.
3. Oral interviews with persons knowledgeable about the historic and traditional practices in the project area and region.
4. Preparation of a report on items 1-3 summarizing the information gathered related to traditional practices and land use. The report will assess the impact of the proposed action on the cultural practices and features identified.

1.4 Methods

Historical documents, maps and existing archaeological information pertaining to the sites in the vicinity of this project were researched at the State Historic Preservation Division library, the Cultural Surveys Hawai'i library, and the University of Hawai'i's Hamilton Library. The Office of Hawaiian Affairs, O'ahu Island Burial Council, and members of other community organizations were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the study area and the surrounding vicinity. The names of potential community contacts were also provided by colleagues at CSH and from the researchers' familiarity with the families who live in the area. Some of the prospective community contacts were not available to be interviewed as part of this project. A discussion of the consultation process can be found in Section 5 (Results of the Community Contact Process). Please refer to Table 2 in Section 6 below for a complete list of individuals and organizations contacted.

Section 2 Project Area Description

2.1 Environmental Setting

2.1.1 Natural Environment

The proposed Waimānalo Gulch Landfill expansion area is located within the *mauka* portion of Waimānalo Gulch, in the southern foothills of the Wai'anae Mountain range. The project area is located 970 meters east of the coastline. Elevations within the proposed expansion area range from approximately 90-210 m (300-700 ft.) AMSL. Lands within the proposed expansion area generally consist of steep sloping gulch walls, with a dry stream channel at the base of the gulch. The stream channel is understood to only have running water during periods of heavy rainfall, which are relatively uncommon in the dry, leeward O'ahu. The proposed expansion area receives an average of approximately 600-700 mm (24-28 in.) of annual rainfall (Giambelluca et al. 1986).

Soils within the undeveloped portions of the Waimānalo Gulch Landfill property consist primarily of Rock Land (rRK), with a small area of Stony Steep Land (rSY) in the northeastern portion of the property. Soils within the proposed landfill expansion area consist entirely of Rock Land (rRK) (Foote et al. 1972) (Figure 5). Rock Land is described as "made up of areas where exposed rock covers 25 to 90 percent of the surface...rock outcrops and very shallow soils are the main characteristics" (Foote et al. 1972). Stony Steep Land is described as consisting of "a mass of boulders and stones deposited by water and gravity on side slopes of drainage-ways...stones and boulders cover 50 to 90 percent of the surface...there is a small amount of soil among the stones that provides a foothold for plants...rock outcrops occur in many places" (Foote et al. 1972).

With regards to the vegetation, Frierson (1972) suggests that prior to the introduction of exotic vegetation in 1790, the slopes of the Wai'anae Range extending down to about 150 m (500 ft.) elevation supported a dry forest of native trees and shrubs between an upper *'ōhi'a* wet forest and lower grassy savannah area. Frierson (1972:4) summarizes the following patterns suggested by J.F. Rock (1913) for the indigenous vegetation in the area prior to 1778:

a) Lowland zone - open grassland on the leeward side

b) Lower Forest - beginning about 1000 feet and richer in species than the rainforest: *kukui*, *'ōhi'a 'ai, koa, kalia*, sandalwood, *'ōhi'a lehua, hau, tī, ape, pia*, banana, ginger, birdnest fern and *honohono*, as well as grasses and cyperaceous plants.

c) Specifically leeward lower forest – *'ohe, wiliwili, maile, halapepe* and *alani*, with almost no undergrowth.

Historical accounts presented by Frierson (1972) describe these lower forest species as extending to 500 feet, with the presence of sandalwood observed down to as low as 300 feet. The lower forest then is hypothesized to have covered much of the current landfill expansion area. This was always a rain shadow slope and we may more accurately envisage a park land community rather than a thick forest in early Hawaiian times.

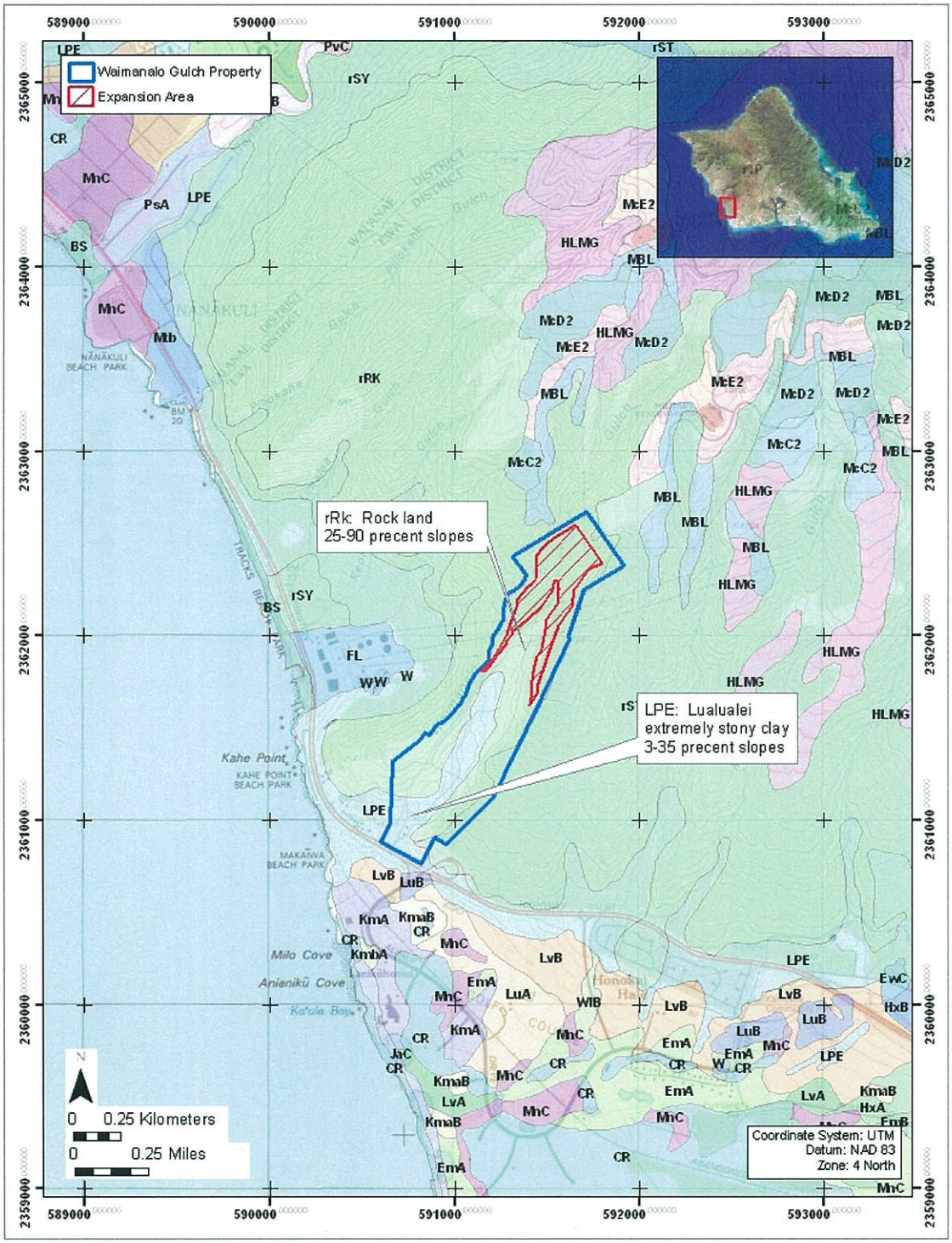

Figure 5. Waimānalo Gulch soils (http://soils.usda.gov/survey/printed_surveys/state.asp?state=Hawaii&abbr=HI)

The current vegetation in the project area is comprised mostly of scattered *koa haole* and various grasses. As a result of a relatively recent wildfire, the grasses within the project area have grown dense and thick, covering about 90% of the ground surface, making ground surface observation difficult throughout the project area.

2.1.2 Built Environment

Lands within the proposed landfill expansion area are currently undeveloped, with the exception of unpaved access roads. Lands within Waimānalo Gulch immediately *makai* (seaward) of the proposed expansion area consist of the active Waimānalo Gulch Sanitary Landfill, and include solid waste disposal sites and associated landfill infrastructure. *Makai* of the landfill site is the Ko Olina Resort, including a golf course and residential subdivision. West of the landfill site are the Kahe Point Homes residential subdivision and the HECO Kahe Power Plant. Lands to the east and north of the Waimānalo Gulch landfill are the undeveloped Makaīwa Hills and Pālehua areas.

Section 3 Traditional and Historic Background

3.1 Introduction to the Cultural Landscape

The project area is situated on the eastern side of the Wai'anae Mountains in Hono'uli'uli Ahupua'a (traditional land division) sub-divided into the *'ili* of Waimānalo in the *moku* or district of 'Ewa. Hono'uli'uli is the largest *ahupua'a* on the island of O'ahu. Hono'uli'uli includes all the land from the western boundary of Pearl Harbor (West Loch or Kaihuopala'ai) westward around the southwest corner of O'ahu to the 'Ewa/ Wai'anae District Boundary with the exception of the west side of the harbor entrance which is in the *ahupua'a* of Pu'uloa (the 'Ewa Beach/Iroquois Point area). Hono'uli'uli Ahupua'a includes approximately nineteen kilometers (twelve miles) of open coastline from One'ula westward to the boundary known as Pili o Kahe. The *ahupua'a* extends *mauka*, almost pie-shaped, from West Loch nearly to Schofield Barracks in Wahiawā; the western boundary is the Wai'anae Mountain crest running north as far as Pu'u Hapapa (or to the top of Ka'ala Mountain according to some).

Not only does Hono'uli'uli Ahupua'a include a long coastline fronting the normally calm waters of leeward O'ahu but there is also four miles of waterfront along the west side of West Loch. The land immediately *mauka* of the Pacific coast consists of a flat karstic raised limestone reef forming a level nearly featureless "desert" plain marked in pre-Contact times (previous to illuviation caused by sugar cultivation) by a thin or non-existent soil mantle. The micro-topography is notable in containing countless sinkholes caused by chemical weathering (dissolution) of the limestone shelf. Proceeding *mauka* from this limestone plain, this shelf is overlain by alluvium deposited through a series of gulches draining the Wai'anae Mountains. The largest of these is Hono'uli'uli Gulch towards the east side of the plain that drains into West Loch. To the west are fairly steep gradient gulches forming a more linear than dendritic drainage pattern. The major gulches are, from east to west: Awanui, Pālailai, Makaīwa, Waimānalo and Limaloa. These gulches are steep-sided in the uplands and generally of a high gradient until they emerge onto the flat 'Ewa plain. The alluvium they have carried has spread out in delta fashion over the *mauka* portions of the plain, which comprises a dramatic depositional environment at the stream gradient change. These gulches are generally dry, but seasonal Kona storms carry immense quantities of runoff onto the plain and into the ocean. As typical drainages in arid slopes they are either raging uncontrollably, or are dry and as such do not form stable water sources for traditional agriculture in their upper reaches. The Hono'uli'uli gulches, in contrast to those draining into Pearl Harbor to the east, do not have valleys suitable for extensive irrigated agriculture. However, the lack of suitable valleys is compensated for by the rich watered lowlands at the base of Hono'uli'uli Gulch (the *'ili* of Hono'uli'uli).

Hono'uli'uli Ahupua'a, as a traditional land unit, had tremendous and varied resources available for exploitation by early Hawaiians. The "karstic desert" and marginal characterization of the limestone plan, which is the most readably visible terrain, does not do justice to the *ahupua'a* as a whole. The richness of this land unit is marked by the following resources:

1) Twelve miles of coastline with continuous shallow fringing reef that offered rich marine resources.

2) Four miles of frontage on the waters of West Loch which offered extensive fisheries (mullet, *awa*, shellfish), as well as frontage suitable for development of fishponds (for example, Laulaunui)
3) The lower portion of Hono'uli'uli Valley in the 'Ewa plain offered rich level alluvial soils with plentiful water for irrigation from the stream as well as abundant springs. This land would have stretched well up the valley.
4) A broad limestone plain which because of innumerable limestone sink holes offered a nesting home for a large population of avifauna. This resource may have been one of the early attractions to human settlement.
5) An extensive upland forest zone extending as much as twelve miles inland from the edge of the coastal plain. As Handy and Handy have pointed out, the forest was much more distant from the lowlands here than it was on the windward side, but on the leeward side was more extensive (1972:469). Much of the upper reaches of the *ahupua'a* would have had species-diverse forest with *kukui, 'ōhi'a*, sandalwood, *hau, kī,* banana, etc.
6) A network of trails giving access to Lualualei and Wai'anae coastal reaches.

3.2 Main Areas of Settlement

Within this natural setting, cultural, archaeological, and historical sources show a general pattern of three main areas of settlement within the *ahupua'a*: a coastal zone, inland settlement at Pu'u Ku'ua and the Hono'uli'uli taro lands.

3.2.1 The Coastal Zone - Ko'olina and Kalaeloa (Barbers Point)

Ko'olina

There are three major studies on the Ko'olina project area (Davis et al. 1986a; Davis et al. 1986b; and Davis and Haun 1987). Davis documents around 180 component features at 48 sites and site complexes consisting of habitation sites, gardening areas, and human burials. Chronologically the occupation covers the entire span of Hawaiian settlement in what Davis and Haun describe as "one of the longest local sequences in Hawaiian prehistory" (Davis and Haun 1987:37). The earliest part of the sequence relates to the discovery of an inland marsh and early dates were also obtained for the beachfront site (Lanikūhonua) and an inland rock shelter.

Kalaeloa (Barbers Point)

Archaeological research at Barbers Point has focused on the areas in and around the newly constructed Deep Draft Harbor (Barrera 1975; Davis and Griffin 1978; Hammatt and Folk 1981, McDermott et al. 2000). Series of small clustered shelters, enclosures and platforms show limited but recurrent use at the shoreline zone for marine oriented exploitation. This settlement covers much of the shoreline with more concentrated features around small marshes and wet sinks. Immediately behind the shoreline under a linear dune deposit is a buried cultural layer believed to contain some of the earliest habitation evidence in the area.

A significant attraction of the area to early Hawaiians was the plentiful and easily exploited bird population. Particular evidence for taking of petrel occurs at Site -2763 (Hammatt and Folk 1981:13). Initial heavy exploitation of nesting seabirds and other species in conjunction with habitat destruction probably led to early extinction.

There is some indication of limited agriculture in mulched sink holes and limited soil areas. Considering the low rainfall, this activity would have been limited, but probably involved tree crops and roots (sweet potatoes). The archaeological content of the sites indicates a major focus on marine resources.

Davis and Griffin (1978) distinguish functional classes of sites, based on surface area size and argue that the Barbers Point settlement consists of functionally integrated multi-household residence groups. Density contours of midden (by weight) and artifacts (by numbers) plotted for residence sites by Hammatt and Folk (1981) generally indicate narrowly defined spatial foci of discard, possibly indicating continuous use, or at least with no refurbishing or additions to the structures through time (Hammatt and Folk 1981). The focus is small habitation sites, typically lacking the full range of features found in large permanent residence complexes such as high platforms, complex enclosures, and ceremonial sites.

3.2.2 Pu'uku'ua: Inland Settlement

It is mentioned in *mo'olelo* (oral history) that the area of Pu'uku'ua, on the east side of the Wai'anae Ridge, north east of the current project area, seven miles inland of the coast, was a Hawaiian place of great importance.

In 1899, the Hawaiian language Newspaper "*Ka Loea Kālai'āina*" relates a story of Pu'uku'ua as "a place where chiefs lived in ancient times" and a "battle field," "thickly populated." This area was well known by all O'ahu chiefs and customary for them to visit. The term Kauwā was first used here because of a one armed chiefess who was ashamed and ran when other chiefs would visit. She was not a Kauwā she only behaved as one. The article:

> The chiefs of old, who lived at that time, were of divine descent. The two gods [Kāne and Kanaloa] looked down on the hollow [vicinity of Pu'u Ku'ua] and saw how thickly populated it was. The mode of living here was so that chiefs and commoners mixed freely and they were so like the lowest of people (Kauwā). That is what these gods said and that was the time when the term kauwā was first used, and was used for many years afterwards. After the first generations of chiefs had passed away and there descendants succeeded them, a chiefess Oahu to visit this place to see the local chiefs. They did this always. When the time came in which a new chiefess ruled, an armless chiefess, she ran away to hide when other chiefs came to visit as usual because she was ashamed of her lack of an arm. Because she was always running away because of being ashamed the chiefs that visited her called her the low-born (kauwā). Thus the term remained in the thoughts down to this enlightened period. She was no truly a kauwā but was called that because she behaved like one. This was how they were made to be kauwā.... (Ka Loea Kālai'āina, July 8, 1899 in Sterling and Summers 1978:33).

McAllister recorded three sites in this area: two *heiau* (shrines) (sites 134 Pu'u Kuina and 137 Pu'uku'ua; both destroyed) and a series of enclosures in Kukuilua which he calls "*kuleana* sites" (McAllister, 1933). On the opposite side of the Wai'anae range along the trail to Pōhākea Pass, as Cordy (2002) states, "Kākuhihewa was said to have built (or rebuilt) Nīoi'ula, a *po'okanaka heiau* (1,300 sq. m.) in Hālona in upper Lualualei, along the trail to Pōhākea Pass leading into 'Ewa, ca. A.D. 1640-1660" (Cordy 2002:36). There is no direct archaeological evidence

available to the authors' knowledge that intensive Hawaiian settlement occurred along the Pōhākea Pass trail but it is considered as a place of higher probability for traditional Hawaiian sites, based on the above indications. John Papa 'Ī'ī (1959) described a journey that Liholiho took which led him and an entourage through inland Hono'uli'uli and over Pōhākea Pass. Geographically, the area receives sufficient quantities of water and would have had abundant locally available forest resources.

3.2.3 Hono'uli'uli Taro Lands

Centered around the west side of Pearl Harbor at Hono'uli'uli Stream and its broad outlet into the West Loch are the rich irrigated lands of the *'ili* of Hono'uli'uli which give the *ahupua'a* its name. The major archaeological reference to this area is Dicks, Haun and Rosendahl (1987) who documented remnants of a once-widespread wetland system (*lo'i* and fishponds) as well as dry land cultivation of the adjacent slopes.

The area bordering West Loch was clearly a major focus of population within the Hawaiian Islands and this was a logical response to the abundance of fish and shellfish resources in proximity to a wide expanse of well-irrigated bottomland suitable for wetland taro cultivation. The earliest detailed map (Malden 1825) shows all the roads of southwest O'ahu coalescing and descending the *pali* as they funnel into the locality (i.e., Hono'uli'uli Village) which gave the *ahupua'a* of Hono'uli'uli its name. Dicks et al. (1987:78-79) conclude, on the basis of nineteen carbon isotope dates and three volcanic glass dates that "Agricultural use of the area spans over 1,000 years." Undoubtedly, Hono'uli'uli was a locus of habitation for thousands of Hawaiians. Prehistoric population estimates are a matter of some debate but it is worth pointing out that in the earliest mission census (Schmitt 1973:19) 1831-1832, the land (*'āina*) of Hono'uli'uli contained 1,026 men, women, and children. It is not clear whether this population relates to Hono'uli'uli Village or to the entire *ahupua'a* but the village probably contained the vast majority of the district's population at that time. The nature of the reported population structure for Hono'uli'uli (less than 20% children under twelve years of age) and the fact that the population decreased more than 15% in the next four years (Schmitt 1973:22) suggests that the prehistoric population of Hono'uli'uli Village may well have been significantly greater than it was in 1831-1832. A conservative estimate would be that tens of thousands of Hawaiians lived and died at Hono'uli'uli Village.

3.3 Traditional and Legendary Accounts of Hono'uli'uli

Hono'uli'uli, O'ahu is associated with a number of legendary accounts. Many of these concern the actions of gods or demi-gods such as Kāne, Kanaloa, Māui, Kamapua'a, the pig god, Maunauna, the shark deity, Ka'ahupāhau, and the hero Palila. There are several references to chiefly lineages and references to the ruling chiefs Hilo-a-Lakapu and Kūali'i, (Ko 'Olina is reported to have been a vacationing place for Kākuhihewa). Traditional and legendary accounts are presented below starting with the one's pertaining to Pōhākea Pass and then in a loose arrangement from more mythological accounts of gods and demi-gods to accounts of a more historical nature. There is no sharp distinction in this regard.

3.3.1 The Naming of Hono'uli'uli (Legend of Lepeamo'a)

In the legend of Lepeamoa, the chicken-girl of Pālama, Hono'uli'uli is the name of the husband of the chiefess Kapālama and grandfather of Lepeamoa (Thrum 1923:164-184). "Her grandfather gave his name, Hono'uli'uli to a land district west of Honolulu..." (Thrum 1923:170). Westervelt (1917:209) gives an almost identical account.

3.3.2 The Pele Family at Hono'uli'uli

Kapolei (beloved Kapo), specifically the 166-foot high cone of that name, is understood to have been named in reference to the volcano goddess Pele's sister Kapo (Pukui et al. 1974:89). Pōhākea Pass is understood as one of the resting places of Pele's sister Hi'iaka as she was returning from Kaua'i with Pele's lover Lohiau (Fornander 1919 Vol. V: 188 note 6). A considerable number of *mele* (songs) and *pule* (prayers) are ascribed to Hi'iaka as she stood at the summit of Pōhākea (*Aluna au a Pōhākea, Kū au, nānā ia Puna...*)(Emerson 1915:162-168). From this vantage point Hi'iaka could see, through her powers of vision, that her beloved *lehua* groves and friend Hopoe at Puna, Hawai'i Island had been blasted by her jealous sister Pele. She could also see that in her canoe, off the coast of Wai'anae, Lohiau was seducing her traveling companion Wahine'ōma'o! A spring located at Kualaka'i near Barbers Point was named Hoaka-lei (*lei* reflection) because Hi'iaka picked *lehua* flowers here to make a *lei* and saw her reflection in the water.

3.3.3 Keahumoa, Residence of Māui's Grandfather (Legend of Māui's Flying Expedition)

In the Legend of Māui's Flying Expedition (Thrum 1923:252-259) Māui-kupua looks toward Pōhākea Pass and sees his wife, Kumulama, being carried away by chief Pe'ape'amakawalu. After failing to recover her, Māui returns and tells his problems to his mother, Hina. Hina instructs her son to go to Keahumoa and visit his grandfather Kuolokele who lives there in a large hut. The hump-backed Kuolokele returns home with a load of potato leaves and Māui cures him by striking him in the back with a stone (which Kuolokele throws to Waipahu where it remains). Kuolokele has Māui gather *kī* leaves *'ie'ie* vines and bird feathers from which the old man fabricates a "bird-ship" (*moku-manu*) which Māui uses to defeat Pe'ape'amakawalu and recover his wife. They return to Kuolokele's house where they feast and Māui eats Pe'ape'amakawalu's eyeballs.

3.3.4 Kāne and Kanaloa and the Boundaries of 'Ewa (Simeon Nawaa account)

It seems likely the boundaries of the western-most *ahupua'a* of 'Ewa were and still are often contested between the Wai'anae and 'Ewa people:

> When Kāne and Kanaloa were surveying the islands they came to O'ahu and when they reached Red Hill saw below them the broad plains of what is now 'Ewa. To mark boundaries of land they would throw a stone and where the stone fell would be the boundary line...They hurled the stone as far as the Wai'anae Range and it landed somewhere in the Waimānalo section...Eventually the stone was found at Pili o Kahe. This is a spot where two small hills of the Wai'anae Range come down parallel on the boundary between Hono'uli'uli and Nānākuli ('Ewa and Wai'anae). The ancient Hawaiians said the hill on the 'Ewa side was

> the male and the hill on the Wai'anae side was female. The stone was found on the Waianae side hill and the place is known as Pili oKahe (Pili= to cling to, Kahe= to flow). The name refers, therefore, to the female or Waianae side hill. And that is where the boundary between the two districts runs. (Simeon Nawaa in Sterling and Summers 1978:1)

3.3.5 Kamapua'a, the pig god, is associated with Hono'uli'uli:

> Kamapua'a subsequently conquered most of the island of O'ahu, and, installing his grandmother [Kamaunuaniho] as queen, took her to Puuokapolei, the lesser of the two hillocks forming the southeastern spur of the Wai'anae Mountain Range, and made her establish her court there. This was to compel the people who were to pay tribute to bring all the necessities of life from a distance, to show his absolute power over all. (Nakuina 1904:50)

Emma Nakuina goes on to note: "A very short time ago [prior to 1904] the foundations of Kamaunuaniho's house could still be seen at Puuokapolei" (Nakuina 1904:50). Another account (*Ka Loea Kālai'āina* January 13, 1900) speaks of Kekeleaiku, the older brother of Kamapua'a, who also was said to have lived on Pu'uokapolei.

3.3.6 Home of the Shark-Goddess Ka'ahupāhau (Legend of Ka'ehuikimanōo Pu'uloa)

In the Legend of Ka'ehuikimanōo Pu'uloa (Thrum 1923:293-306) the Big Island shark god, Ka'ehuiki travels to visit the famous shark deity Ka'ahupāhau "reaching Hono'uli'uli, the royal residence." Ka'ahupāhau is said to have lived in a royal cave at Hono'uli'uli (Thrum 1923:302).

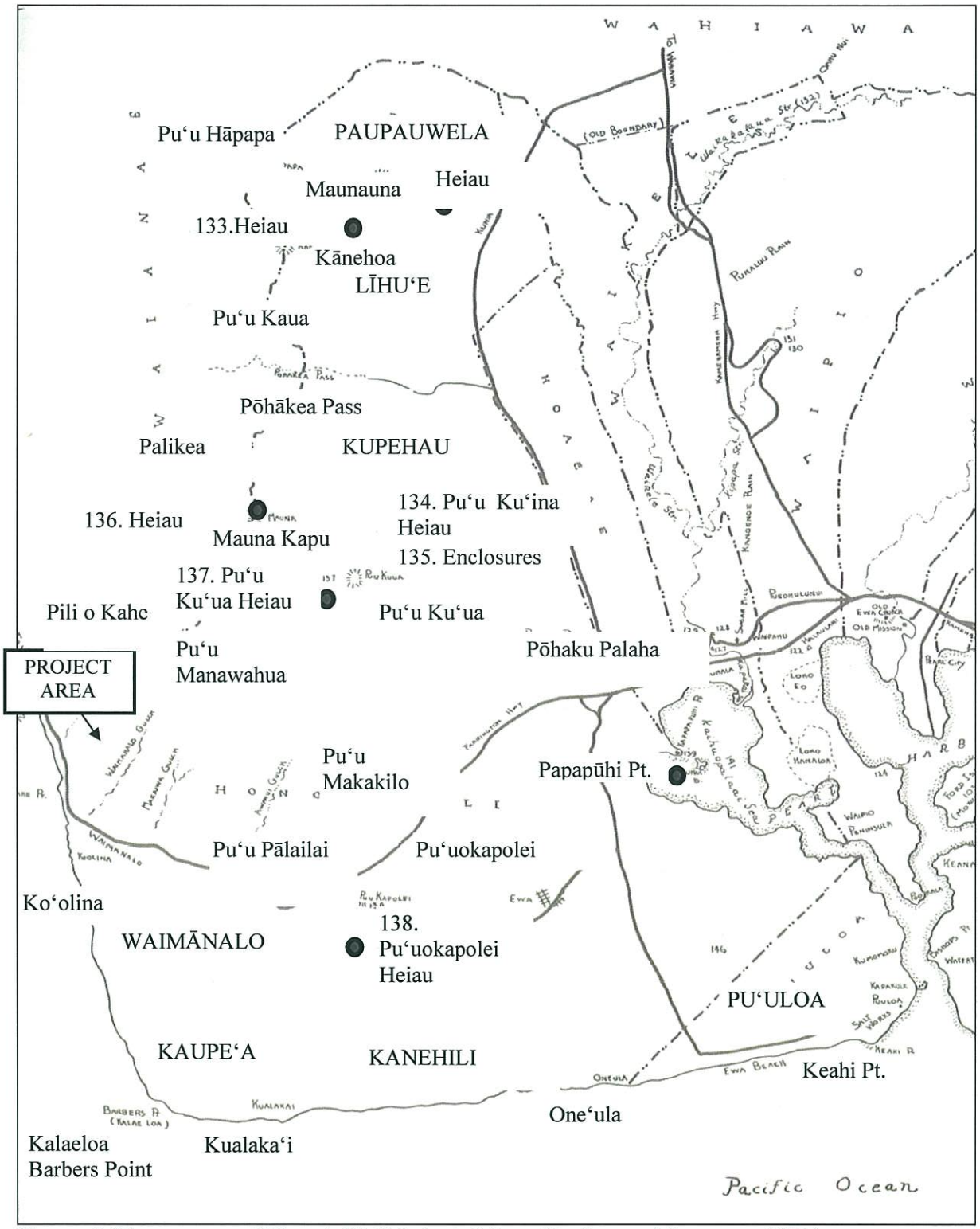

Figure 6. Place names of Hono'uli'uli (adapted from Sterling and Summers 1978)

3.3.7 The Frightened Populace of Hono'uli'uli *(He Ka'ao no Palila)*

In the Legend of Palila, the *kupua* or demigod hero of Kaua'i, he lands at Ka'ena point with his fabulous war club (*lā'au pālau*), which required eighty men to carry it, and crosses into Hono'uli'uli through the Pōhākea Pass. He descends to the plain of Keahumoa:

> Kū kēia i laila nānā i ke kū ka ea o ka lepo i nā kānaka, e pahu aku ana kēia i ka lā'au pālau aia nei i kai o Hono'uli'uli, kū ka ea o ka lepo o ka honua, me he ōla'i la, maka'u nā kānaka holo a hiki i Waikele...
>
> At this place he stood and looked at the dust as it ascended to the sky caused by the people who had gathered there; he then pushed his war club toward Hono'uli'uli. When the people heard something roar like an earthquake they were afraid and they all ran to Waikele ... (Fornander 1917 Vol. V 136-153)

3.3.8 Two Old Women Who Turned To Stone *(Ka Loea Kālai'āina)*

The Hawaiian language newspaper *Ka Loea Kālai'āina* relates that near Pu'uokapolei, on the plain of Pukaua, on the *mauka* side of the road, there was a large rock. The legend is as follows:

> There were two supernatural old women or rather peculiar women with strange powers and Pu'ukaua belonged to them. While they were down fishing at Kualaka'i [near Barbers Point] in the evening, they caught these things, 'a'ama crabs, pipipi shellfish, and whatever they could get with their hands. As they were returning to the plain from the shore and thinking of getting home while it was yet dark, they failed for they met a one-eyed person [bad omen]. It became light as they came near to the plain, so that passing people were distinguishable. They were still below the road and became frightened lest they be seen by men. They began to run - running, leaping, falling, sprawling, rising up and running on, without a thought of the 'a'ama crabs and seaweeds that dropped on the way, so long as they would reach the upper side of the road. They did not go far for by then it was broad daylight. One woman said to the other, "Let us hide lest people see us," and so they hid. Their bodies turned into stone and that is one of the famous things on this plain to this day, the stone body. This is the end of these strange women. When one visits the plain, it will do no harm to glance on the upper side of the road and see them standing on the plain. (Ka Loea Kālai'āina, January 13, 1900)

3.3.9 The Strife of Nāmakaokapāo'o and Puali'i (*Ka'ao no* Nāmakaokapāo'o)

In the Legend of Nāmakaokapāo'o the brave boy, Nāmakaokapāo'o, and his mother, Pōka'ī, appear to have been living near the coast but were quite destitute (*'ilihune loa*). His mother met Puali'i when he came from Līhu'e to fish at Hono'uli'uli and the family went to live on the plains of Keahumoa (*ke kula o Keahumoa*). Puali'i kept sweet potato patches (*māla 'uala*) and fished for *ulua*. Following a dispute over sweet potatoes, Nāmakaokapāo'o defeated his step-father, Puali'i and:

> Lālau aku la o Nāmakaokapāo'o i ke po'o o Puali'i a kiola aku la i kai o Waipouli, he ana ma kahakai o Hono'uli'uli, o kona loa, 'elima mile ka loa...
>
> Nāmakaokapāo'o picked up Puali'i's head and threw it towards Waipouli, a cave situated on the beach at Hono'uli'uli (a distance of about five miles)... (Fornander 1917 Vol. V 274-277)

3.3.10 The Story of Kaihuopala'ai Pond, Hono'uli'uli (*Ka'ao no Maikohā)*

In the Legend of Maikohā a sister of Maikohā (a deified hairy man who became the god of tapa makers) named Kaihuopala'ai, journeys to O'ahu:

> 'Ike aku la o Kaihuopala'ai i ka maikai o Kapapaapuhi, he kāne e noho ana ma Hono'uli'uli ma 'Ewa. Moe iho la lāua, a noho iho la o Kaihuopala'ai i laila a hiki i kēia lā. 'Oia kēlā loko kai e ho'opuni ia nei i ka 'anae, nona nā i'a he nui loa, a hiki i kēia kākau ana.
>
> Kaihuopala'ai saw a goodly man by the name of Kapapaapuhi who was living at Hono'uli'uli, 'Ewa; she fell in love with him and they were united, so Kaihuopala'ai has remained in 'Ewa to this day. She was changed into that fishpond in which mullet are kept and fattened, and that fishpond is used for that purpose to this day [1919]. (Fornander 1917 Vol. V 270-271)

3.3.11 The Traveling Mullet of Hono'uli'uli (Fish Stories)

The story of (Ka)Ihuopala'ai is also associated with the tradition of the *'anae-holo* or traveling mullet (Thrum 1907:270-272):

> The home of the 'anae-holo is at Hono'uli'uli, Pearl Harbor, at a place called Ihuopala'ai. They make periodical journeys around to the opposite side of the island, starting from Pu'uloa and going to windward, passing successively Kumumanu, Kalihi, Kou, Kālia, Waikīkī, Ka'alāwai, and so on, around to the Ko'olau side, ending at Lā'ie, and then returning by the same course to their starting point.(Thrum 1907:271)

In Thrum's account, Ihuopala'ai is a male who possesses a Kū'ula or fish god which supplied the large mullet known as *'anae*. His sister lived in Lā'ie and there came a time when there were no fish. She sent her husband to visit Ihuopala'ai who was kind enough to send the fish following his brother-in-law on his trip back to Lā'ie.

This story is associated with a poetical saying documented by Mark Pukui about Hono'uli'uli:

> Ka i'a hali a ka makani
>
> The fish fetched by the wind (Pukui 1983: # 1330)

Pukui explains "The *'anaeholo*, a fish that travels from Hono'uli'uli, 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." Whether this saying was used in contexts other than in reference to mullet is unclear.

3.3.12 Hono'uli'uli and the Head of Hilo-a-Lakapu (Legend of the Sacred Spear-point)

In the Legend of the Sacred Spear-point (Kalākaua 1888:209-225) is a reference to the Hawai'i Island chief Hilo-a-Lakapu. Following his unsuccessful raid against O'ahu "he was slain at Waimano, and his head was placed upon a pole near Hono'uli'uli for the birds to feed upon"(Kalākaua 1888:224).

3.3.13 The Strife at Hono'uli'uli from which Kūali'i unites Hawai'i nei (Mo'olelo o Kūali'i)

The celebrated chief, Kūali'i, is said to have lead an army of twelve thousand *('ekolu mano)* against the chiefs of Ko'olauloa with an army of twelve hundred *('ekolu lau)* upon the plains of Keahumoa (Fornander 1917 Vol. IV 364-401). Perhaps because the odds were so skewed the battle was called off and the *ali'i* (chiefs) of Ko'olau ceded *(ha'awi a'e)* the districts of Ko'olauloa, Ko'olaupoko, Waialua and Wai'anae to Kūali'i. When the *ali'i* of Kaua'i heard of this victory at Hono'uli'uli they gave Kaua'i to Kūali'i as well and thus he became possessed of all the islands *(a lilo a'e la nā moku a pau ia Kūali'i mai Hawai'i a Ni'ihau)*. The strife at Hono'uli'uli was the occasion of the recitation of a song for Kūali'i by a certain Kapa'ahulani *(Ka Pule Ana a Kapa'ahulani)* that makes passing reference in word play to the blue poi, which appeases the hunger of Hono'uli'uli *(Uliuli ka poi e piha nei - o Hono'uli'uli)*.

3.3.14 The Last Days of Kahahana and Hono'uli'uli (The Land is the Sea's)

In the tradition of the prophecy of the *kahuna* Ka'opulupulu, Moke Manu relates that the deposed O'ahu chief Kahahana fled for his life:

> Upon the arrival here at O'ahu of Kahekili, Kahahana fled, with his wife Kekuapoi, and friend Alapa'i, and hid in the shrubbery of the hills. They went to Āliamanu, Moanalua, to a place called Kinimakalehua; then moved along to Keanapua'a, and Kepo'okala, at the lochs of Pu'uloa, and from there to upper Waipi'o; thence to Wahiawā, Helemano, and on to Līhu'e; thence they came to Po'ohilo, at Hono'uli'uli, where they first showed themselves to the people and submitted themselves to their care. (Thrum 1907:203-214)
>
> Through treachery, Kahahana was induced to leave Po'ohilo, Hono'uli'uli and was killed on the plains of Hō'ae'ae (Thrum 1907:213-214).

3.3.15 Pu'uokapolei and the Reckoning of the Seasons (Kamakau)

Samuel Kamakau relates:

> ...the people of O'ahu reckoned from the time when the sun set over Pu'uokapolei until it set in the hollow of Mahinaona and called this period Kau [summer], 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 from their germination ('ōilo) the season of Ho'oilo [winter, rainy, season]. (Mo'olelo Hawai'i Vol. I, Chap. 2, p. 23)

3.3.16 Hono'uli'uli in the Poetry of Halemano (Ka'ao no Halemano)

In the Legend of Halemano the romantic O'ahu anti-hero chants a love song with a reference to Hono'uli'uli:

> Huli a'e la Ka'ala kau i luna, Waiho wale kai o Pōka'ī, Nānā wale ke aloha i Hono'uli'uli, Kokolo kēhau he makani no Līhu'e...
>
> Search is made to the top of Ka'ala, The lower end of Pōka'ī is plainly seen. Love looks in from Hono'uli'uli, The dew comes creeping, it is like the wind of Līhu'e... (Fornander 1917 Vol. V 252)

3.4 Legends and Traditional Places in Upland Hono'uli'uli

3.4.1 Kahalaopuna at Pōhākea Pass

One of the most popular legends of O'ahu is that of Kahalaopuna (or Kaha) a young woman of Mānoa who is slandered by others and is then killed by her betrothed, Kauhi, a chief from Ko'olau, O'ahu. While the numerous accounts (Day 1906:1-11, Fornander 1919 Vol. V: 188-193, Kalākaua 1888:511-522, Nakuina 1904:41-45, Patton 1932:41-49, Skinner 1971:220-223, Thrum 1907:118-132, Westervelt 1907a 127-137, Westervelt 1907b 84-93) vary in details they typically have Kahalaopuna slain and then revived repeatedly with the aid of a protective owl spirit. Kauhi forces her to hike west from Mānoa through the uplands until they get to Pōhākea Pass through the southern Wai'anae Range in north Hono'uli'uli. At Pōhākea Pass, Kauhi beats her with a stick until she is very dead ("*Ia hahau ana a Kauhi i ka lā'au, make loa o Kahalaopuna*"). Her spirit (*'uhane*) flies up into a *lehua* tree and chants for someone to go notify her parents of her fate. Upon hearing the news her parents fetch Kahalaopuna back to Mānoa and she is restored to life.

3.4.2 *Mo'o* at Maunauna (*Kuokoa*)

Moses Manu in recounting the Legend of Keaomelemele makes a reference to a *mo'o* (fabulous lizard, dragon, serpent) named Maunauna who lived above Līhu'e (presumably at the landform of that name in extreme northern Hono'uli'uli) and who was regarded as a bad lizard (*Kuokoa* April 25, 1885).

3.4.3 Paupauwela and Līhu'e

Paupauwela, also spelled Popouwela (derivation unknown), is the name of the land area in the extreme *mauka* section of Hono'uli'uli Ahupua'a. The land area of Līhu'e is just *makai* of this land, and extends into the *ahupua'a* of Waipi'o (adjacent to the eastern border of Hono'uli'uli). Both place names are mentioned in a chant recorded by Abraham Fornander, which was composed as a *mele* for the O'ahu king, Kūali'i, as he was preparing to battle Kuiaia, the chief of Wai'anae:

Where? Where is the battle field	Ihea, ihea la ke kahua,
Where the warrior is to fight?	Paio ai o ke koa-a?

On the field of Kalena,	I kai i kahua i Kalena,
At Manini, at Hanini,	I Manini, i Hanini
Where was poured the water of the god	I ninia i ka wai akua,
By your work at Malamanui;	I ko hana i Malamanui
On the heights of Kapapa, at Paupauwela,	Ka luna o Kapapa, i Paupauwela,
Where they lean and rest;	I ka hilinai i ke kalele,
At the hala trees of indolent Halahalanui,	Ka hala o Halahalanui maauea,
At the ohia grove of Pule-e	E kula ohia ke Pule-e,
The god of Lono, of Makalii	Ke 'kua o Lono o Makalii
Thr fragrant branch of the Ukulonoku,	Ka lala aalao Ukulonoku,
Mayhap from Kona, from Lihue,	No Kona paha, no Lihue.
For the day at Maunauna	No ka la i Maunauna,
For the water at Paupauwela.	No ka wai i Paupauwela.
Red is the water of Paupauwela,	Ula ka wai i Paupauwela,
From the slain at Malamani,	Ke kilau o Malamani,
The slain on the ridge at Kapapa.	Ka moo kilau I Kapapa.

(Fornander 1917, Vol. IV, Part 2:384-386).

The derivation of the place name Līhu'e (meaning "cold chill") is illustrated in the following poem; all other places names mentioned in this poem are in Waipi'o:

The icy wind of Lihue plied its spurs,

Pulling up the bridle of Haleauau,

Speeding headlong over Kalena

And running over the plain of Kanoenoe

(Ka Loea Kālai'āina, July 22, 1899, translated in Sterling and Summers 1978:21)

This explains the meaning of a Hawaiian saying "*Hao na kēpā o Līhu'e i ke anu*" (The spurs of Līhu'e dig in with cold) (Pukui 1983:#479).

The icy winds of Hono'uli'uli are also noted in a *mele* for the high king Kūali'i. In this *mele*, the cold winds of Kumomoku and Leleiwe, near Pu'uloa in Hono'uli'uli are compared unfavorably to the god Kū.

Not like these are thou, Ku	Aole i like Ku.
[Nor] the rain that brings the land breeze,	Ia ua hoohali kehau,
Like a vessel of water poured out.	Mehe ipu wai ninia la,

Nor to the mountain breeze of Kumomoku,	Na hau o Kumomoku;
[The] land breeze coming round to Leleiwi.	Kekee na hau o Leleiwi,
Truly, have you not known?	Oi ole ka oe i ike
The mountain breezes, that double up your back,	I ka hau kuapuu.
[That make you] sit crooked and cramped at Kaimohala,	Kekee noho kee, o Kaimohala,
The Kanehili at Kaupea?	O Kanehili i Kaupea-la
Not like these are thou, Ku.	Aole i like Ku.

(Fornander 1917, Vol. IV, Part II:390-391)

In the Legend of Halemano (Fornander 1919, Vol. V, Part II: 252), the romantic O'ahu anti-hero chanted a love song with a reference to the winds of Līhu'e:

Search is made to the top of Ka'ala,	Huli a'e la Ka'ala kau i luna,
The lower end of Pōka'ī is plainly seen.	Waiho wale kai o Pōka'ī,
Love looks in from Hono'uli'uli,	Nānā wale ke aloha i Hono'uli'uli,
The dew comes creeping, it is like the wind of Līhu'e...	Kokolo kēhau he makani no Līhu'e.

The wind of Līhu'e and others in the region are also named by Moses K. Nakuina, as follows:

Moa'e-kū is of 'Ewaloa

Kēhau is of Waiopua

Waikōloa is of Līhu'e

Kona is of Pu'uokapolei

Maunuunu is of Pu'uloa

(Nakuina 1992:43)

The *ali'i* were closely associated with Līhu'e, which had habitation areas and playing grounds set aside for their sports. 'Ewa

> Lolale was the father and Keleanohoapiapi the mother of Ka-lo-kaholi-a-Lale. He was born in the land of Lihue and there he was reared into manhood. He excelled in good looks and greatly resembled his mother.
>
> In the olden days the favorite occupation of Lihue chiefs was spear throwing and the best instructors hailed from this locality. (Ka Nūpepa Kū'oko'a, Aug. 26, 1865, translation in Sterling and Summers 1978:23)

Līhu'e was also the home of a famous cannibal king-man, Kaupe, who overthrew the ruling chiefs to become the paramount power between Nu'uanu and the sea. He had a home and a *heiau* in Līhu'e. Kaupe was a *kapua*, a supernatural being who could take the form of a man or a dog; this type of dog man was known as an *'ōlohe*. Although he left the O'ahu *ali'i* alone, he killed many commoners in the area, and eventually sailed to the island of Hawai'i on a raid, where he captured a chief's son; he planned to sacrifice this boy at his *heiau* in Līhu'e. The father came to O'ahu, and with the help of the priests of the Hawaiian hero, Kahanaiakeakua, was able to free his son, escape back to Hawai'i, and eventually kill the dog-man, Kaupe (Westervelt 1963:90-96).

3.4.4 Hill of Maunauna

The hill Maunauna lies between the lands Paupauwela and Līhu'e. One translation of Maunauna is "mountain sent [on errands]." Two servant *mo'o* who lived here had no keepers to supply their needs" (Pukui et al. 1974:149). It was at Maunauna, according to one tradition, that the forces of the chiefs Kūali'i and Kuiaia of Wai'anae met to do battle, which was averted when a *mele* honoring the god Kū was chanted (see previous section). (Fornander 1917, Vol IV, Part 2:348). In the Legend of Ke-ao-melemele, a woman named Paliuli traveled in this area.

> In a very short time she [Paliuli] walked over the plain of Ewa; Ewa that is known as the land of the silent fish [pearl oysters]...She went on to the plain of Punalu'u and turned to gaze at Maunauna point and the plain of Lihue. (Manu 1885, translation in Sterling and Summers 1978:21)

Certain place names in the uplands, including Maunauna, are also mentioned in the story of Lo-lae's Lament. The place of Lolale's residence is given in King Kalākaua's version of this story. According to him (Kalākaua 1990:232): "There lived there at that time in Lihue, in the district of 'Ewa, on the island of Oahu, a chief named Lo-lale, son of Kalona-iki, and brother of Piliwale, the *alii-nui*, or nominal sovereign, of the island, whose court was established at Waialua."

In this story, Lolale was a chief of O'ahu who asked his friend Kalamakua to find him a bride (Kalākaua 1990:228-246; Skinner 1971:217-219). Kalamakua traveled to Maui and chose Kelea, the chief's sister, and returned with her to O'ahu; during this time the two grew close. Kelea lived with Lolale for a while, but he was a silent type that was often away from home playing sports and walking in the woodlands. Longing for Kalamakua, Kelea decided to leave her husband, Lolale voiced no "spoken bitterness;" however, after she left, he sang this lament:

> Farewell, my partner of the lowland plains,
>
> On the waters of Pohakeo, above Kanehoa,
>
> On the dark mountain spur of Mauna-una!
>
> O, Lihue, she is gone!
>
> Sniff the sweet scent of the grass,
>
> The sweet scent of the wild vines
>
> That are twisted by Waikoloa,

By the winds of Waiopua,

My flower!

As if a mote were in my eye.

The pupil of my eye is troubled.

Dimness covers my eyes. Woe is me!

[Kalākaua 1990:244-245].

3.5 Prehistory and Early History

Various Hawaiian legends and early historical accounts indicate that the *ahupua'a* of Hono'uli'uli was once widely inhabited by pre-Contact populations. This would be attributable for the most part to the plentiful marine and estuarine resources available at the coast, along which several sites interpreted as permanent habitations and fishing shrines were located. Other attractive subsistence-related features of the *ahupua'a* include irrigated lowlands suitable for wetland taro cultivation (Hammatt and Shideler 1990), as well as the lower forest area of the mountain slopes for the procurement of forest resources.

Exploitation of the forest resources along the slopes of the Wai'anae Range - as suggested by E. S. and E.G. Handy - probably acted as a viable subsistence alternative during times of famine:

> ...The length or depth of the valleys and the gradual slope of the ridges made the inhabited lowlands much more distant from the *wao*, or upland jungle, than was the case on the windward coast. Yet the *wao* here was more extensive, giving greater opportunity to forage for wild foods during famine time. (Handy and Handy 1972:469)

These upper valley slopes may have also been a significant resource for sporadic quarrying of basalt for the manufacturing of stone tools. This is evidenced in part by the existence of a probable quarrying site (50-80-12-4322) in Makaīwa Gulch at 152 m. (500 ft.) a.m.s.l. (Hammatt et al. 1991).

The Hawaiian *ali'i* were also attracted to the region, which is steeped in myth.

> Ko 'Olina is in Waimānalo near the boundary of 'Ewa and Wai'anae. This was a vacationing place for chief Kākuhihewa and the priest Napuaikamao was the caretaker of the place. Remember reader, this Ko Olina is not situated in the Waimānalo on the Ko'olau side of the island but the Waimānalo in 'Ewa. It is a lovely and delightful place and the chief, Kākuhihewa loved this home of his. (Ke Au Hou July 13, 1910)

Other early historical accounts of the general region typically refer to the more populated areas of the 'Ewa district, where missions and schools were established and subsistence resources were perceived to be greater. However, the presence of archaeological sites along the barren coral plains and coast of southwest Hono'uli'uli Ahupua'a, indicate that prehistoric and early historic populations also adapted to less inviting areas, despite the environmental hardships.

Barbers Point is named after Captain Henry Barber whose vessel ran aground on October 31, 1796. Subsequent to western contact in the area, the landscape of the 'Ewa plains and Wai'anae slopes was adversely affected by the removal of the sandalwood forest, and the introduction of domesticated animals and new vegetation species. Domesticated animals including goats, sheep and cattle were brought to the Hawaiian Islands by Vancouver in the early 1790s, and allowed to graze freely about the land for some time after. It is unclear when the domesticated animals were brought to O'ahu; however, L.A. Henke reports the existence of a longhorn cattle ranch in Wai'anae prior to 1840 (in Frierson 1972:10). During this same time, perhaps as early as 1790, exotic vegetation species were introduced to the area. These typically included vegetation best suited to a terrain disturbed by the logging of sandalwood forest and eroded by animal grazing. The following dates of specific vegetation introduced to Hawai'i are given by R. Smith and outlined by Frierson:

1) "early", c. 1790:
Prickly pear cactus, *Opuntia tuna*
Haole koa, *Leucaena glauca*
Guava, *Psidium guajava*

2) 1835-1840
Burmuda [sic] grass, *Cynodon dactylon*
Wire grass, *Eleusine indica*

3) 1858
Lantana, *Lantana camara*

The *kiawe* tree (*Prosopis pallida*) was also introduced during this period, either in 1828 or 1837 (Frierson 1972:11).

Intensive sandalwood harvesting, according to H. St. John (in Frierson 1972:7) occurred in the Hawaiian Islands from 1815 to 1830. As it is likely that sandalwood forests once occupied the lower, dry slopes of the Wai'anae Range, the current project area was likely impacted by the cutting and burning of these forests.

3.5.1 Mid- to late-1800s

Associated with the Māhele of 1848, 99 individual land claims in the *ahupua'a* of Hono'uli'uli were registered and immediately awarded by King Kamehameha III. The vast majority of the Land Commission Awards (LCA) were located near the Pu'uloa salt works and the taro lands of the *'ili* of Hono'uli'uli. The present study area appears to have been included in the largest award (Royal Patent 6071, LCA 11216, 'Āpana 8) granted in Hono'uli'uli Ahupua'a to Miriam Ke'ahi-Kuni Kekau'ōnohi on January 1848 (Native Register). Kekau'ōnohi acquired a deed to all unclaimed land within the *ahupua'a*, including a total of 43,250 acres.

Kamaukau relates the following about Kekau'ōnohi as a child:

> Kamehameha's granddaughter, Ke-ahi-Kuni Kekau-'ōnohi...was also a tabu chiefess in whose presence the other chiefesses had to prostrate and uncover themselves, and Kamehameha would lie face upward while she sat on his chest. (In Hammatt and Shideler 1990:19-20)

Kekau'ōnohi was one of Liholiho's (Kamehameha II) wives, and after his death, she lived with her half-brother, Luanu'u Kahala'i'a, who was governor of Kaua'i (Hammatt and Shideler 1990:20). Subsequently, Kekau'ōnohi ran away with Queen Ka'ahumanu's stepson, Keli'i-ahonui, and then became the wife of Chief Levi Ha'alelea. Upon her death on June 2, 1851, all her property was passed on to her husband and his heirs. When Levi Ha'alelea died the property went to his surviving wife, who in turn leased it to James Dowsett and John Meek in 1871 for stock running and grazing.

In 1877, James Campbell purchased most of Hono'uli'uli Ahupua'a for a total of $95,000. He then drove off 32,347 head of cattle belonging to Dowsett, Meek and James Robinson and constructed a fence around the outer boundary of his property (Bordner and Silva 1983:C-12). In 1879, Campbell brought in a well driller from California to search the 'Ewa plains for water, and a "vast pure water reserve" was discovered (Armstrong and Bier 1983). Following this discovery, plantation developers and ranchers drilled numerous wells in search of the valuable resource. By 1881, the Campbell property of Hono'uli'uli prospered as a cattle ranch with "abundant pasturage of various kinds" (Briggs in Haun and Kelly 1984:45). Within 10 years of the first drilled well in 'Ewa, the addition of a series of artesian wells throughout the island was supplying most of Honolulu's water needs (Armstrong and Bier 1983).

In 1889, Campbell leased his property to Benjamin Dillingham, who subsequently formed the O'ahu Railway & Land Co. (O.R. & L) in 1890. To attract business to his new railroad system, Dillingham subleased all land below 200 feet elevation to William Castle who in turn sublet the area to the 'Ewa Plantation Company for sugar cane cultivation (Frierson 1972:15) (Figure 7). Dillingham's Hono'uli'uli lands above 200 feet elevation that were suitable for sugar cane cultivation were sublet to the O'ahu Sugar Co. Throughout this time and continuing into modern times, cattle ranching continued in the area, and Hono'uli'uli Ranch established by Dillingham was the "fattening" area for the other ranches (Frierson 1972:15).

'Ewa Plantation Co. was incorporated in 1890 and continued in full operation up into modern times (Figure 7). The plantation grew quickly with the abundant artesian water. As a means to generate soil deposition on the coral plain and increase arable land in the lowlands, the 'Ewa

Plantation Co. installed ditches running from the lower slopes of the mountain range to the lowlands and then plowed the slopes vertically just before the rainy season to induce erosion (Frierson 1972:17).

The O'ahu Sugar Co. was incorporated in 1897 and included lands in the foothills above the 'Ewa plain and Pearl Harbor. Prior to commercial sugar cultivation, the lands occupied by the O'ahu Sugar Co. were described as being "of near desert proportion until water was supplied from drilled artesian wells and the Waiāhole Water project" (Condé and Best 1973:313). The O'ahu Sugar Co. took control over the 'Ewa Plantation lands in 1970 and continued operations into the 1990s.

Dillingham's *mauka* lands in western Hono'uli'uli that were unsuitable for commercial sugar production remained pasture for grazing livestock. From 1890 to 1892, the Ranch Department of the O.R. & L. Co. desperately sought water for their herds of cattle by tapping plantation flumes and searching for alternative sources of water. Ida von Holt leaves this account of her husband Harry's (Superintendent of the O.R. & L Ranch Dept.) search for water in the foothills of the Wai'anae Range:

> 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. (Von Holt 1985:136)

A second account is given of the discovery of spring water in an area over the ridge on the north side of Kalo'i Gulch:

> Shouting to the men to come over with their picks and shovels, he [Harry von Holt] soon got them busy clearing away lots of small stones and earth. Almost at once they could see that there were evidences of a paved well, and at about three feet down they came upon a huge flat rock, as large around as two men could span with their arms. Digging the rock loose and lifting it to one side, what was their astonishment to find a clear bubbling spring! (Von Holt 1985:138)

Following the discovery, two old Hawaiians began to ask Von Holt about the spring:

> Finally he [Harry von Holt] got them to explain that the spring, called "Waihuna" (Hidden Spring) had been one of the principal sources of water for all that country, which was quite heavily populated before the smallpox epidemic of 1840...A powerful Kahuna living at the spring had hidden it before he died of the smallpox, and had put a curse on the one who disturbed the stone, that he or she would surely die before a year was out. (Von Holt 1985:138-140)

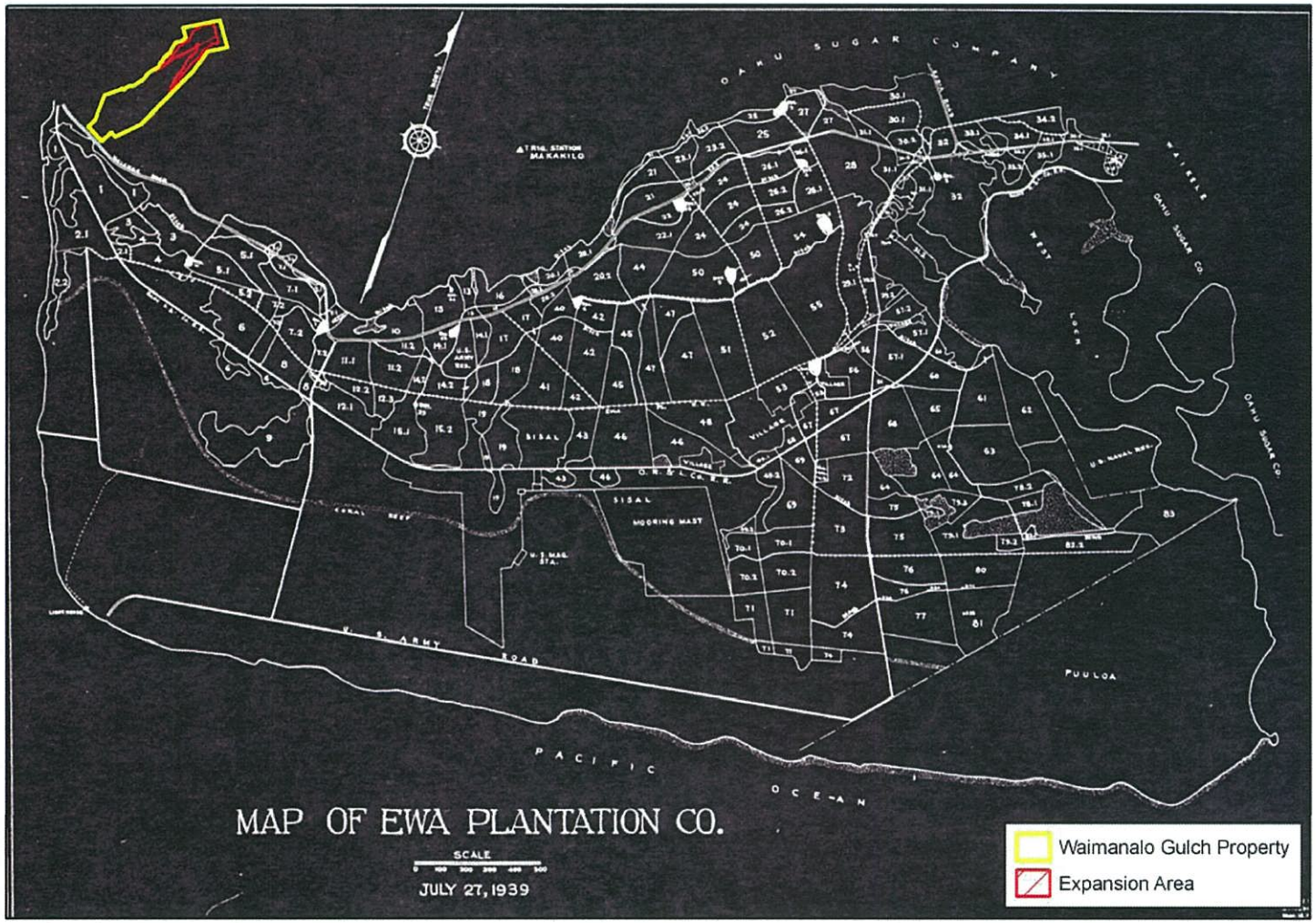

Figure 7. Map of 'Ewa Plantation Co. (Condé and Best 1973:285), showing the extent of sugar cane cultivation in the vicinity of the Waimānalo Gulch property.

3.5.2 1900s

By 1920, the lands of Hono'uli'uli were used primarily for commercial sugar cane cultivation and ranching (Frierson 1972:18). Much of the *mauka* lands in western Hono'uli'uli, including ridges and deep gulches, were unsuitable for commercial sugar cultivation and remained pasture for grazing livestock. Historic maps of the Waimānalo Gulch area indicate a lack of any significant development in the area into the 1940s (Figures 8-10). Modest constructions in the area included the realignment of the "Waianae Road" (present Farrington Hwy.) to run along the *makai* / southern edge of the Waimānalo Gulch property, and a road the top of the Kahe Point ridge, within the Waimānalo Gulch property.

In the late 1920s, the main residential communities were at the northeast edge of the 'Ewa Plain. The largest community was still at Hono'uli'uli village. 'Ewa was primarily a plantation town, focused around the sugar mill, with a public school as well as a Japanese School. Additional settlement was in Waipahu, centered around the Waipahu sugar mill, operated by the Oahu Sugar Company.

Major land use changes came to western Hono'uli'uli when the U.S. Military began development in the area. Long before the Japanese bombing of Pearl Harbor in December 1941, the U.S. military had initiated the Oahu Coast Defense Command, a series of coastal artillery batteries designed to assist in the defense of Pearl Harbor and to prevent invasion of O'ahu. Military installations were constructed both near the coast, as well as in the foothills and upland areas. The following military installations were located in the general vicinity of the current Waimānalo Gulch project area. Barbers Point Military Reservation (a.k.a. Battery Barbers Point, 1937-1942), located at Barbers Point Beach, was used beginning in 1921 as a training area for firing 155 mm guns (Payette 2003). Camp Malakole Military Reservation (a.k.a. Hono'uli'uli Military Reservation until 1941), located south of Barbers Point Harbor, was used from 1939 as an anti-aircraft artillery training firing point (Payette 2003). Gilbert Military Reservation, located east of Barbers Point Harbor, was used from 1922-1944 as a railway battery firing position (Payette 2003). Brown's Camp Military Reservation (a.k.a. Brown's Camp Battery from 1937-1944 and Battery Awanui from 1940-1945), located near Kahe Point was a railway battery firing position (Payette 2003). Fort Barrette (a.k.a. Kapolei Military Reservation and Battery Hatch), located atop Pu'u Kapolei, was in use from 1931 to 1948 for housing four 3-inch anti-aircraft batteries (Payette 2003).

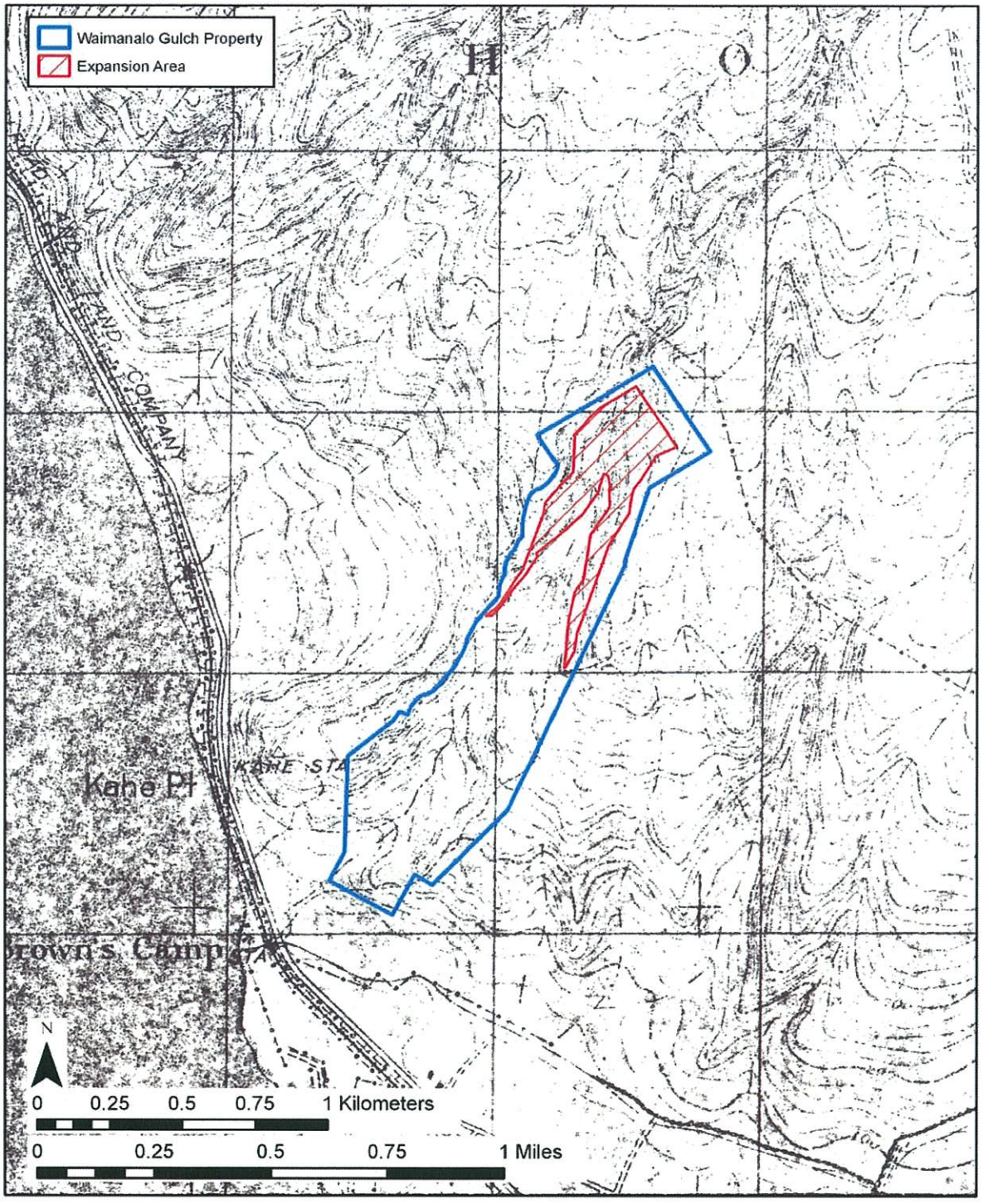

Figure 8. 1918 Fire Control Map, showing the location of the Waimānalo Gulch property and proposed landfill expansion area

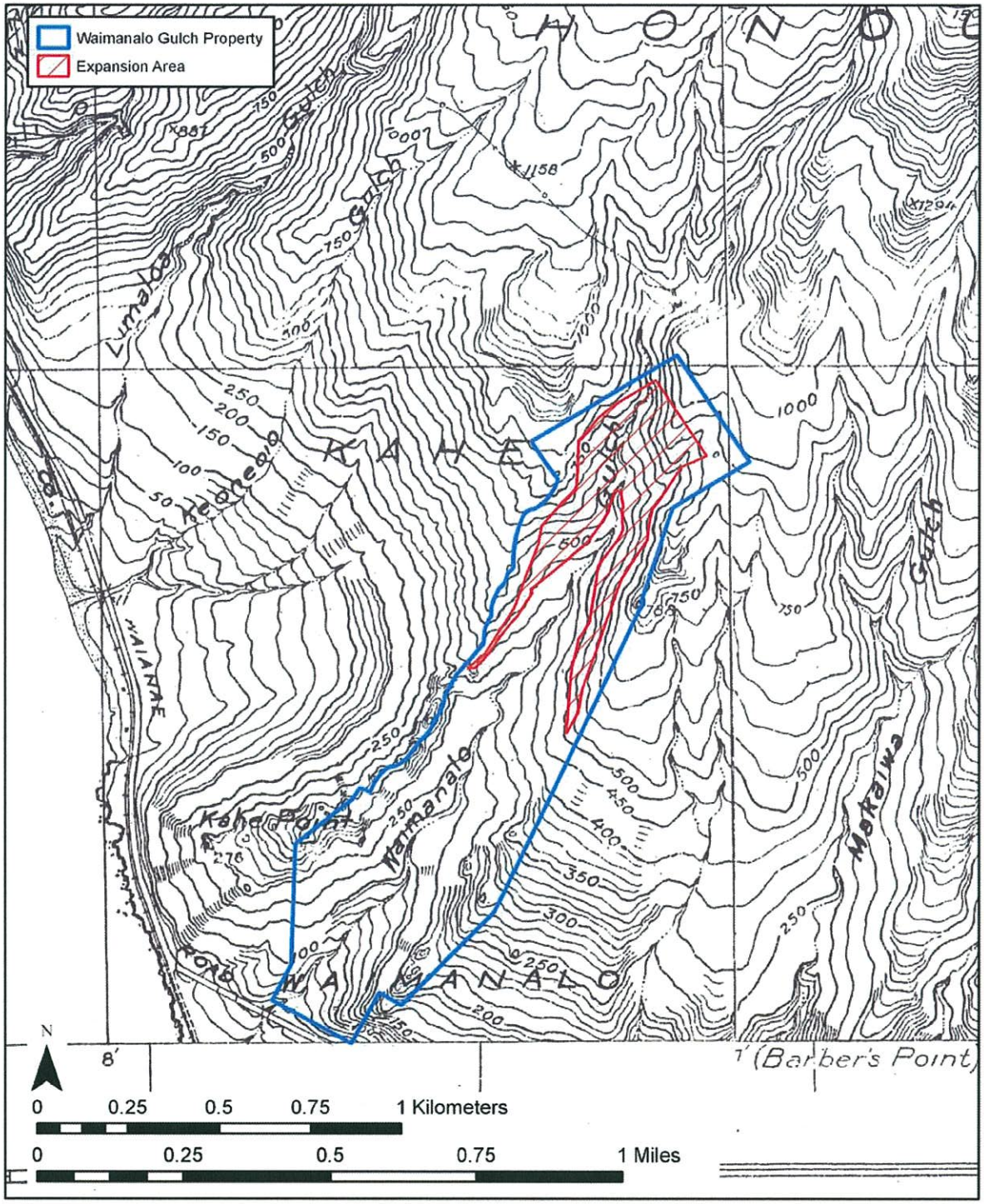

Figure 9. 1928 USGS Topographic Map, Wai'anae Quad, showing the location of the Waimānalo Gulch property and proposed landfill expansion area

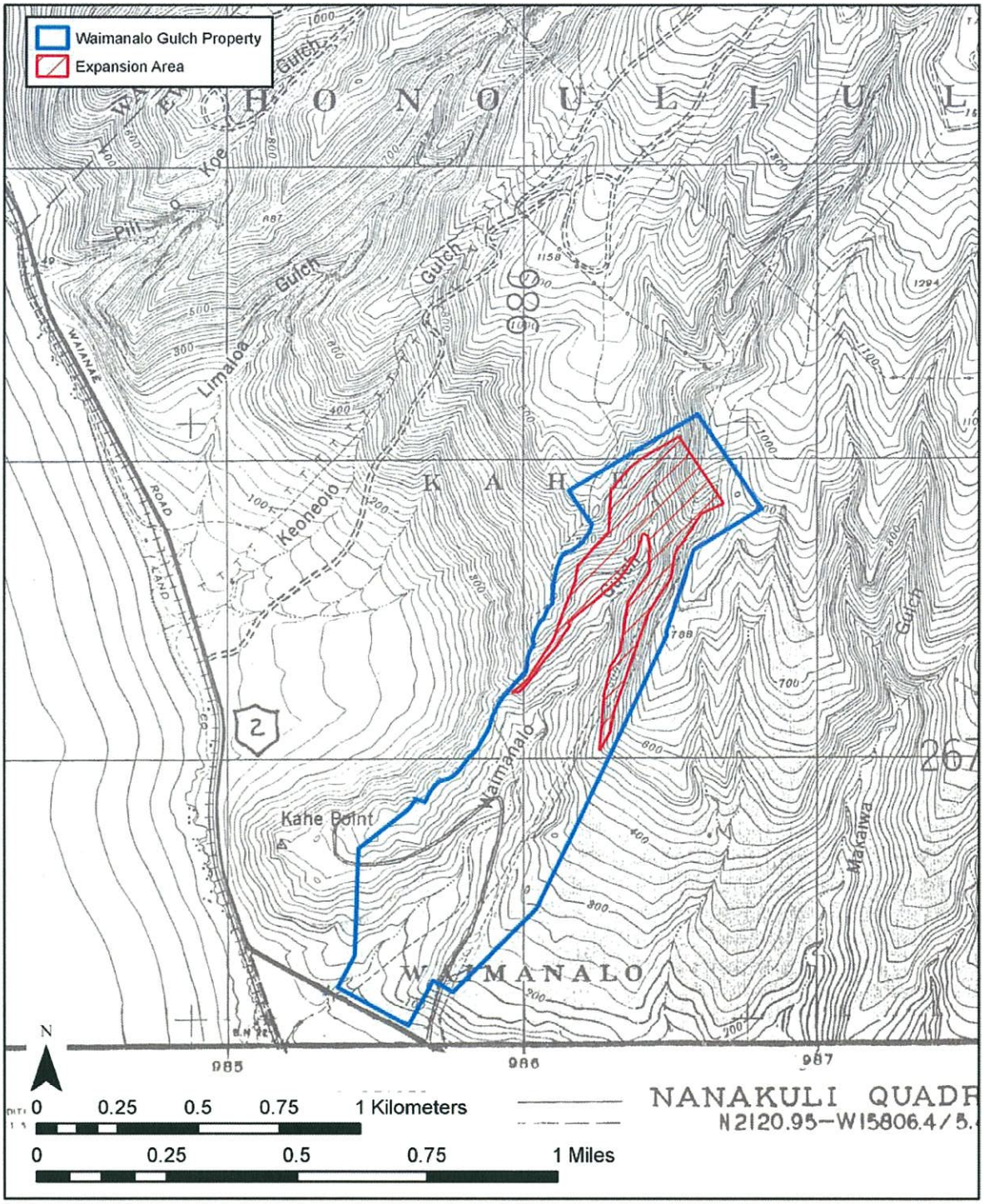

Figure 10. 1928 USGS Topographic Map, Wai'anae Quad, showing the location of the Waimānalo Gulch property and proposed landfill expansion area

In the 1950s, the site was used as a NIKE missile base. Palailai Military Reservation (a.k.a. Battery Palailai from 1942-1944), located atop Pu'u Palailai, was used from the 1920s and included Fire Control Station "B" (Payette 2003). Barbers Point NAS, in operation from 1942 into the 1990s, was the largest and most significant base built in the area. It housed numerous naval and defense organizations, including maritime surveillance and anti-submarine warfare aircraft squadrons, a U.S. Coast Guard Air Station, and the U.S. Pacific Fleet.

3.5.3 Battery Arizona

On the southwest ridge above Waimānalo Gulch are the subterranean remnants of Battery Arizona, an ambitious World War II military project. The attack of December 7, 1941 impelled the construction of further defensive armament for portions of the O'ahu coastline not protected by the existing batteries. Even the sunken ships at Pearl Harbor would be enlisted in O'ahu's defense. When, early in 1942, it was discovered that the two rear three-gun turrets of the U.S.S. Arizona were salvageable, an ambitious plan to mount them at two land installations on O'ahu was set into motion. The two sites chosen were the tip of Mōkapu Peninsula at Kāne'ohe Bay, designated Battery Pennsylvania, and Kahe Point above the Wai'anae Coast, designated Battery Arizona.

Construction of Batteries Pennsylvania and Arizona commenced in April 1943. A formidable subterranean complex was contrived to house the turrets at the two sites. According to a U.S. Army Corps of Engineers report prepared in 1946:

> The design that was eventually produced consists of a central barbette well of concrete set in rock, having an overall depth of about 60 ft. and an inside diameter of about 24 ft., with three levels below the bottom of the turret connected by stairways. Two tunnels radiate from this well to house projectiles and powder magazines immediately adjacent to the well. Beyond and in line with the projectile magazine is a large power room for three 125 KW generators, all miscellaneous switchgear, air conditioning, and ventilating equipment. In a separate tunnel off the main tunnel in the vicinity of the powder room is a 10,000 gallon emergency water tank to maintain the battery for several days in case of siege. Beyond the power room in a separate leg of the tunnel are the operations rooms. Because during prolonged action it might be necessary for the entire battery personnel to remain in the battery and be self sustaining, these gas proofed and air conditioned operations rooms normally comprised of radio and switchboard, plotting, and radar rooms included latrines for officers and enlisted men, a galley, first aid room, offices, and storerooms.

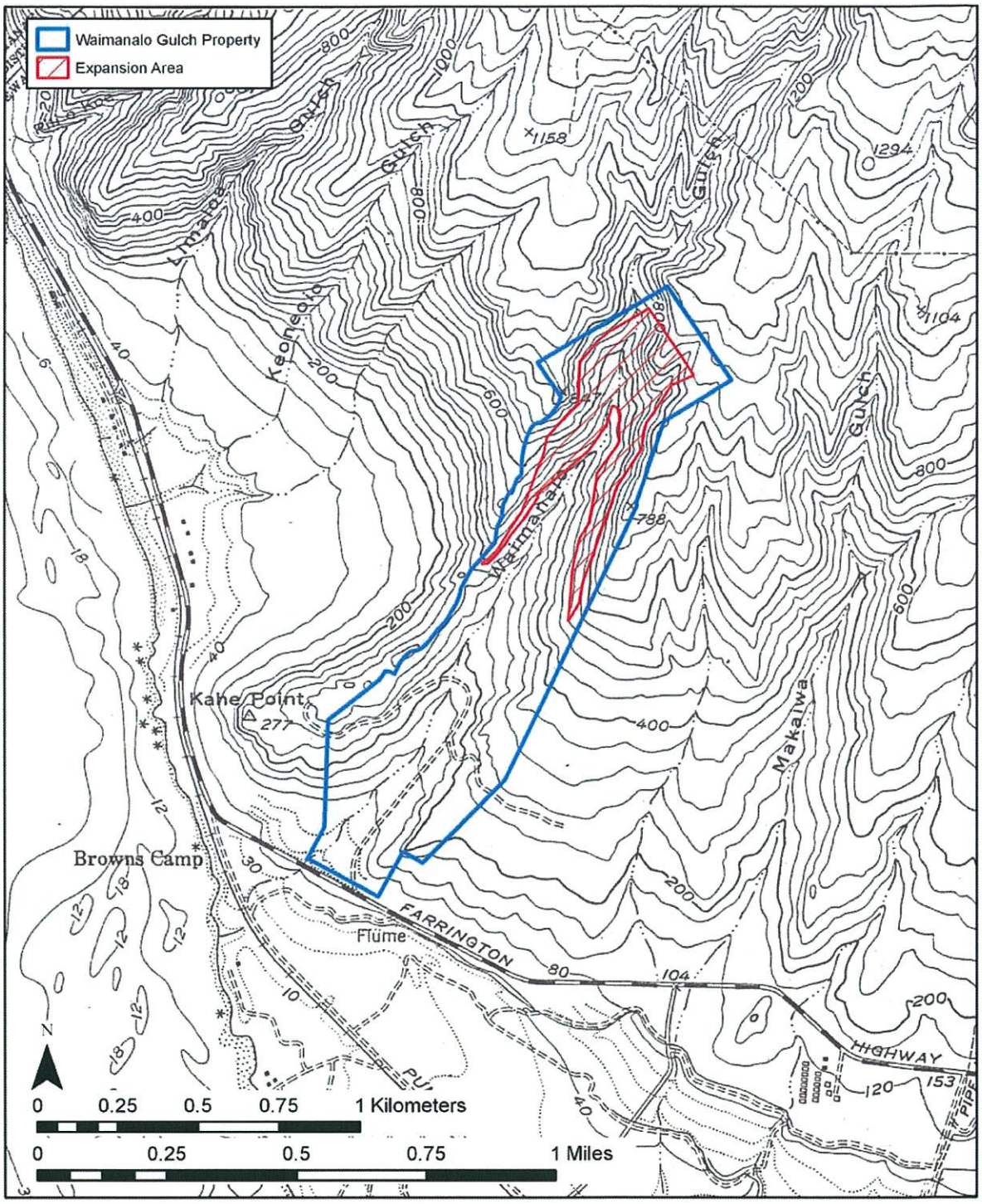

Figure 11. 1953 USGS Topographic Map, 'Ewa Quad., showing the location of the Waimānalo Gulch property and proposed landfill expansion area

The salvaged turrets were stored at a facility on Pearl City Peninsula. Refurbishing of the turrets proved to be a formidable task:

> An immediate complication arose from the fact that removal of the turrets from the Arizona was begun prior to any thought of their reuse; hence, much of the cutting was done rapidly and crudely with no consideration for future reassembly. As a result, the reconstruction frequently was held up by the painstaking realignment and joining of turret segments. Other difficulties arose from the initial damage and subsequent immersion suffered by the armament components. (Kirchner and Lewis 1967:432)

Records in the archives of the U.S. Army Museum at Ft. DeRussy reveal the months-long search across the Mainland for replacement parts, especially motors, and for parts to adapt the turrets to installation on land. It was finally determined that, because they had been so long under water, every part of the turrets' operating systems had to be repaired or replaced.

Perhaps appropriately for the former battleship armaments, the turrets were transported to their respective battery sites by sea. According to the 1946 Army Corps of Engineers report:

> The heavy section of the turrets comprising three 14-inch guns were moved by barge from Pearl Harbor to beaches near the battery sites. Here they were cleaned, painted, and put into condition for installation in the barbette. Special equipment was designed at each site for raising the parts from the ground and lowering to their correct position in the barbette.

Construction of the two batteries continued through all of 1944 and into two-thirds of 1945. Problems--associated with wartime conditions and the unique engineering feat of adapting shipboard weaponry to land installation--dogged the two projects over the many months:

> This work involving repair, replacement, or remanufacture of thousands of separate parts placed great demands upon the Army and Navy ordnance facilities and workers. Often, drawings were not available for damaged or missing items, and a particular stage of reconstruction had to be awaited before such parts could be reproduced...In one instance, well over a year was required to procure a single turret turning gear worm and pinion.
>
> ...The various problems were further complicated by the sheer mass of the armament and the size of the battery structures...Special heavy equipment...had to be erected at each installation for raising the turret members from the shore and for assembling the armament at the site. Some segments had to be moved on rollers along specially constructed roads, while the 71-ton gun tubes were lifted by parkbuckles from the beaches to the emplacements high above.
>
> ...Site peculiarities placed severe restrictions upon the battery layouts. The fire-control radars, for example, because of their sensitivity to concussion, could not be near the turrets; yet the ideal positions for the radars both technically and topographically were but a few yards away...

> During late 1944, the battery construction reached a bottleneck stage when progress depended upon a few highly skilled technicians and the closely timed arrival of a few critical armament components. By Christmas, 1944, the number of personnel that could effectively work at the two installations was limited to about 35 specialists. At this time, Battery Pennsylvania's turret was roughly half assembled, while Battery Arizona was even further behind. (Kirchner and Lewis 1967:432-433)

The slow pace of construction of the two batteries reflected a diminishing urgency for defense of O'ahu and its military installations. The war front was moving west across the Pacific as successive defeats impelled Japan's retreat. Battery Pennsylvania at Mōkapu Point was near completion in August 1945 when its guns were test fired around the same time of Japan's surrender. Battery Arizona had not been completed by the war's end; its guns, though installed, were never fired.

Neither of the two batteries was ever placed in operation during the post-war years. The batteries had been rendered obsolete "due to the development of air power, new assault techniques and nuclear weapons. The guns were scrapped in 1949..." (Bouthillier 1995:12).

A 1943 War Department map indicates a road was constructed within the *makai* / southern portion of Waimānalo Gulch, ascending the western slope to the top of the Kahe Point ridge. This road, along with several other roads and trails indicated on the map, were likely constructed in association with the Battery Arizona complex and other military installations and training areas in the vicinity.

3.5.4 1950s to Present

Waimānalo would once again play a role in the O'ahu defense system when, sometime after 1959, the United States Army purchased or exchanged land with the Campbell Estate for the construction of a Nike-Hercules anti-aircraft missile base located at the head of Waimānalo Gulch. The Nike complex, in used between 1961 and 1968 consisted of two control sites and one double-sized launcher site (Murdock 2003). The tunnel complex of Battery Arizona was also used for civil defense circa 1960.

Development in the uplands of western Hono'uli'uli have generally been limited to ranch related housing and infrastructure, military training and NIKE missile stations, as well as the construction of military and commercial communication and atmospheric observation stations on the ridges near Pālehua. In 1975, the U.S. Air Force constructed the Pālehua Solar Observatory with five solar optical telescopes. A circa 1980s aerial photograph (Figure 13) shows limited development in the vicinity of the Waimānalo Gulch landfill property.

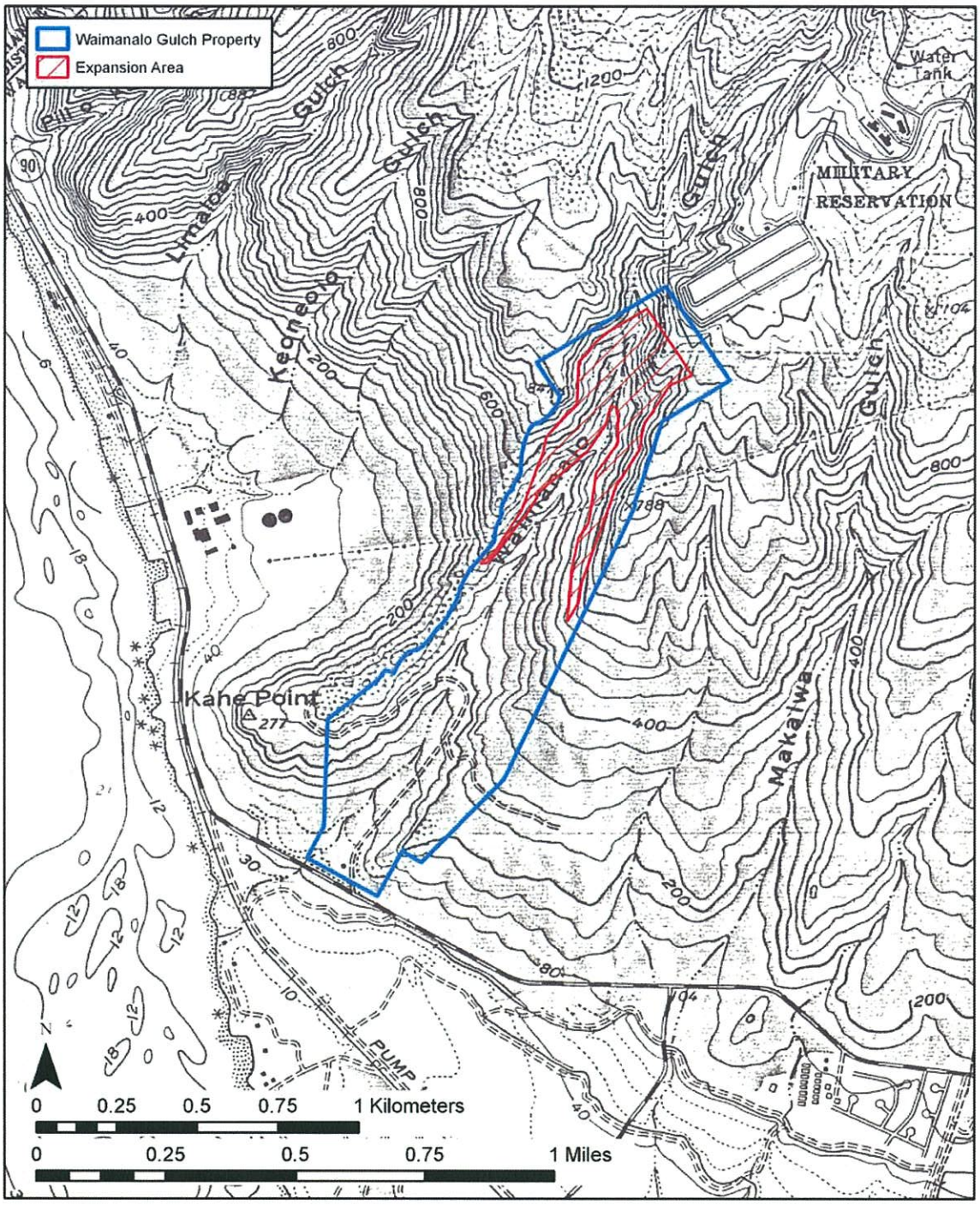

Figure 12. 1962 USGS Topographic Map, 'Ewa Quad., showing the location of the Waimānalo Gulch property and proposed landfill expansion area

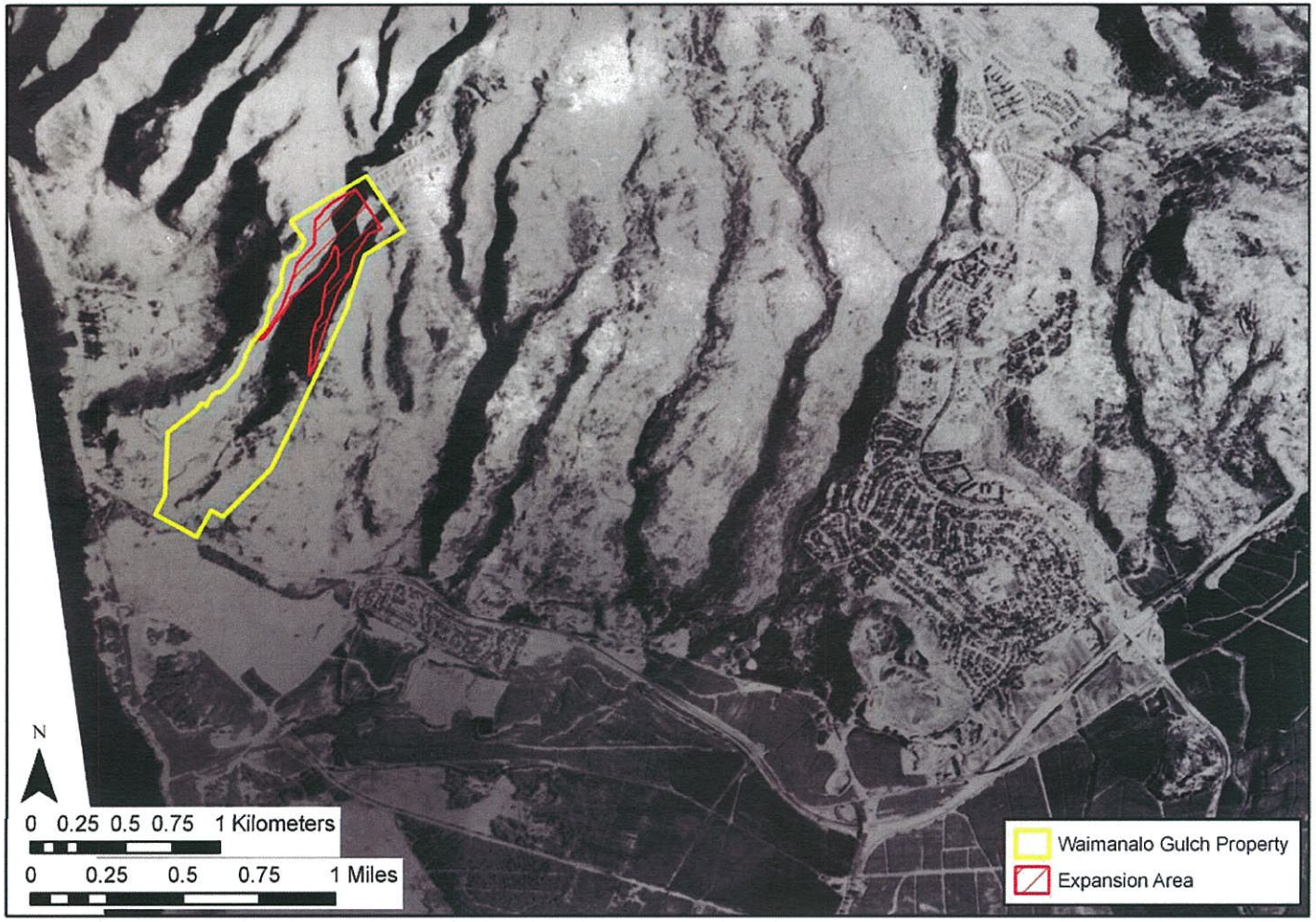

Figure 13. Circa 1980s aerial photograph of western Hono'uli'uli, showing the location of the Waimānalo Gulch property and proposed landfill expansion area

In 1985, the City and County of Honolulu condemned 81.5 acres of agricultural land in Waimānalo Gulch for use as a landfill to dispose of municipal refuse and ash from the H-POWER incinerator to be built nearby at Campbell Industrial Park. Work on the landfill began in 1987. In 1988, workers constructing the Waimānalo Gulch landfill were reporting strange incidents at the site. According to a newspaper article by Bob Krauss:

> "We've been having funny things happen," said one of the men on the site. "Unnatural things. In one case, a man was standing on a flat rock and the thing threw him over. All of a sudden, it just flipped over."
>
> Another time a backhoe was knocking down kiawe trees. The trees have shallow roots systems so they usually just fall down. But one of the trees jumped up and did a somersault...
>
> Then there was the payloader filling in a huge hole where a $17,000 fiberglass fuel tank had been placed. The story is that the driver put his machine in reverse but it jumped forward and leaped into the hole, smashing the tank. (Honolulu Advertiser, 6/20/88:A-1, A-4)

Other incidents reported to Krauss were a truck that had flipped over, tools that had vanished, and a huge stone that had disappeared. The workers called in:

> ...a woman recommended for lifting curses and banishing evil spirits. She said the trouble was caused by a certain stone, the "chief of the valley," which was lying on its side.
>
> The men quickly set the stone upright. But they got it upside down. Things went from bad to worse. The woman came out again and recommended they place the stone on the hill where it will not be covered by rubbish when the landfill opens.(Honolulu Advertiser, 6/20/88:A-1, A-4)

According to Krauss, in April 1988, the stone was moved to a "nest of boulders so that it faces east," at the "end of a Hawaiian Electric Co. Road to one of its relay stations on top of [a] hill." This site lies close to the Battery Arizona bunkers in the southwest portion of the Waimānalo Gulch landfill property.

Section 4 Previous Archaeological Research

The coral plains of 'Ewa have been the focus of more than 50 archaeological studies over the last two decades, largely as the result of required compliance with county, state, and federal legislation. The Kalaeloa (Barbers Point) area, in particular, has been intensively studied. In contrast, relatively little research has been conducted in the uplands of Hono'uli'uli, along the southern slopes of the Wai'anae Range. This discussion of previous archaeological research will focus on the results of this prior archaeological work at the southern end of the Wai'anae range.

Recent archaeological investigations in the southern Wai'anae Range have generally been focused on deep gulch areas for potential landfill locations, lower slopes for residential development, and mountain peaks for antennae or satellite tracking infrastructure (Table 1 and Figure 14).

Table 1. Previous archaeological investigations in the uplands of Hono'uli'uli Ahupua'a

Reference	Type of Investigation	General Location	Findings
Bordner 1977a	Archaeological Reconnaissance	Proposed Makaīwa Gulch Landfill Site	No archaeological sites identified
Bordner 1977b	Archaeological Reconnaissance	Proposed Kalo'i Gulch Landfill Site	3 sites (-2600, -2601, -2602), low stacked boulder walls
Bordner and Silva 1983	Archaeological Reconnaissance and Historical Documentation	Proposed Waimānalo Gulch Landfill Site	No archaeological sites identified
Sinoto 1988	Archaeological Reconnaissance	Makakilo Golf Course	Low stacked boulder wall (-1975)
Bath 1989	Petroglyph Documentation	Waimānalo Gulch	3 petroglyphs (-4110)
Hammatt et al. 1991	Archaeological Inventory Survey	Makaīwa Hills Project Site	34 sites, including prehistoric habitation and agricultural features, rock shelters, petroglyphs, *ahu*, and various sugar cane cultivation infrastructure
Hammatt 1992	Archaeological Inventory Survey	KAIM Radio Tower, Pālehua	No archaeological sites identified

Reference	Type of Investigation	General Location	Findings
Nakamura et al. 1993	Archaeological Inventory Survey	Makakilo D and D-1 Development Parcels	Cement irrigation flume (-4664)
Borthwick 1997	Archaeological Assessment	Satellite Multi-Ranging Station, Pālehua	No archaeological sites identified
Dega et al. 1998	Archaeological Inventory Survey	UH West O'ahu	Two historic site complexes, (50-80-08-5593 historic irrigation system and 50-80-09-2268 Waiahole Ditch System)
Hammatt and Shideler 1998	Archaeological Inventory Survey and Assessment	Waimānalo Gulch Sanitary Landfill Project Site	Battery Arizona Complex and modern "shrine" site

The earliest attempt to record archaeological remains in Hono'uli'uli Ahupua'a was made by Thrum (1906). He reports the existence of a *heiau* located on Pu'u Kapolei, southeast of the current project area. Pu'u Kapolei Heiau was described as "Ewa-size and class unknown. Its walls thrown down for fencing" (Thrum 1906:46).

In his surface survey of 1930, archaeologist J. Gilbert McAllister recorded the specific locations of important sites, and the general locations of less important sites (at least at Hono'uli'uli). Archaeological investigations by McAllister along the southern slopes of the Wai'anae Range identified a number of sites, which are of interest (Figure 15).

McAllister documents Pu'u Kapolei Heiau as Site 138 and notes:

> 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 (the pig-god) is said to have lived with his grandmother (Kamaunuahihio). (McAllister 1933:108)

McAllister's Site 136 is located near Mauna Kapu, northeast of the current project area, and is described as a small platform on the ridge dividing the 'Ewa and Wai'anae districts. The 4 to 6 square foot platform was constructed of coral and basalt stones, and was believed to be an altar (McAllister 1933:107). It is noted to have been destroyed by the time of Sterling and Summers' work in the late 1950's (Sterling and Summers 1978:32).

McAllister's Site 137 is located at Pu'u Ku'ua, a prominent landmark northeast of the current project area. Pu'u Ku'ua Heiau was described by McAllister as:

> (Destroyed) The heiau was located on the ridge overlooking Nanakuli as well as Hono'uli'uli at the approximate height of 1800 feet. Most of the stones of the heiau were used for a cattle pen located on the sea side of the site. The portion of

> the heiau which has not been cleared for pineapple has been planted in ironwoods. (McAllister 1933:32)

The presence of Pu'u Ku'ua Heiau provides some archaeological evidence of the Pu'u Ku'ua settlement described in the Hawaiian Newspaper "*Ka Loea Kalaiaina*" (see Section V: Background Research).

Makaīwa Gulch, the next major gulch east of Waimānalo Gulch was surveyed as a potential landfill location (Bordner 1977a). The reconnaissance survey included lands within Makaīwa Gulch from Farrington Highway *mauka* to the approximately 1000 ft (305 m) elevation. One archaeological feature was identified, a complex of three concrete platforms that was interpreted to be a military related structure.

An archaeological inventory survey of the "Makaīwa Hills" development project located several traditional as well as post-contact archaeological sites (Hammatt et al. 1991). The project area included a 1,915-acre parcel in Hono'uli'uli Ahupua'a, located between the town of Makakilo and Waimānalo Gulch, and bounded to the south by Farrington Highway and to the north by Pālehua Road (immediately east of the current project area). 34 sites were located, including prehistoric habitation structures (temporary and permanent), agricultural features (terrace and mounds), rock shelters, petroglyphs, *ahu*, and various sugar cane cultivation infrastructure (Figure 16).

Within the "Makaīwa Hills" project area, habitation sites were found to be clustered in higher elevations above 1000 ft., and in lower elevations below 500 ft (Hammatt et al. 1991). The higher elevations would contain ample forest subsistence resources for gathering on both a continual basis, as well as during times of famine and drought. The lower elevations would be in close proximity to the shoreline and bountiful coastal resources.

> In sum, this site type and patterning sample suggests that prehistoric and historic Hawaiian populations utilized the present study area as a recurrent and temporary habitation area focused mainly on the gathering of specialized goods, such as wild forest plants from the upper elevations and the quarrying of lithic material within the lower elevations. (Hammatt et al. 1991:106)

Kalo'i Gulch, which borders the northern portion of the current project area, was also surveyed as a potential landfill location (Bordner 1977b). The survey included lands within Kalo'i Gulch and its smaller tributaries from the *makai* end of the gulch up to the 1,400 ft elevation. It was noted that bulldozing extensively modified lands at the base of the gulch, *makai* of an historic quarry. In the *mauka* portions of the project area, three sites, possibly prehistoric, were identified. The three sites (50-80-12-2600, -2601, -2602) consisted of low-stacked basalt boulder walls located along the north side of the Kalo'i Stream channel.

During the initial archaeological survey of the lower portions of Waimānalo Gulch (the future site of the Waimānalo Gulch Sanitary Landfill), up to the 430-foot elevation, no archaeological sites were identified (Bordner and Silva 1983). In 1989, three petroglyph units (Site 50-80-12-4110) were located within the previously surveyed parcel (Bath 1989). Site -4110 is located in the southwest corner of Waimānalo Gulch, at approximately 80 ft. elevation.

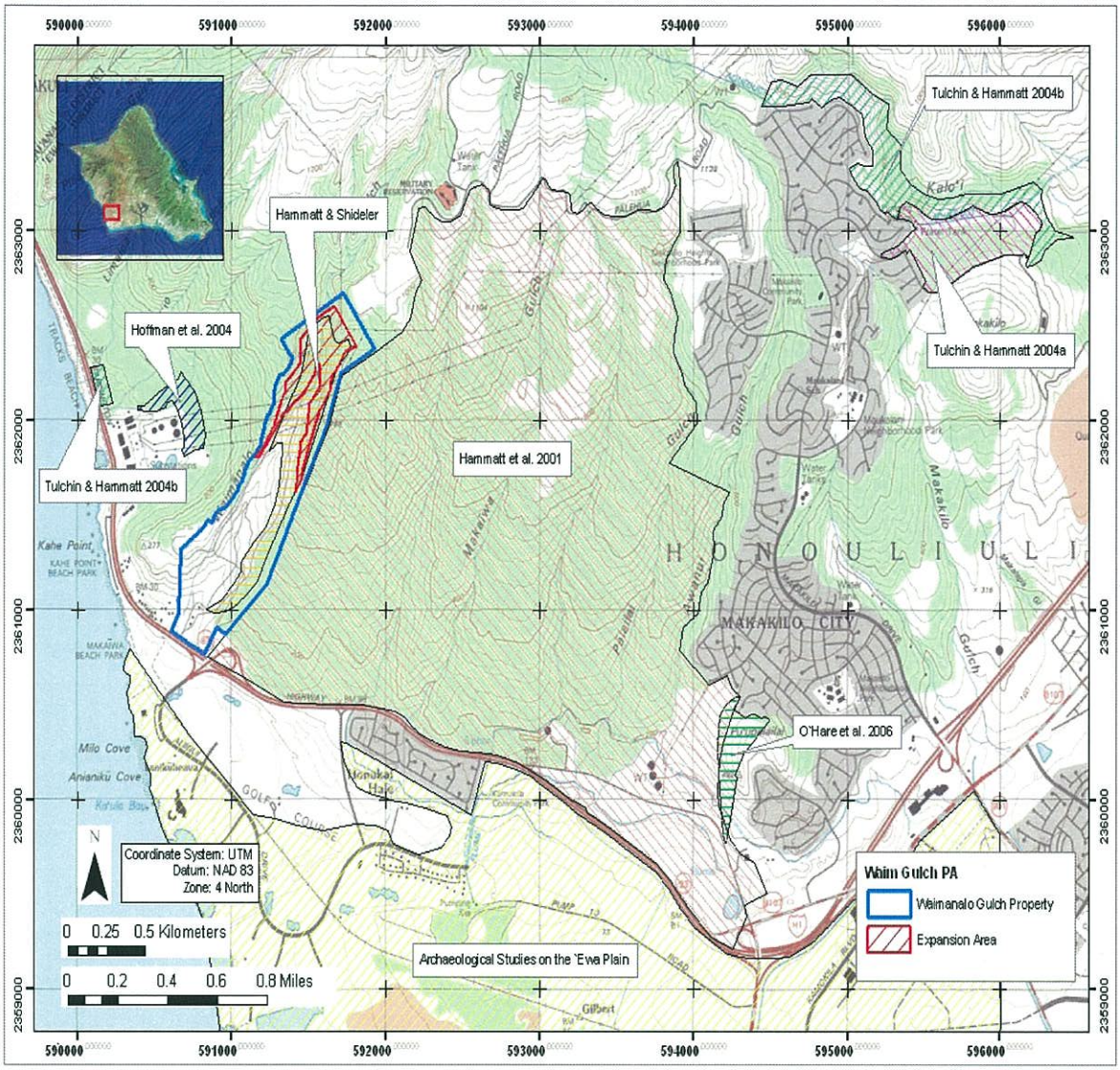

Figure 14. Previous archaeology work for the Waimānalo 'Ili

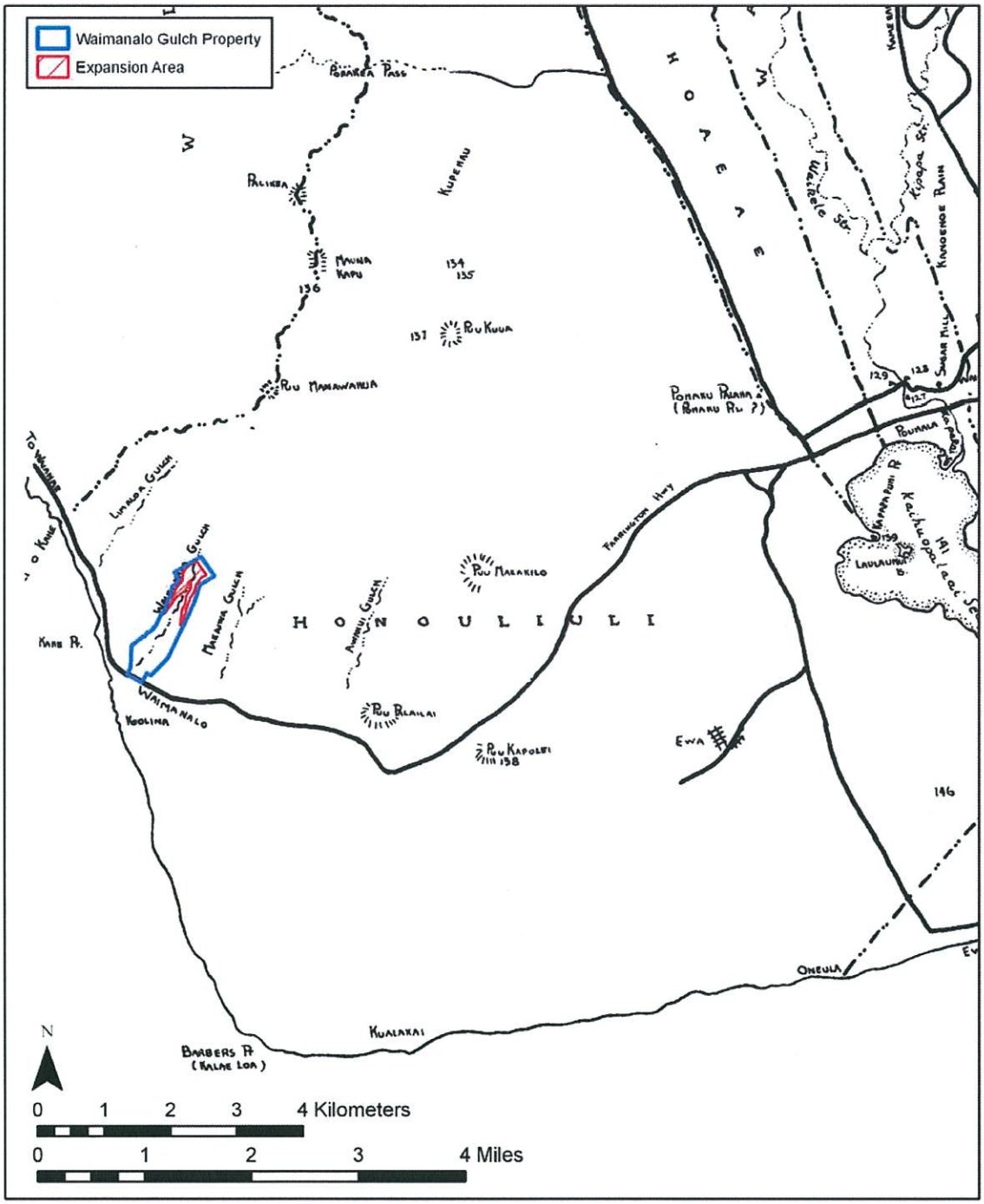

Figure 15. Portion of a 1930 map by archaeologist J. Gilbert McAllister showing Waimānalo Gulch property in relation to archaeological sites discussed in the text (base map from Sterling and Summers 1978)

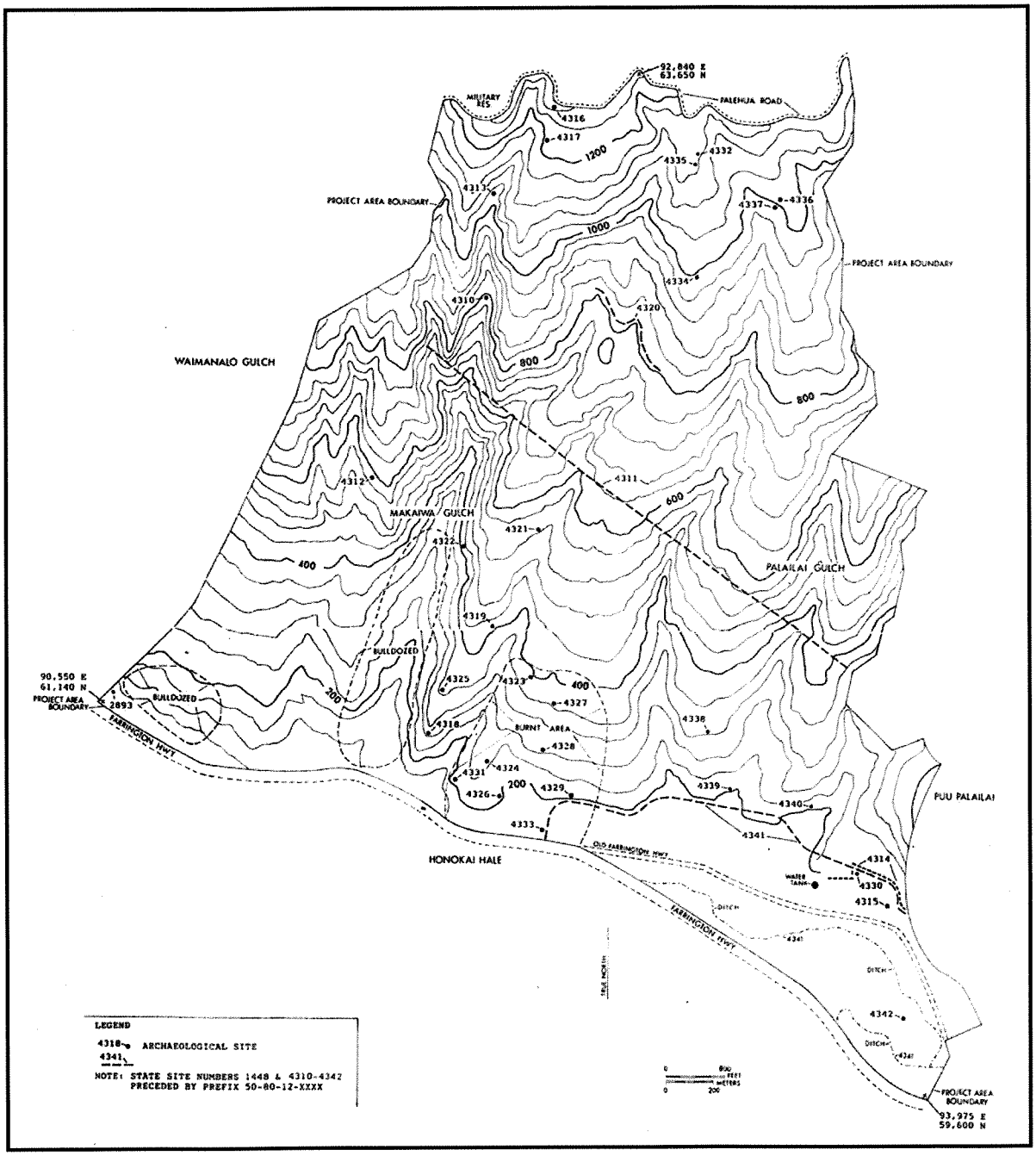

Figure 16. Makaīwa Hills project area showing the location of identified archaeological sites (Hammatt et al. 1991:7)

Further archaeological study within Waimānalo Gulch was conducted for the expansion of the sanitary landfill (Hammatt and Shideler 1998). No archaeological sites were located with the project area; however two sites, the Battery Arizona bunker complex and a modern "shrine" site, were observed along the northern ridge that separates Waimānalo Gulch from the HECO Kahe Power Plant property. The stones of the "shrine" site were believed to have been previously relocated from the central portion of Waimānalo Gulch circa 1988.

An archaeological inventory survey for the proposed University of Hawai'i-West O'ahu campus was conducted by Dega et al. (1998). The survey area included 991 acres in the vicinity of Pu'u Kapu'ai, northeast of the current project area. No traditional Hawaiian sites were located. The project area was noted to have undergone extensive land modification associated with commercial agriculture. Two historic site complexes (50-80-08-5593 historic irrigation system, 50-80-09-2268 Waiahole Ditch System) were documented. Identified features included flumes, aqueducts, ditches, pumps, and other irrigation infrastructure.

Two archaeological studies were made in the Pālehua area, *mauka* of Makakilo. An archaeological inventory survey of the proposed KAIM radio tower (Hammatt 1992), located northwest of the current project area identified no archaeological remains. An archaeological assessment for the proposed Ministry of Transportation Satellite Multi-Ranging Station project site (Borthwick 1997), which abuts the western perimeter of the Air Force Solar Observatory facility, identified no archaeological remains. In 2002, an informal survey conducted by SHPD/DLNR identified an enclosure site (50-80-08-6402) just off of Pālehua Road (SHPD personal communication 2004). The site consisted of two enclosures; one enclosure was determined to be of prehistoric origin, while the other was historic.

Archaeological studies associated with the proposed Makakilo Golf Course (Sinoto 1988) and the Makakilo D and D-1 Development Parcels (Nakamura et al. 1993) were conducted in the immediate vicinity of the current project area. Archaeological reconnaissance of the Makakilo Golf Course property included lands along the southern and eastern slopes of Pu'u Makakilo. Severe erosion was noted throughout the property. A single archaeological feature, a low stacked basalt boulder wall (50-80-12-1975), was identified (Sinoto 1988). Archaeological inventory survey of the Makakilo D and D-1 Development Parcels included lands on the southern and western slopes of Pu'u Makakilo, adjacent to the golf course property. A single historic property, a cement irrigation flume (50-80-12-4664), was located in the southern portion of the project area near the H-1 Freeway (Nakamura et al. 1993). No sites were located in the vicinity of Pu'u Makakilo.

Section 5 Results of the Community Contact Process

Throughout the course of this study, an effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about traditional cultural practices specifically related to the Waimānalo Gulch. This effort was made by letter, e-mail, telephone or in-person contact. In the majority of cases, letters – along with a map of the project area – were mailed with the following text:

> In collaboration with Waste Management of Hawai'i and the City & County of Honolulu Department of Environmental Services, Cultural Surveys Hawai'i is conducting a Cultural Impact Assessment for the expansion of approximately of the approximately 36-acre Waimānalo Gulch Sanitary Landfill Expansion Project, (TMK [1] 9-2-003:073 por) in Hono'uli'uli Ahupua'a, 'Ewa District, O'ahu. An overview of the historical and cultural literature background is provided for your convenience.
>
> The purpose of this assessment is to identify any traditional cultural practices associated with the project area, past or present. We are seeking your kōkua and guidance regarding the following aspects of our study:
>
> - General history and present and past land use of the study area.
> - Knowledge of cultural sites which may be impacted by the project – for example, historic sites, archaeological sites, and burials.
> - Knowledge of traditional gathering practices in the study area–both past and on-going.
> - Cultural associations with the study area through legends, traditional use or otherwise.
> - Referrals of kūpuna or anyone else who might be willing to share their general cultural knowledge of the study area.
> - Any other cultural concerns the community might have related to cultural practices in the Waimānalo area.

A total of twenty-one (21) individuals, organizations, and agencies were consulted for this CIA (Table 2). Four of these referred CSH to other individuals who were included in the study. Seventeen (17) individuals contributed specific and relevant information via formal interviews, informal "talk story" discussion and / or email. One person (Douglas McDonald Philpotts) was formally interviewed for this project (see transcription in Appendix B). One person (Shad Kane) was previously interviewed during a prior (2002) CIA for an earlier version of the subject project (see Appendix A for a transcription of the interview, used with permission from Shad Kane).

Table 2. Summary of consultation efforts

Name	Affiliation	Comments
Ailā , William	Hui Mālama I Nā Kūpuna o Hawai'i Nei	Mr. Ailā feels it is very important to preserve the sites of this area. See Section 6 below for response.
Amaral, Annelle	'Ahahui Siwila Hawai'i O Kapolei Hawaiian Civic Club	Made referral to Shad Kane.
Cope, Aggie	Hale O Na'auao Society	Mrs. Cope mentioned that that area was known for the night marchers trail from *mauka* to *makai*. See Section 6 below for response.
Desoto, Frenchy	Wai'anae Coast Archaeological Preservation Representative	Made referral to Gary Omori, William Ailā .
Eaton, Arline	*Kupuna* at Iroquois Elementary School	See Section 6 below for response.
Enos, Eric	Cultural practitioner and director of Ka'ala Farms	Mr. Enos visited Site 6903 to view *pōhaku* within the project area. He is concerned about the protection of this site.
Flanders, Judith	Granddaughter of Alice Kamōkila Campbell	See Section 6 below for response.
Greenwood, Alice	O'ahu Island Burial Council Member, Wai'anae District	Ms. Greenwood spoke of a village at Makaīwa. She recalls a story about a ceremony in the area that mentioned possible burials. She remembers the *mo'olelo* had the names of the unknown gulches. She also spoke about the *huaka'i pō* (procession of the night marchers) and *akua lele* (flying god, usually a poison god sent to destroy, sometimes in the form of fireballs). See Section 6 below for response.
Ho'ohuli, "Black" Jo	Wai'anae Neighborhood Board No. 24	Mr. Ho'ohuli is concerned about caves in the *mauka* area that may contain burials.
Rezentes, Cynthia	Wai'anae Neighborhood Board No. 24	Mrs. Rezentes suggested contacting Frenchy Desoto. She is very concerned about the view plane.
Johnson, Rubellite	Hawaiian scholar	Ms. Johnson recommended consulting people who are from the project area.
Josephides, Analu	O'ahu Island Burial Council Member, Wai'anae District	See Section 6 below for response.
Kanahele, Kamaki	President of Nānākuli Homestead	See Section 6 below for response.
Kane, Shad	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board and 'Ahahui Siwila Hawai'i O Kapolei Hawaiian Civic Club	Mr. Kane made two site visits with CSH to the project area. Mr. Kane is very concerned about the cultural sites within the project area and wants to be involved in the preservation process. He is also concerned about the view plane. See Appendix A for complete interview conducted in 2002 in association with a previous CIA of portions of the project area (cf. Souza and Hammatt 2002)

Name	Affiliation	Comments
Makaiwi, Martha	Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34	Made referral to Maeda Timson and Shad Kane.
McKeague, Kawika	O'ahu Island Burial Council member 'Ewa District	See Section 6 below for response.
Momoa, Joseph	Kama'āina of Nānākuli and member of Kamo'i Canoe Club	Mr. Momoa mentioned the night marcher path in Waimānalo area and he feels the path needs to be kept clear of visual blockage.
Nāmu'o, Clyde	Administrator at Office of Hawaiian Affairs	OHA recommended: (1) Consultation with seven specifc individuals, all of whom CSH attempted to contact. (2) The project area be considered a portion of a larger traditional cultural landscape, and that the possible presence of one or more Traditional Cultural Properties be considered (See Appendix C for OHA letter).
Philpotts, Douglas McDonald	Cultural practitioner and long time resident of Waimānalo 'Ili	Mr. Philpotts made a site visit to view the uprights within the projet area. See Section 6 below for response and Appendix B for complete interview.
Tiffany, Nettie	Kahu of Lanikūhonua and Former O'ahu Island Burial Council member, 'Ewa District	See Section 6 below for response.
Timson, Maeda	Member of the Makakilo, Kapolei, Honokai Hale Neighborhood Board No. 34 and President of Ua Au O Kapolei	Mrs. Timson shared two stories told to her by her Tutu Defreitas. Her *tutu* would bless the *hale* with *tī* (or *kī*) leaf and Hawaiian salt because all the *keiki* would get *maka'u* (scared). They also had *tī* leaf on all four corners of the house for protection.

As described in Section 1(Introduction), when the expansion project's CIA consultation was initiated, communication with the project proponents indicated that the proposed expansion area would be 36 acres—the same 36 acres that the project proponents were having surveyed as part of the project's archaeological inventory survey of the expansion area. For this reason, the initial project consultation letters describe the expansion area as approximately 36 acres. It was only later that CSH learned that the expansion area was actually approximately 90 acres. The 36 acres corresponds with the actual foot print of the landfill cells that will be created and used for refuse. Portions of the remaining approximately 90-acre expansion area will be used for the aforementioned appurtenances. Therefore, although the foot print of the proposed area to be disturbed is larger than the 36 acres indicated in the initla CIA consultation, the actual portion of the gulch to be used specifically as a landfill (36 acres) has not changed.

The consultation results contained in this CIA, which refer specifically to the 36-acre area of the landfill proper, will be augmented and expanded prior to preparation of the Final Environmental Impact Statement. The individuals and agencies listed in Table 2 will be contacted again with the new information about the larger project area.

Section 6 Cultural Resources and Traditional Practices

The areas of Waimānalo Gulch, Makaīwa Gulch, Ko'olina, Lanikūhonua and the uplands of Pālehua and Pu'uku'ua are within the *'ili* of Waimānalo located in the *ahupua'a* of Hono'uli'uli, 'Ewa District (see Figure 11). 'Ili is defined as "a land section, next in importance to *ahupua'a* and usually a subdivision of an *ahupua'a*" (Pukui and Elbert 1971:91).

The current project area was a zone of less intensive land use between resource rich areas *mauka* and *makai.* The *makai* area has marine resources, a canoe landing, *ko'a* (fishing grounds) and *lo'i* (pondfield) that sustained a fishing village. The *mauka* area is considered a sacred place with many *heiau*, myths and legends.

Although this area has been placed in the district of 'Ewa and the *ahupua'a* of Hono'uli'uli, some Wai'anae community members feel a strong connection with this place as many traverse this area fequently to get in and out of Wai'anae. Participants also mentioned the many natural and cultural resources of the region.

Specific aspects of traditional Hawaiian culture mentioned during information gathering interviews and "talk story" sessions are incorporated throughout this section as they relate to the project area. Some interview material is excerpted from past CIAs conducted by CSH. Interviewees for the current project gave their permission for past interviews to be included in this report. Participants also provided new stories for Waimānalo Gulch for which we have found no previous written documentation. Some of these stories include Spirits *('Uhane*), the "Legend of the Slain Girl", the "Legend of Two Giants", and associations with the Pueo 'Aumakua.

Concerns for sacred sites in the area focused on the Pueo Stone which was relocated around 1988 for preservation. Nana Veary, a respected *kupuna*, relocated the *pōhaku.* Gary Omori asserts that after the Pueo Stone was moved to safe ground "the strange events stopped." Another concern of the area surrounds the tradition of "Night Marchers" (*huaka'i pō*); in particular, the passage in the *makai* region close to human habitation at Lanikūhonua. The *huaka'i pō* inland route is somewhat vague but appears to be up the southern ridge of Waimānalo Gulch.

6.1 Traditional Hawaiian Beliefs

A number of *kūpuna* and other community members spoke of beliefs associated with Waimānalo 'Ili of Hono'uli'uli and the surrounding valleys. While these beliefs and traditions are interrelated, they are discussed below in terms of the presence of *'uhane* (soul, spirit, ghost), traditions of *huaka'i pō* (procession of the night marchers), a legend of a slain girl, a legend of two giants, and a tradition of owl *'aumakua* (ancestor gods), in addition to accounts of other mysterious and strange incidents.

Association with *'Uhane*

Several people familiar with the area mentioned that Waimānalo Gulch and Makaīwa Gulch are associated with *'uhane*. In *Nānā i Ke Kumu*, a source book on Hawaiian cultural practices, concepts and beliefs, *'uhane* are introduced as follows:

> Says Mary Kawena Pukui of certain of her ancestral beliefs, "Some things are 'e'epa. Unexplainable. "Accept that, and it becomes easier to know about 'uhane. For in Hawai'i's religious mystic tenets, 'uhane was:
>
> The animating force which, present in the body, distinguished the quick from the dead. And so 'uhane can be called "spirit."
>
> The vital spark, that departed from the flesh, lived on through eternity, rewarded for virtue or punished for transgressions in life. Thus 'uhane is "spirit" in the immortal sense, and the "soul" of Christian concept.
>
> Or, as immortal spirit or soul, the 'uhane might return to visit the living and so be termed a "ghost". (Pukui et al. Vol. I, 1972:193)

The presence of *'uhane* at Waimānalo Gulch was mentioned previously in a CIA for Waimānalo Gulch Landfill by Black Ho'ohuli, who is a cultural practitioner and Nānākuli Hawaiian Homestead resource person; Gary Omori, who was the consultant for Ko Olina Resort at the time the Waimānalo Gulch landfill was proposed; Maylene Keamo, who is the Wai'anae Ahupua'a Council President; and Alice Greenwood a *kupuna* in the Wai'anae area (Souza and Hammatt 2002).

Often the perception seems to be more a matter of the person feeling the presence of the *'uhane* in the area rather than knowledge of transmitted lore. Mrs. Keamo also talked about the wandering spirits. Wandering *('auana*) spirits were particularly associated with desolate places in 'Ewa District. Samuel Kamakau (Mo'olelo Hawai'i, Vol. II, Chap. 12, p 23) associates them with the plain of Kama'oma'o, the rough country of Kaupe'a and Leilono - all in 'Ewa District. The belief was that these wandering souls were friendless and wandered in desolate places like the plain of Kaupe'a catching night moths (*pulelehua*) and spiders (*nanana*) for food (*Ke Au Hou*, July 12, 1911; *Ka Po'e Kahiko* 1964:49).

6.1.1 Huaka'i Pō or 'Oi'o (Procession of the Night Marchers)

There are Hawaiian beliefs regarding the presence of what are commonly known as "night marchers" and the *huaka'i pō* or the, "night procession or parade, especially the night procession of ghosts that is sometimes called *'oi'o*" (Pukui and Elbert 1986:84). The night marchers are the souls of those who have passed on. An *'ōlelo no'eau* (proverb) makes reference to this tradition: "*He pō Kāne kēia, he mā'au nei nā 'e'epa o ka pō.*" (This is the night of Kāne, for supernatural beings are wandering about in the night) (Pukui 1983:98).

> Family ties in the afterworld remain unbroken, and all Hawaiians believe in the power of sprits to return to the scenes they know on earth in the form in which they appeared while they were alive. Especially is this true of the processions of gods and spirits who come on certain sacred nights to visit the sacred places, or to welcome a dying relative and conduct him to the 'aumakua world. "Marchers of the night" (Hauaka'ipo) or "Spirit ranks" (Oi'o) they are called. Many Hawaiians and even some person of foreign blood have seen this spirit march or heard the "chanting voices, the high notes of the flute, and drummi8ng so loud as to seem beaten upon the side of the house." Always, if seen, the marchers are dressed according to ancient usage in the costume of chiefs or of gods. If the procession

> is one of gods, the marchers move five abreast, with five torches burning red between the ranks, and without music save that of the voice raised in chant. Processions of chiefs are accompanied by 'aumakua and march in silence, or to the accompaniment of drum, nose-flute, and chanting. They are seen on the sacred nights of Ku, Lono, Kane, or Kanaloa, or they may be seen by day if it is a procession to welcome the soul of a dying relative. To meet such a procession is very dangerous. "O-ia" (Let him be pierced) is the cry of the leader and if no relative among the dead or none of his 'aumakua is present to protect him, a ghostly spearsman will strike him dead. The wise thing to do is to "remove all clotting and turn face up and feign sleep." (Beckwith 1970:164).

Several of the participants in this cultural study talked about night marchers. Aunty Arline Eaton commented that there is a pathway for the night marchers that travel from the *mauka* area of Waimānalo 'Ili down to the special place of Lanikūhonua. She feels strongly that this pathway must be kept clear for them to continue their traditional passage.

Aunty Aggie Cope and Kamaki Kanahele both mentioned that the *'ili* of Waimānalo was well known for the pathway of the night marchers and they both feel it is of great importance to keep that pathway clear of visual impact.

Judith Flanders mentioned that her grandmother Kamōkila Campbell spoke about the night marchers' trail that came from the uplands to the ponds at Lanikūhonua.

Mrs. Nettie Armitage-Lapilio related a tradition that at certain times of the year night marchers would come down from the uplands to the vicinity of Kamōkila Campbell's place on the coast (Lanikūhonua). The procession route indicated was on the east ridge of Waimānalo Gulch which is the west ridge of Makaīwa Gulch (Souza and Hammatt 2002).

Analu Josephides recalls *mo'oleo* told to him by his *kūpuna*:

> I grew up knowing about the land area known as Makaīwa. My mother, my Tutu Wahine, as well as, *kūpuna* within my *'ohana* had shared various stories about this area. One of the many stories shared and landscapes pointed out is both the path of the night marchers and of the night marchers themselves. One of the stories that Tutu Wahine related was that in the old days no homes were built in this particular area except for the *mauka* area of Makaīwa to the west, the *mauka* area to the east known as Makakilo, and the *makai* area below where in ancient time was the dwelling place of the Kamapua'a *'ohana*.
>
> We were told as children that one of the reasons that homes were not built on the path of the night marchers were that the night marchers and those who leaped from this world and taken to be with these clans were said to carry the burning *kapu* of Pihenakalani. This was a *kapu* that descends from Kaua'i from the ancient days of the Mū and the Menehune people. It was also known as the prostrating *kapu* of Kalanikauleleiaiwi.
>
> Tutu went on to state that if a *hale* was built upon the path of the night marchers that it would be destroyed by fire. A similar life story occurred in Opihali, South Kona, Hawaii where a grand-uncle of my Tutu Wahine named Ioane Kuahiwinui

> was said to have warned his brother not to build his home in a certain area in Opihali or else the night marchers would take it; and sure enough when the *hale* was finished, on the night of the night marchers, the new *hale* was burned to the ground. Not long after this home was built and burned did they build another home in a location off and away from the path of the marchers and till today that home is standing, *makai* of Mamalahoa highway near the 95 mile marker.
>
> Tutu spoke of how nothing should be on the path of the night marchers as when they came through they would destroy anything and everything in their way. It is also believed that if a person was on the path of the night marchers they would prostrate themselves and keep their face hidden lest they are succumbed to the marchers and join them in their realm. The story continues, that if the night marcher came upon you and you were not family nor the chief of the particular area they would take your soul and you would continue your spiritual life marching with them forever. It is believed that in this particular area called Makaīwa that Hi'iakaikapoliopele, the sister of Pele, would be the last one in the night marchers' line because of her back having been placed under *kapu*; therefore no one was allowed to walk behind her.
>
> For these historical reasons the path of the night marchers should be preserved so that the marchers who are the ancestors of many of our Kānaka Maoli [native born] can continue to travel.

Mrs. Nettie Tiffany discussed her childhood memories about what her aunty called the "bird catchers." They would come down from the Waimānalo and Makaīwa Gulch area through a trail that was marked by a large *pōhaku* (stone). The bird catchers would come down from the gulch to take a bath in the waters fronting Lanikūhonua.

The following excerpt is from the 'Ahahui Siwila Hawai'i O Kapolei letter regarding the Makaīwa Gulch project. They gave permission to reprint that letter for this project:

> There were many stories associated with night marchers walking from the area of Lanikuhonua mauka crossing Farrington Hwy in the area *makai* of Honokai Hale and walking mauka by way of Makaiwa Gulch. When Kamōkila Campbell lived at Lanikuhonua she had always left an opening in the Naupaka hedge that separated the beach from her property. This opening in the hedge was cut to allow night marchers to pass through the area on their way *mauka*. Members of the Campbell family have shared this story. There are many unexplained accidents that have occurred on Farrington Highway between Honokai Hale and the entrance to Ko Olina when drivers turned off the road in an effort to avoid something that they saw, or thought they saw, ahead of them.

The excerpt below is taken from an interview with the late Uncle Walter Kamanā (WK) who shared his *mana'o* (concerns) with CSH on the Pō Kāne (Souza and Hammatt 2003):

> WK: Ok there is no such thing that *menehune* (legendary little people of old) and night marchers are different people. They are the same. Some people use the *menehune* to tell old stories the *menehune* get power like they translate the word from Kona you know! On that side that they when build the big stones to put in the water outside. But through the

menehune lazy work before they never complete that *loko* the pond. So here when they say night marchers the *menehune* coming down go *holoholo* [taking a walk] down the beach.

CSH: You said get one from here to there (looking on map)

WK: Yeah that's a trail way but now get houses. But now today many of the secret path are gone. So the night walkers they come out certain times, like pō kane night or certain Hawaiian nights they going march through. The nightwalkers got to come down to the ocean. There is something between the ocean and them and the mountain, you know! That's why when you see long trail like over here over here Waimānalo, Puko, (Ko'olina).

CSH: Yeah. I heard there is one over there too!

WK: Yeah goes from Ko'olina, goes to Nanikono come out I the only guy who knows the trail. Before certain time they use to come down you know where the red trail come over into Nānākuli, before they improve that road it come right from there come down. Where the guy call it Pahe or Kihei because it is house of the wind. Same like here they name it Ilimapapa the name of this place was called Hualilili house of the wind, same like here they name 'em Ilimapapa because of all the flat land. The twin sisters start from in here. The twin sisters was a whirlwind, that certain time of the year they like go down the beach and bath. So when they come they going come right through come spinning right down through Poku and come up. You know they bang this wall come over in Lualualei go down cross over you know that get Hakimo and Pa'akea and go down inside into Leihōkū area into Wai'anae into where Pōka'ī Bay and head out the ocean. So when it use to come in here it use to develop an air pocket. There were no coincidences except the rock in Kolekole Pass. The guy that bulldozed that he was living and he died. The son must remember, his name was David Kilikahua. The father was the one who pushed the rock over Kolekole Pass. He told the story and some old timers who died, they said had three of them who pushed the rock over the Pali. The next morning the rock was standing right back up there. So when their boss saw he said go move 'em again. He said how can a big boulder come back up? They figure the *menehune* when bring 'em up but nobody saw 'em they only saw the rock back. Later part of the year they made heads to tails to the rock in Nānākuli.

6.1.2 Legend of Two Giants

A legend told by Alice Greenwood mentions two giants who live in the Waimānalo and Makaīwa area. The legend indicates that when one giant opens his eyes it means the giant will take someone's life. There is concern that these legends may be connected with unexplained car accidents that have occurred on Farrington Highway in front of the two gulches. Few details of this legend were provided.

There are also several accounts of giants in the vicinity. The Hawaiian gods Kāne and Kanaloa, who are sometimes understood to attain supernatural size, are associated with the area of Piliokahe where stones they hurled from red hill landed (Simeon Nawa'a 1954 in Sterling and Summers 1978:1). Simeon Nawa'a related another account of Piliokahe associating two hills with a male and a female - seemingly of fabulous size. The demi-god Māui is associated with the

southern Wai'anae area (particularly Lualualei) and is often thought of as a giant in his superhuman efforts to snare the sun.

6.1.3 Legend of the Slain Girl

These *'uhane* may be explained by a few legends concerning the Waimānalo Gulch area. Mr. Omori tells about one legend of two lovers (Souza and Hammatt 2003):

> ...the girl is hunted down and killed in the Waimānalo Gulch. People say that the girl's 'uhane lingers in this gulch and an image of a white lady appears at times and strange things happen in the area. For example, unexplained car accidents happen on Farrington Highway.

This account has strong similarities with the famous legend of Kahalaopuna, the young woman of Mānoa who is murdered repeatedly (she revives repeatedly) by Kauhi, her jealous lover from Ko'olau. Enraged at accounts of her sleeping with various lovers, Kauhi leads Kahalaopuna through the uplands of south O'ahu traveling west from Mānoa Valley (with Kahala being slain repeatedly). While the many accounts differ in detail a common setting for the last of the beatings is Pōhākea Pass in Hono'uli'uli north of the project area. After being put to death, her *'uhane* flies up into an *'ōhi'a lehua* tree and calls out to travelers passing along the road asking them to inform her parents of her death. An interesting aspect of the story is:

> Kū iho lā ka huakai e ho'olohe, i kēia leo, e kanaka paha, he makani paha, he 'uwī lā'au paha. 'Elua oli ana o Kahalaopuna, maopopo ia lākou, he 'uhane ua make.

Translation:

> The travelers stood and listened, to this voice, was it a person or perhaps the wind, or the rubbing together of trees. The travelers are at first uncertain but when she cries a second time they know it is a spirit that has died. (Fornander 1919: Vol. V 192-193)

While it is certainly possible that Mr. Omori's account is unrelated, similarities include: a woman who is slain by her lover in the uplands of Hono'uli'uli, that the slain woman's spirit lingers in the vicinity of her death, and that the spirit causes unexpected events to travelers. The nature of the legend of Kahalaopuna, with events happening in many different places, lends itself to becoming incorporated in other settings - particularly desolate areas in which the wind or creaking trees might sound like a human voice.

6.1.4 'Aumakua Pueo of the 'Ili of Waimānalo

Many people consulted for this project mentioned the frequent sighting of *pueo* (owl) in the area. Gary Omori and William Ailā mentioned that the *pueo* was the *'aumakua* of the *'ohana* in the area (Souza and Hammatt 2002). In *Nānā i Ke Kumu*, a source book on Hawaiian cultural practices, concepts and beliefs, the concept of *'aumakua* is introduced as: "ancestor gods; the god spirits of those who were in life forebears of those now living; spiritual ancestors" (Vol. I, 1972:35). *'Aumakua* fall into the English category of totems and were typically animal or plant species. *'Aumakua* could be inherited bilaterally, from both the father's and mother's kin groups (*'ohana*). Each individual had the opportunity to retain multiple *'aumakua.* Mary Kawena

Pukui's childhood education included memorizing the names of fifty of her family *'aumakua* (Nānā i Ke Kumu Vol. I, 1972:356). Aunty Aggie Cope mentioned that there was a rock in Waimānalo Gulch that resembles a *pueo.* The presence of the Pueo Rock connects the traditions and beliefs directly to this area. The Waimānalo and Makaīwa Gulches are typical habitat for *pueo* and they are often seen hunting in the grasslands.

6.2 Burials

Most Hawaiians in the pre-Contact period belonged to the *maka'āinana* or commoner class and their bones were usually buried in their particular *'ili.* Burials are commonly reported from clean, consolidated sand deposits, which was clearly a common method of internment practiced by Hawaiians (Cleghorn 1987:42).

Commenting on the nature of burial areas and body positions used in burial, William Ellis (1827: 361-363) says: "The common people committed their dead to the earth in a most singular manner." The body was flexed, bound with cord, wrapped in a coarse mat, and buried one or two days after death. Graves were "...either simply pits dug in the earth, or large enclosures... Occasionally they buried their dead in sequestered places at a short distance from their habitations, but frequently in their gardens and sometimes in their houses. Their graves were not deep and the bodies were usually placed in them in a sitting posture.". Hawaiians placed significance on the *iwi* that were regarded as a lasting physical manifestation of the departed person and spirit. "The bones of the dead were guarded, respected, treasured, venerated, loved or even deified by relatives; coveted and despoiled by enemies" (Pukui et al. 1972:107).

No burials or *iwi kūpuna* (ancestral human remains) have been documented in two archaeological inventory surveys of the project area (Hammatt and Shideler 1998; Dalton and Hammatt 2008). The closest known burials were found in the Ko'olina and Lanikūhonua in caves, sand dunes and sinkholes. However, Dalton and Hammatt's (2008) report states it is possible that burials may be discovered during proposed construction activities; in particular, several small caves and overhangs in the northwest portion of the current project area may contain such evidence. Some participants strongly recommend that the project does not extend any further into the *mauka* region, which may contain burials.

Mrs. Nettie Tiffany urged caution in regards to burials in the project area; she feels although the land has been heavily altered by ranching and other activities there is still a possibility of finding *iwi kūpuna.* She also strongly suggests that there be a plan of action if there are burials found during the project.

Aunty Arline also mentioned that if people lived in the project area, there might be a possibility of finding burials:

> My only thought is that for every person that lives in that area, that's where they bury their people... We never said anything if people died, we'd go over there and they'd bury them right there where the house is. We'd never go four-hundred-million-miles away, it's right there. All your *'ohana* stay right in the same area. We never went afar, not in the rural areas.

6.3 Trails

Trails connected the settlements throughout the District of 'Ewa and Wai'anae. Based on nineteenth and twentieth century maps, the primary transportation routes correlated closely to the existing major roadways. John Papa 'I'ī describes a network of Leeward O'ahu trails that in later historic times encircled and crossed the Wai'anae Range, allowing passage from West Loch to the Hono'uli'uli lowlands, past Pu'uokapolei and Waimānalo Gulch to the Wai'anae coast and onward, circumscribing the shoreline of O'ahu ('Ī'ī 1959:96-98). Following 'I'ī's description, a portion of this trail network passed close to the current Farrington Highway.

It seems clear that a major east/west artery from 'Ewa and Kona O'ahu to Wai'anae ran just south of Makaīwa Gulch roughly along the Farrington Highway alignment. "As mentioned before, there were three trails to Wai'anae, one by way of Pu'u o Kapolei, another by way of Pōhākea, and the third by way of Kolekole" ('Ī'ī 1959:97).

'Ī'ī, who was born about 1800, also recounts an incident at Waimānalo that occurred when he was eight or nine years old. While the young 'Ī'ī was staying at Nānākuli, he learned:

> ...of the burning of the houses in Waimānalo. The overseer in charge of the burning told ['Ī'ī and his relatives] that it was so ordered by the royal court because the people there had given shelter to the chiefess, Kuwahine, who ran away from her husband Kalanimoku after associating wrongfully with someone. Kuwahine was the daughter of the Kaikioewa who reared Kamehameha III in his infancy. She had run away because she had been beaten for her offense and for other reasons, too, perhaps. She had remained hidden for about four or five days before she was found. Here we see the sadness that befell the people through the fault of the chiefs. The punishment fell on others, though they were not to blame. ('Ī'ī 1959:29)

Ī'ī's sad account reveals that the coastal Waimānalo portion of Hono'uli'uli Ahupua'a continued to be inhabited into the early 19th century.

The following on ancient trails is from the 'Ahahui Siwila Hawai'i O Kapolei letter:

> There may have once existed an intersection of 2 trails in the approximate location where the present entrance to Ko Olina exist today. In ancient times there were 3 ways to get to Wai'anae. One was by way of Kolekole, one was by way of Pohakea and the 3rd was by way of Pu'uokapolei. Farrington Highway follows the path of the ancient trail that passed Pu'uokapolei.
>
> Generally, petroglyphs are found on the high ground between Waimānalo and Makaiwa Gulches indicating that a trail may have once existed in this area, again confirming a *mauka-makai* path. The existence of this trail is supported by numerous amounts of cultural resources and structures built along this lineal *mauka-makai* relationship that follows the path of Waimānalo and Makaiwa Gulches.

Shad Kane has also expressed his knowledge in regards to the many trails in Hono'uli'uli. Below is an excerpt from a previous interview with Mr. Kane (Souza and Hammatt 2002):

> One of the most elementary relationships in ancient times was the *mauka-makai* relationship. And the reason why I bring this one up is because it plays a very important role in having an understanding of the area surrounding Waimānalo Gulch. It's not to say that it wasn't important elsewhere. It may have been. Or I would say it was important all over, that *mauka-makai* relationship. But what makes this area unique is the fact that we have evidence, we have structures that support that *mauka-makai* relationship. Most places most of these kinds of structures – stone walls, habitation structures, cultural resources – most places they've largely been disturbed or destroyed. But in this respect, this particular *mauka-makai* relationship, there's, I think, sufficient structures that still exist today that you and I can look, see, feel and touch, that supports that *mauka-makai* relationship. And I think if we had a map, if you were to draw a line from the approximate area that may today identify as Ko'olina – If we were to draw a straight line from Ko'olina to Mauna Kapu you'd find that that passes along the northern ridge of Waimānalo Gulch, goes straight up to the ridgeline at Pu'u Manawahua, and follows pretty much a straight line to Mauna Kapu.
>
> Okay, a lot of the information that I shared too are things that you can actually find from different resources. And this is one. In ancient times there were several trails that people would take to come from Honolulu to come to this side of the island. I think there were three ways to get to Wai'anae. One was by way of Kolekole Pass. One was by way of Pōhākea. Another was by way of Pu'u Kapolei. Three trails. Obviously, another one along the shoreline which was the longest way to travel. Farrington Highway is very obviously a trail. Now, in the context of Waimānalo Gulch, what makes this extremely interesting is the fact that there's a series of petroglyphs that was preserved by the developer of Ko'olina or West Beach Estates. When they first started developing – There were a number of archaeological surveys that were done early on. And one of the key persons was Aki Sinoto. I've read a lot of Aki's work. Very interesting cultural information that he found – that whole area over there. And several other people. The interesting thing is that the first archaeological survey that was done was 1930 by Gilbert MacAllister. Between 1930 up until the '70s nothing was done. So 1970 was the start of all this discussion in regards to building in this whole region. And because of the requirements for the EIS and doing a cultural assessment – All of a sudden, since the 1970s until now, and the development of the Campbell Industrial Park and Kapolei and the resort area, we had all these archaeological surveys that came up. So Aki Sinoto is one of them, amongst others. But one of the things they discovered is the fact, in addition to all the information in the lower plains, in addition to the sinkholes and the bird bones, they also found what I think they refer to as the alluvial level or the higher elevation up above the coral plains. And what they found, they found habitation structures, they found burials, and some petroglyphs. I think they actually found

> two. I think they found one that's actually inside Waimānalo Gulch, up on the higher ridge. I've never seen it.
>
> Another one they found that was preserved at the entrance to Ko'olina. Now the interesting thing about petroglyphs is that most of them are built identifying trails. And you find them along ancient trails. And the significance of these particular petroglyphs here is that it actually defines the intersection of two trails – Farrington Highway and the *mauka-makai* trail. That *mauka-makai* trail is supported by everything else that I've shared with you in respect to the cultural sites up above. We need to understand the significance of that *mauka-makai* relationship because that was one of the relationships in ancient times. In ancient times, it was matter of life-or-death resources. It was food. So it was establishing that relationship between the people up above and the people at the ocean. So these were your closest friends. These were the people – So you don't have to go dive for fish. You just go down and you take what you got to share. You get fish from people down below. So these were your neighbors. So obviously there would be *mauka-makai* trails all over the islands. The significance of this one is the fact that you have structures that supports that idea, that's still intact today. And the petroglyphs along Farrington Highway is one of those supporting pieces of information.

The petroglyph site mentioned above (State Inventory of Historic Properties [SIHP] # 50-80-12-2893) is located outside the southeast corner of the current project area (see Previous Archaeological Research section above). The *mauka/makai* trail mentioned above is probably the one depicted on the 1914 Fire Control Map (Figure 17). The trail starts at the area of the petroglyphs (SIHP # 2893) and goes up between the east end of Waimānalo Gulch and the west end of Makaīwa Gulch. This trail is most likely a pathway to the former village of Pu'u Ku'ua and the *heiau* in the *mauka* region of Hono'uli'uli. This *mauka/makai* trail would have also intersected the well known trails of upper Hono'uli'uli, Pōhākea Pass, Kolekole and Palikea which all lead to Kūkaniloko, the center or *piko* of the Island of O'ahu.

Douglas McDonald Philpotts also spoke about trails in the *'ili* of Waimānalo:

> The main trails from this community to *makai* were in both Waimānalo and Makaīwa. These trails had water and springs there and were probably used more for uphill travel. The ridge between them was faster but there was no water so it was more than likely used for downhill travel. Another was down by Awanui just west of Pu'u Palailai and another was on the up side of Kaloi. The main trails had a spring or two along the way and if there was enough water something was grown there.

Another *mauka/makai* trail is depicted on the 1873 Alexander map (Figure 18) of Hono'uli'uli. The trail went from the uplands of Pu'umanawahua, Palikea (shown on map as "wooded hill"), Kapuai and Pu'ukuua passing Pu'umakakilo straight to Pu'u Pālailai, then to the coast of Ko'olina where there was once a village.

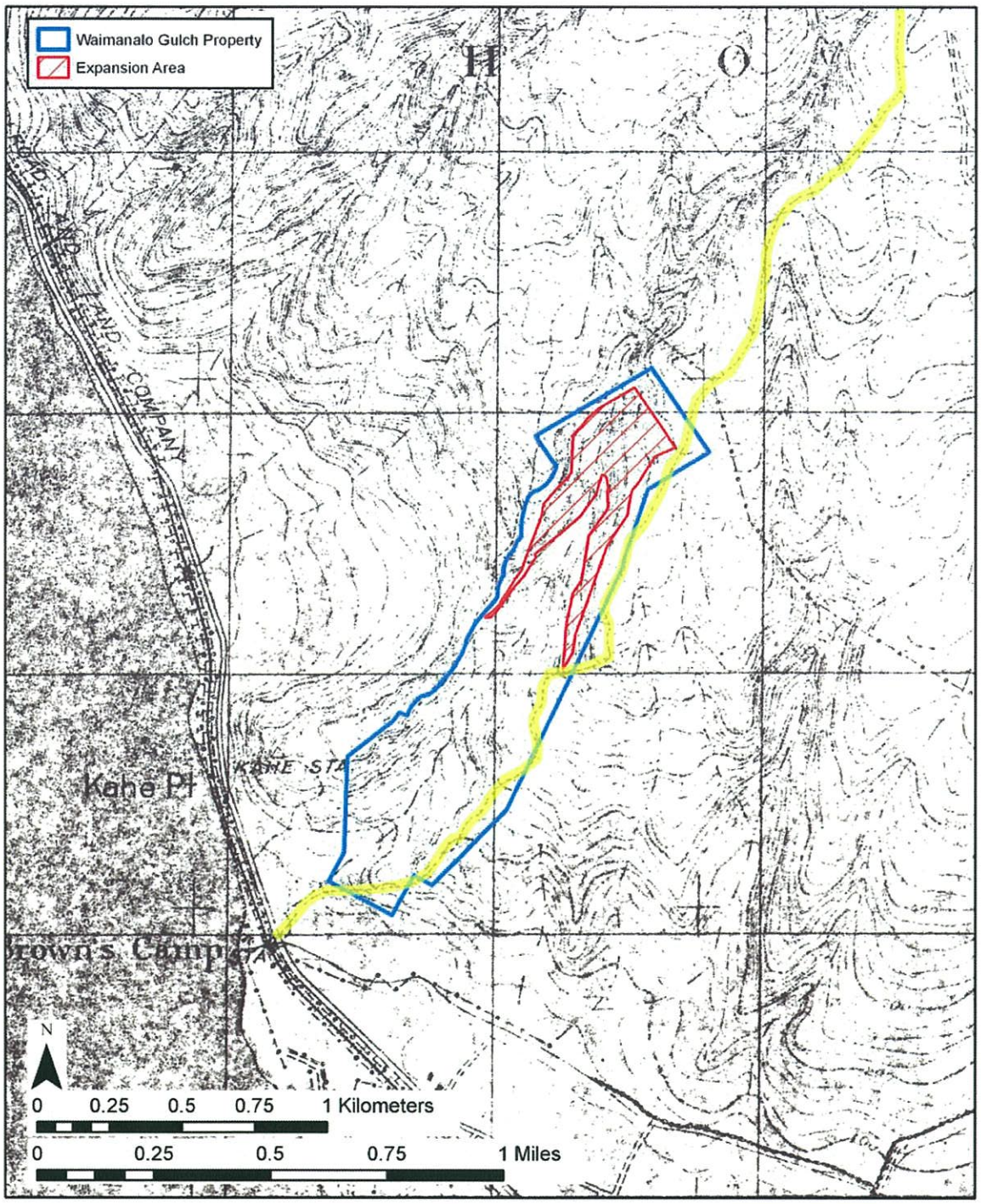

Figure 17. 1914 Fire control map showing *mauka/makai* trail from Brown's camp up to the *mauka* region of Hono'uli'uli

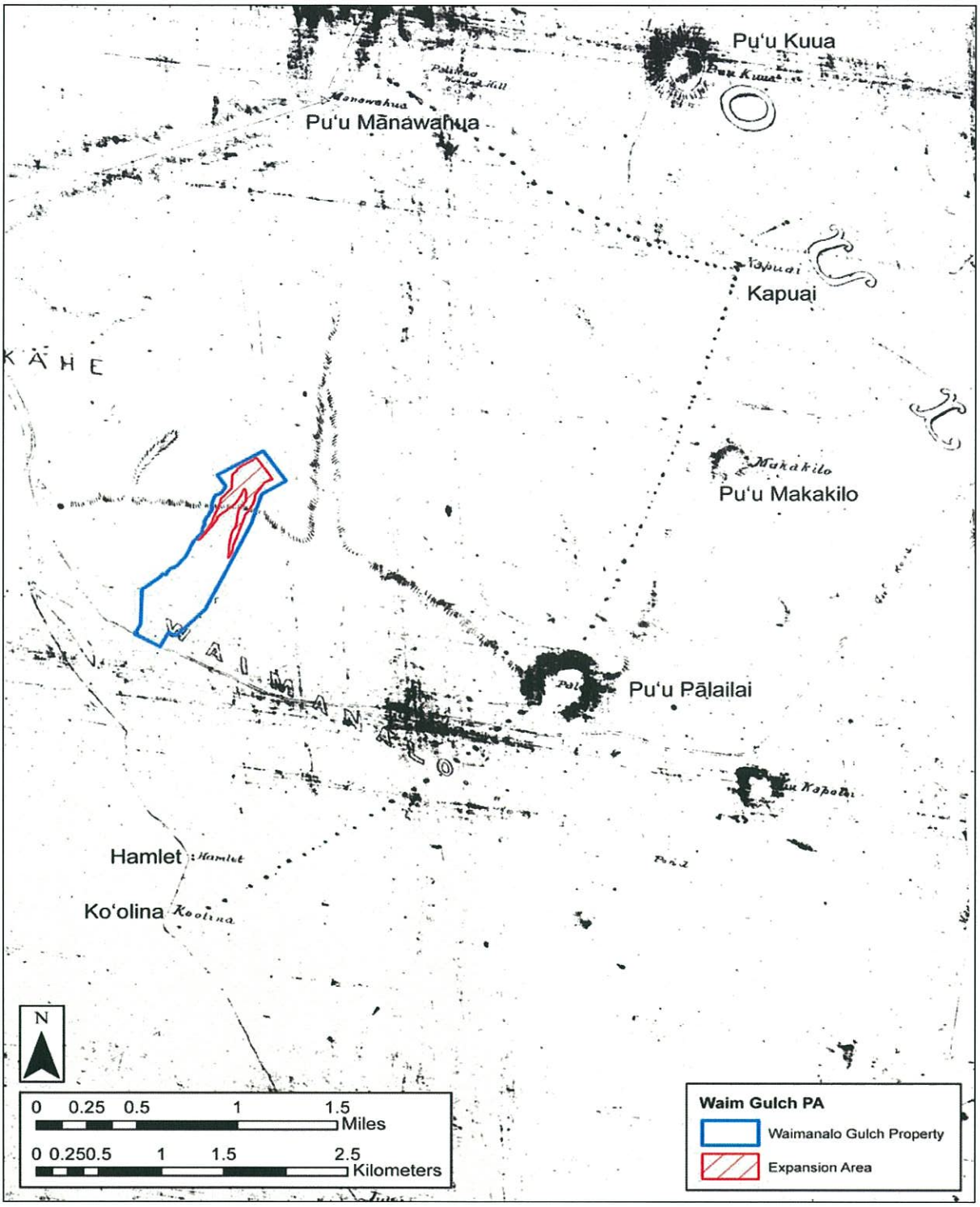

Figure 18. 1873 Alexander map showing *mauka/makai* trail from Pu'umanawahua to Ko'olina and a "Hamlet" (village)

6.4 Gathering of Plant Resources

Given the ecosystem diversity of coastal lowland, transition and upland forest zones in Hono'uli'uli Ahupua'a, it is likely that one of the primary traditional cultural practices associated with the present project area would have been the gathering of native plant resources. Table 3 lists Hono'uli'uli lowland plants and uses with columns for "common/Hawaiian name", "scientific name" and "use" based on research conducted by Barbara Frierson (1973) on native plant species present in Hono'uli'uli before 1790, in addition to plant use recorded by Isabella Abbott (1992).

Table 3. Native plants in Hono'uli'uli

Hawaiian/Common Name	Scientific Name	Use
Hala, pandanus	*Pandanus odoratissimus*	Weaving
Hau, hibiscus	*Hibiscus tiliaceus*	Cordage
Milo	*Thespesia paradisiaca*	Wood used for bowls
Neneleau, Sumac	*Rhus sandwicensis* *Rhus chinensis*	Unknown
'Ilima	*Sida cordifolia*	Leis, medicine
Kou	*Cordia subcordata*	Bowls
Makaloa, sedge	*Cyperus laevigatus*	Mats (Abbott)
Pili, grass	*Heteropogon contortus*	Thatch
Kakonakona, grass	*Panicum torridum*	Unknown
Honohonowai	*Commelina nudiflora*	Unknown
Ma'o, cotton	*Gossypium tomentosum* *Abutilon incanum*	Flowers used as dye for kapa (Abbott)
'Ūlei	*Osteomeles anthyllidifolia*	Branches used for fishing nets (Abbott)
'Uhaloa	*Waltheria americana*	Medicine (Abbott)
Koali'ai	*Ipomoea cairica*	Cordage (Abbott)
Pā'ū o Hiiaka	*Jacquemontia sandwicensis*	Unknown
Ko'oko'olau	*Bidens* sp.	Use as tea (Abbott)
'Ulu, breadfruit	*Artocarpus incisus*	Food
Kalo, taro	*Colocasia esculenta*	Food
Niu, coconut	*Cocos nucifera*	Food, liquid

The accessibility of Hono'uli'uli lands, including the present project area, to Hawaiians for gathering or other cultural purposes was radically curtailed during the second half of the nineteenth century. As noted above, by the 1870s, herds of cattle grazing across the 'Ewa Plain likely denuded the landscape of much of the native vegetation. Subsequently, during the last decade of the nineteenth century, the traditional Hawaiian landscape was further distorted by the introduction and rapid development of commercial sugar cane cultivation. Throughout the twentieth century sugar cane cultivation was the dominating land use activity within the project area. Cane cultivation – and the sense that the project area was private property – restricted access inside the project area to employees of Ewa Plantation.

6.5 Native Gathering Practices for Plant Resources

Mr. Hiram Kamanā indicated that he used to gather ingredients for a cleansing *lā'au lapa'au* (botanical medicine), including "*Kī Māmaki*" (*Māmaki, Pipturus* sp.), in the uplands. The bark, fruit and young leaves of the Māmaki were used medicinally (Wagner et al. 1990:1307). It is definitely understood that this was picked well *mauka* of the landfill (no *Māmaki* is known to grow in the immediate vicinity of the landfill). Mr. Kamanā also spoke of gathering Ha'uōwī (also known as Ha'uoi, Oī and Ōwī, *Verbena litoralis*) and Pānini (Prickly Pear cactus, *Pāpipi*; *Opuntia ficus-indica* aka *Opuntia megacantha*). Parts of the *Ha'uōwī* plant would be soaked in alcohol and the liniment would be used for arthritis. *Verbena litoralis* has been used medicinally as a mash applied to cuts and bruises and also to sprained and fractured areas (Wagner et al. 1990:1325). This exotic species is widely naturalized in Hawai'i (first documented in 1837) occurring in dry to wet habitats on all the major islands. The red fruit of the *Pānini* was used for sore stomachs. This exotic species was probably introduced to Hawai'i prior to 1809 and is naturalized in dry, disturbed habitats on the major islands (Wagner et al. 1990:420).

Ms. Nettie Armitage-Lapilio spoke of gathering plants for both medicine and ornament in the uplands. She spoke of gathering *Ēkoa* (also known as *Koa-haole* and *Lilikoa*; *Leucaena leucocephala* aka *Leucaena glauca*) seeds and or seedpods for *lei* which the *'ohana* would wear while performing *hula* and also sell to make extra money. She indicated the seeds/seedpods were gathered where the landfill is now. This exotic species (first collected on O'ahu in 1837) is very common, often forming the dominant element of the vegetation in low elevation, dry, disturbed habitats of all the major islands (Wagner et al. 1990:680).

Ms. Armitage-Lapilio mentioned gathering two species for *lā'au lapa'au*: *'Uhaloa* (*Waltheria indica* var. *americana*) and *Kīnehe* (Spanish Needle, *Bidens* spp.). According to Wagner et al. 1990:1280, '*Uhaloa*, which is known by many alternative names (e.g., *'Ala'ala, Pū loa, Hala uhaloa, Hi'aloa*, and *Kanakaloa*), is an indigenous pan-tropical plant, occurring in dry, often disturbed sites on all the major islands; it has been widely used medicinally by the Hawaiians as a painkiller especially for sore throat. *Kīnehe* (aka *Kī, Kī pipili* and *Nehe*) is a pan-tropical exotic weed widespread in disturbed areas (Wagner et al. 1990:279). Pukui and Elbert (1986:152) note for "*Kīnehe*" that: "The Spanish needle (*Bidens pilosa*) is a lowland weed; young fresh plants are still brewed for tea."

We are confident that *Māmaki* has not grown near the landfill in recent times as it prefers wetter environments found at higher elevations. *Ha'uōwī, Pānini, Ēkoa, Uhaloa*, and *Kīnehe* are all quite ubiquitous in similar dry, lowland areas. It is interesting to note in passing that four of

the six plant species used (*Ha'uōwī, Pānini, Ēkoa, Kīnehe*) are exotic species. We perceive no adverse impact on Hawaiian utilization of these species by the proposed landfill expansion action.

6.6 Taro in Hawaiian Culture

Taro cultivation was mentioned in two of the LCA testimonies for individual *kuleana* claims in the *'ili* of Waimānalo of Hono'uli'uli Ahupua'a. The testimonies indicated that these LCA's contained at least two *lo'i* as well as house lots, sweet potato, *kula*-at Pu'ukuua, ponds, streams and fishery. The taro cultivation here was not as intensive as the well known "Hono'uli'uli Taro Lands" near the mouth of Pear Harbor and the Hono'uli'uli Stream. Apparently Waimānalo 'Ili had sufficient water along with backshore swampy areas to provide personal *lo'i* on a small scale. Although these claims were not awarded they provide a wealth of information.

The area of Lanikūhonua south of the project area, once a marshy wetland fed by a natural springs, was an ideal place to cultivate taro. Davis et al. (1986) mapped the natural marshy area and spring (Figure 19). Many maps show water filtering down from the Waimānalo and Makaīwa Gulches as well as the unnamed gulches that could have also feed the *lo'i* of this area (Figure 20). There is no mention of taro grown in the project area but there were natural springs that could sustain a small patch. Aunty Nettie Tiffany, Aunty Arline Eaton and Douglas McDonald Philpotts all mentioned that the area of Waimānalo, Makaīwa, and Lanikūhonua had sources of fresh water.

Taro has an intimate connection to the Hawaiian culture. Taro (*kalo*; *Colocassia esculenta*) was probably brought to Hawai'i by the earliest Polynesian voyagers and has been a staple crop on the islands ever since. Taro is intimately connected through myth to the origins of Hawaiians as a people. There are different versions of this myth, but all of them make the connection between the first-born Hawaiian and the taro plant, according to Mary Kawena Pukui:

> The first Hāloa, born to Wākea and Ho'ohoku-ka-lani, became a taro plant. His younger brother, also named Hāloa, became the ancestor of the people. In this way, taro was the elder brother and man the younger-both being children of the same parents. (Pukui in Handy and Handy 1972:80)

The physical attributes, the growth patterns, and the propagation of taro all reflect the structure of Hawaiian kinship and an obvious relationship to the human body. The main plant in the center is the *makua* (parent), the smaller plants budding out of the *makua* are the *'ohā* (offspring). The center of the leaf where it connects to the stem is the growth center of the veins of the leaf and is called the *piko* (belly button). The stem is called *ha*, which is also a word for breath, the basis of life. The cycle of planting is a reflection of the human life cycle. When the taro is harvested the corm is cut right below the green top, the cut top is called the *huli* (turning, returning or transforming). The *huli* is replanted and the family of taro once again continues its growth cycle. The generations of taro are thought of interchangeably with the generations of Hawaiians as reflected in the saying "*Kalo kanu o ka 'āina*"-literally "taro planted on the land" but figuratively referring to successive generations of natives (Pukui 1983:157). Both the *'ohā* and the *makua* can be used as *huli,* but as in a family, the *'oha* (child) must be separated to become independent of the parent and – to become a parent itself. If it is not, it remains a

dependent attachment, overshadowed by the leaves of the *makua*. Another saying, *I makika'i kekalo i ka 'ohā*-"the goodness of the taro is judged by the young plant it produces" (Pukui 1983:133), is a metaphor for the parents being judged by the behavior of their children.

All parts of the taro plant are used for food: the corm is cooked and eaten as table taro or steamed and pounded into *poi*; the stem can be steamed and used in various soup and stew dishes; the young leaves are used for *laulau* and *lū'au* dishes mixed with fish, squid, pork, chicken or beef. Generally, the leaves are not harvested from the plants designated for corm production because continuous cutting makes the corms soft and tasteless (*loli*). Taro growers who grow leaf for home use or commercial purpose always have specially designated *lū'au* patches. It is traditional Hawaiian practice to use all the coarse green cuttings that are the by-product of the harvesting of the corms as food for the pigs. This green material, when cooked and fed to the animals, is highly nutritious. For this reason, raising pigs is traditionally is symbiotic relationship to taro production. In a traditional taro field, no space is wasted. The *lo'i* are used for the taro and any extra space on the banks is used for subsistence, utilitarian and medicinal plants, such as bananas, *noni*, and *tī* (also *kī*).

The practice of taro cultivation most resembles gardening in its scale and methods. Much of the work is undertaken by an individual or family, and is performed by hand. The *lo'i* and banks are beautifully manicured, and the result is aesthetically like a garden. Yet, taro production remains viable even on this small scale because of its high per-acre productivity.

Nowhere else in the world was taro cultivation more developed than in Hawai'i (Kirch 1985:215). It was the staple for the hundreds of thousands of Hawaiians before European contact. It was grown in areas with sufficient rainfall (above 30-50 inches per annum) or under dryland management. In areas of suitable water sources extensive and sophisticated irrigated systems were developed for its cultivation. The social requirement for the planning, development, and maintenance of theses irrigated systems was a stable political system and community cooperation. Although the cultivation and maintenance of individual fields could be the purview of single families or individuals, the maintenance of the water supply system, on which the entire system depended, had to be organized on a community level.

Although less than 100 varieties of taro survive today, there may have been, at one time, as many as 300 varieties in the islands, distinguished by leaf shape, corm, morphology, color and use. The labels of wetland and dryland taro do not refer to different taro varieties, but only to different cultivation practices. All varieties of taro can be grown in dryland fields and all but a few in *lo'i* (flooded fields). Today there are only a few widely grown commercial varieties. Mechanical devices are used, such as tillers and small tractors; in some cases PVC pipes have replaced earthen or stone lined *'auwai* or waterways, and commercial fertilizers are routinely used. A typical taro crop will take from 10 to 14 months to mature. With modern farming methods taro is one of the most productive per-acre staple crops in the world. However, in spite of these modern overlays, the bulk of the labor is done by hand in the context of the family and the essence of a traditional taro growing community. Cooperation in management of water and land resources remains an integral part of this lifestyle.

In pre-Contact Hawai'i, during the late prehistoric era, as documented by archaeological studies, taro cultivation was practiced in virtually every suitable locality, including floodplains in windward valleys with perennial streams, open lava and beach flats near stream systems, and

moist leeward slopes. Taro was such an important crop it was even grown in artificial microenvironments created by mulching pits in lava fields.

Since European contact there has been a slow but steady decline in taro cultivation. In the late nineteenth and early twentieth centuries, many of the large taro growing areas were given over to rice planting. Taro cultivation returned on a smaller scale to these areas after development of the California rice industry. Today, commercial Hawaiian taro cultivation is confined to a few areas in the islands: Hānalei/Waioli, Hanapēpē and Waimea on Kaua'i, Waikāne/Waiāhole and Haleiwa on O'ahu, Honokohau, Ke'anae/Wailuanui on Maui, and Waipi'o Valley on the island of Hawai'i. Although taro is not grown anymore near the project area there is documents that prove there once was taro cultivation west of Hono'uli'uli.

'Ewa was well known for its rare *kai* variety of taro that was very flavorful as well as the ability to reproduce itself over a ten year span. The *Kai O 'Ewa* was grown in mounds in marshy locations. The cultivation of this prized and delicious taro led to the saying:

> Ua 'ai i ke kāī-koi o 'Ewa.
>
> He has eaten the Kāī-koi taro of 'Ewa.
>
> Kāī is O'ahu's best eating taro; one who has eaten it will always like it. Said of a youth of a maiden of 'Ewa, who, like the Kāī taro, is not easily forgotten (Pukui 1983: #2770).

The taro of 'Ewa was poetically referred to a man's love for a 'Ewa women that was so strong he would never leave:

> The *kai* was native to 'Ewa and was often referred to as *kai o 'Ewa*. . . . An 'Ewa *kama'āina* described this in 1899: "When planted, it sends up shoots, more shoots and still more shoots. Again and again it will send up new shoots, filling the mounds until they mixed with the taro of other mounds." This description (*Ka Loea Kalani'āina*, June 3, 1899) indicates that in the flat, wet lowlands of 'Ewa this famous taro was grown in mounds (*pu'epu'e*) as in marshy localities. The article quoted above says that "*kai koi* multiplies itself over and over with one planting and often lasts as long as ten years." No other variety or locality can equal this. This fragrant taro was likened to a woman with whom a man falls in love. And it was said that anyone who married a native of 'Ewa would come and settle there and would never leave, because of the *kai koi* of 'Ewa. Our Hawaiian writer describes two other varieties of *kai*. *Kai 'ele'ele*, black *kai*, has a black stalk, with dark skin on stems and leaves; its corm was tough and hard to pound. *Kai kea*, white *kai*, had a light-colored stem and leaves; the skin (of the corm) was red, but the flesh was dark like that of black *kai*, the corm likewise tough. In 1931 we collected four varieties of *kai*: *kai koi*, whose corm was white, vase of stalk pink, petiole pink, with a pink edge on the leaf; *kai kea* or *keokeo* with white corm, white base, whitish stalk with red margin, and a leaf with white edge and white center and pinkish veins; *kai 'ula'ula* (red *kai*) with corm flesh purplish white, and cortex of corm reddish purple, base red, stalk green with black streaks becoming light green and pink above, and finally, *kai-uliuli* (dark-*kai*) with white

> corm and lavender cortex, red to pink base, whitish and dusky green petiole with red and white margin, and leaf with a slightly reddish center. It was the *kai keokeo* which was described as being fragrant (*'ala*). From this was made the poi reserved for the chiefs (*poi ali'i*). (Handy and Handy 1972:471)

Due to the dry conditions on the leeward side of O'ahu, taro wasn't as abundant in Waimānalo 'Ili as it was in some of the surrounding marshy areas. Though, there was a fair amount of water sources in the area if you knew where to find them. Douglas McDonald Pilpotts elaborates on the water sources in Waimānalo 'Ili and expalians why water was such a commodity here:

> By far the most important resource is always *wai*, freshwater, and with no year-round streams here it was definitely not an abundant resource. As you know *makai* there were sink holes with freshwater on the 'Ewa plane. Near Lanikuhonua, fresh water comes out right in the sand, between the rocks there. You can turn a gourd upside down in the ocean and get fresh water if you know where. Knowing where is the key, it's the same thing up *mauka*, there are no streams. There is what geologists call perched water. Places were water flows to the surface on top of impermeable layers of soil covered by a layer of fractured rock. A few of these at lower elevations still produced water today even in the driest times of the year. The greatest number of these springs are found between 1,200 and 1,800 foot elevations. However due to the reforestation efforts in the 1920s these springs no longer produce water year-round. This is also the elevation with the greatest concentration of archaeological sites. Most of these springs still have terraces and *lo'i* walls around them. The forests above also held substantial resources, but the ocean below by far had the most substantial resources and the leeward exposure provided the best conditions to exploit them. I believe when compared to other *ahupua'a* in ancient times this area was not seen as desirable for its abundant resources. With the commanding view from this place and the limited water resources on the 'Ewa plane this community was highly defendable.
>
> Many old maps show historic water tunnels and reforestation efforts also help to understand the water resources that were here to support pre-Contact populations.

6.7 Significant Cultural Sites within the Project Area

CSH previously performed an inventory survey of the project area in 1998 (Hammatt and Shideler 1998) and an additional assessment was conducted in 2007 (Dalton and Hammatt 2008). During the 2007 companion archaeological inventory survey, CSH identified one historic property within the project area: SIHP # 50-80-12-6903, three rock uprights, which were recommended eligible for the Hawai'i Register under Criteria D and E.

A culturally significant Pueo Stone was identified by Bath in 1989. This "Pueo Stone" eventually had to be relocated to the northwest ridge of the gulch. Due to the signifigance of this cultural site, it has been protected and cared for in a safe area by a cultural practitioner.

Douglas McDonald Philpotts has spent years hiking around Waimānalo 'Ili and he recalls coming across many Hawaiian cultural sites:

> So when hiking up here and going through the grass I feel things and I just turn right or left, or just open the grass in front of me and there's a huge *ahu* or a cave sometimes I think they led me right to it. So that's been the path, the journey about knowing, and learning and seeing different things and getting chicken skin many times. When I was younger I spent a lot of time out there in the woods at night just cruising, checking it out. I got spooked every so often out there, but then I get used to it.
>
> There are so many cultural sites here and all of these sites and their relationships between each other is what's valuable. It is in the collective relationship between all the sites. Studying this area gives us the opportunity to have a deeper understanding of those who lived here because it's still pretty clear. Their footprints are still right there. I think this place has revealed how much potential it has, and the value of how much it has yet to share. I really want to make sure that the cultural sites and what they tell us doesn't get erased.
>
> This area has great value in the collective because there is a window into the life of our culture pre-Contact. It's not just about how they built their house sites, what's important is where they built their houses in relationship to where the water was located. They built their houses out there, in the wind, with the risk of it blowing away in a big storm, because they wanted the view. The five brothers, the watchers, their house sites are still there. It's all about the view. How can we relate to these stories if the house sites are gone, or if you don't know where the spring is, or if you don't know where their food was? This is the whole picture, like that beautiful *ahupua'a* poster that Kamehameha Schools has, and it is right here you can walk on it! Due to the land use being limited to forestry, watershed and ranching, the area's pre-Contact archaeological sites have been preserved. For those who have an interest in really understanding or trying to step back in time, just for a moment, for a visit, they can. You can walk from the fishing *ko'a* to the *lo'i* or you can stop at the spring or the shelter cave or the *ahu*, the *heiau*, the *pā*. You can go a to the forest for lapaau and you can watch the sunset from the front of their *hale* and if you employ the right senses you can do all this with them, they are still here, that is why this place is so special.

Another signifigant site that Douglas McDonald spoke about was the *pā* (stone enclosure) that is located in the uplands of Waimānalo 'Ili:

> The center of this *mauka* community was here above Waimānalo and Makaīwa. Ida Von Holt writes that they were told the area was quite heavily populated before the smallpox epidemic of 1840 and that there was a school for over 40 children where the *pā* is now. This appears to be the case when compared to the size and number of structures in the area. Some of the adjacent pastors were cleared for pineapple years ago these pastors more than likely contained many sites and now they are lost forever.

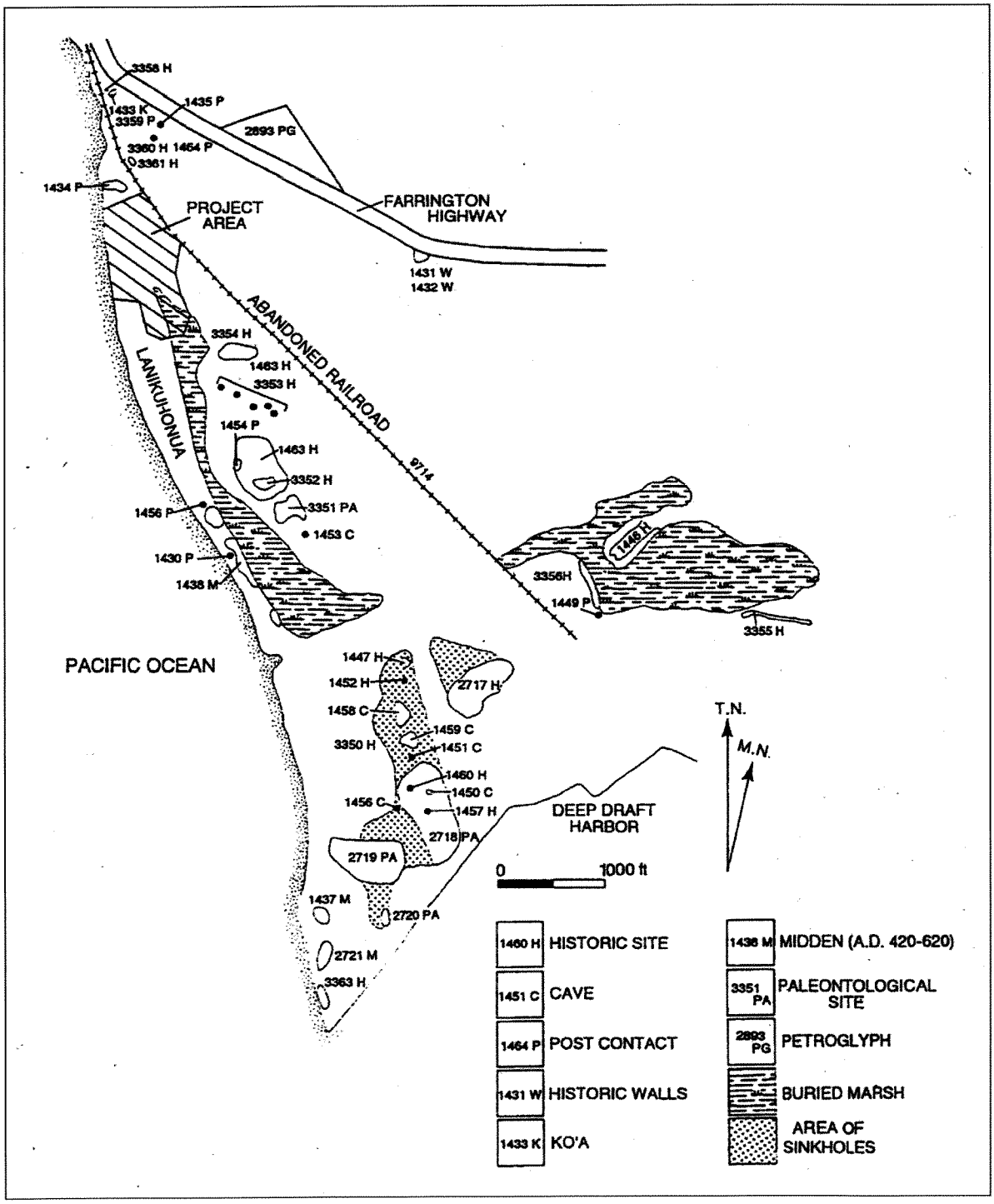

Figure 19. Pre-and post-Contact archaeological sites previously identified in Davis et al. (1986); south of the current project area (Lanikūhonua-Ko'olina-Waimānalo-Paradise Cove)

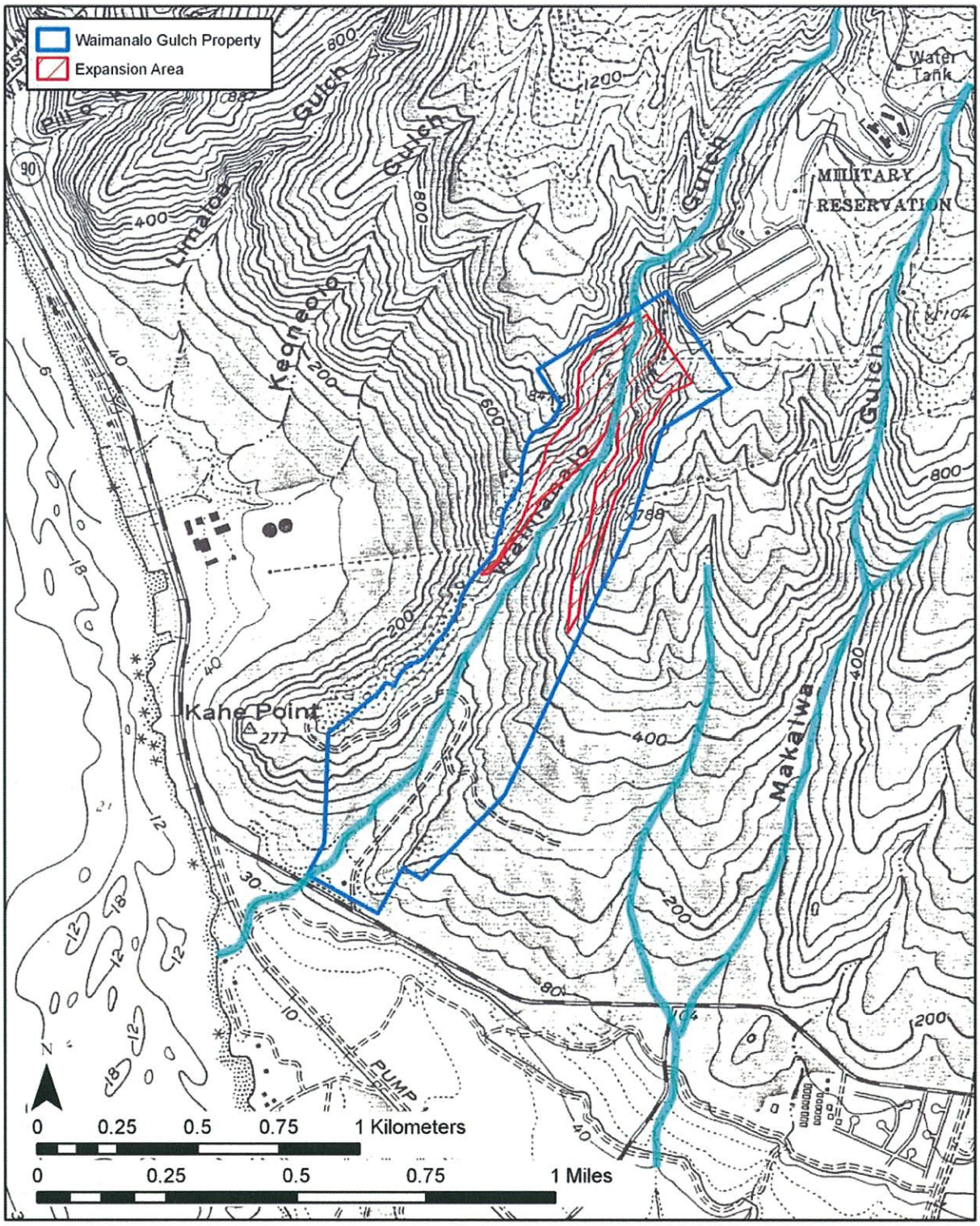

Figure 20. 1962 USGS Map showing seasonal streams

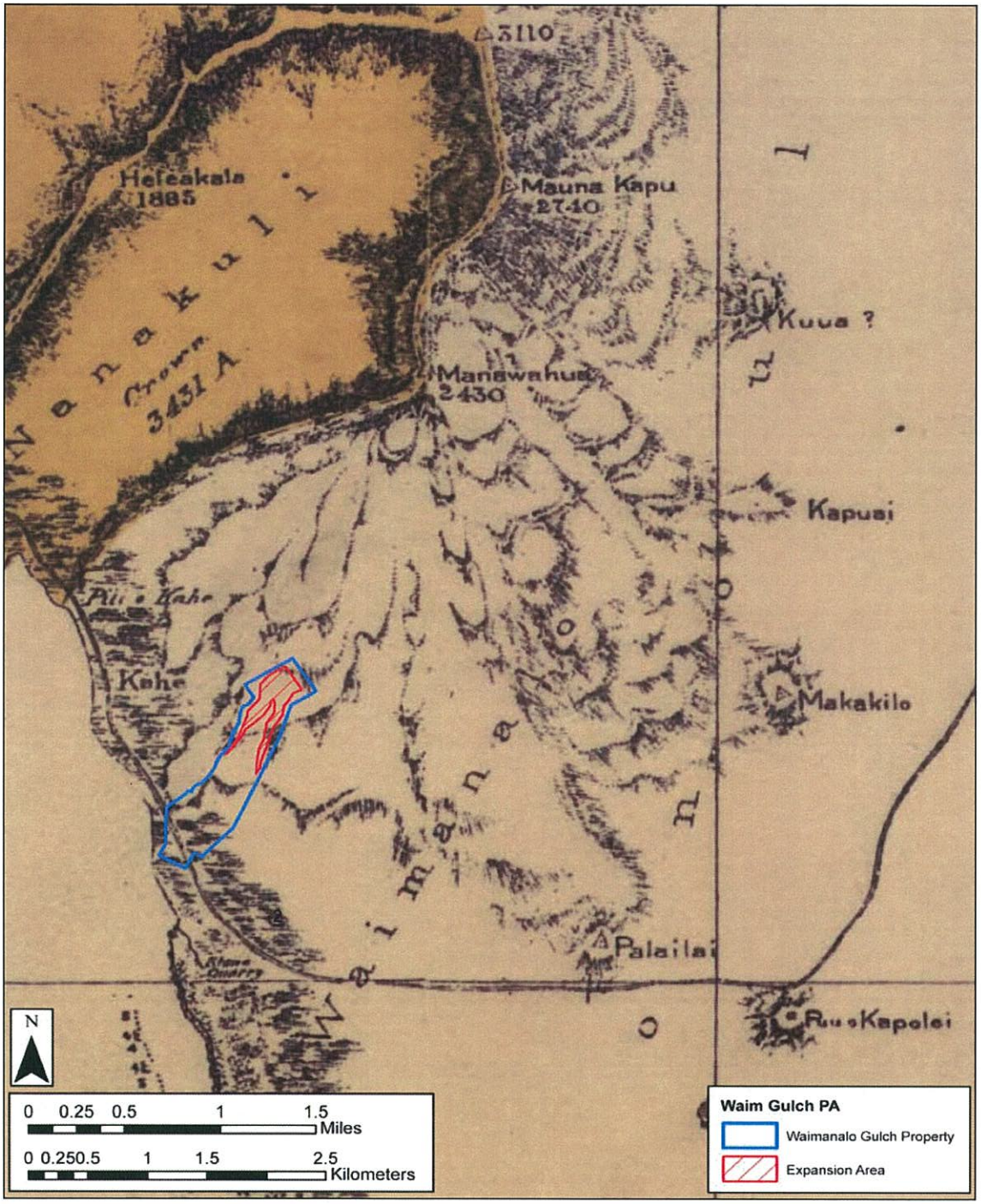

Figure 21. 1881 Hawaii Government Survey Map showing project area and the *'ili* of Waimānalo. Ko'olina is depicted south of the project area as well as a quarry. Also showing east/west trail

6.8 Marine Resources

The sea is a rich resource and the Hawaiian people were traditionally expert fishermen. Fish of all types supplied the Hawaiian diet with a rich source of protein. This source of food is a supplement to the things grown in the uplands. The LCA documents provide information that the people of Waimānalo area were utilizing the ocean resources as a fishery as well as the upland forest area for subsistence. This is a good example of the *ahupua'a* system that was once used.

Through the interview process, people mentioned a *ko'a* when asked about fishing south of the project area at Lanikūhonua. A *ko'a* is defined as "Fishing grounds, usually identified by lining up with marks on shore or shrine, often consisting of circular piles of coral or stone, built along the shore or by ponds or streams" (Pukui and Elbert 1971:144). Kamaki Kanahele is a *kama'āina* to the area and recalls his childhood memories of fishing the Wai'anae coast and using the many *ko'a* in the area to line up the fishing spots. Eddie Ka'anana was an avid fisherman and frequently fished for *'ōpelu* along the Wai'anae coast. He mentioned that he would fish using traditional methods on a canoe for *'ōpelu* as well as on a boat. Other types of fish that were caught were *u'u, akule*, and mullet. When asked about a *ko'a* he mentioned that he is aware of a *ko'a* along the Wai'anae coast and there was abundant fish in that area, which suggests that there may be a *ko'a* near by (Souza and Hammatt 2002). William Ailā also mentioned a *ko'a* and great *akule* fishing offshore fronting the project area. Nettie Tiffany also recalls the *ko'a* and her childhood memories of the shore fronting Lanikūhonua as having abundant fish such as mullet and reef fish.

Mr. George Ka'eliwai mentioned in a telephone interview in a recent report (Souza and Hammatt 2002):

> We all knew how to survive through our culture by the age of thirteen. The older boys would go up mountain and I had to know how to make the *palu* (bait) for fishing. You are not allowed to talk about fishing. You just get up early and go. I knew Tūtū (grandmother) Campbell on the ranch. She liked me and favored me. She gave me fishing rights as long as I gave her some fish.

Additionally Mr. Ka'eliwai confirms that there were activities related to early Hawaiian gathering practices from rich marine resources at Lanikūhonua. Mr. Ka'eiliwai spoke about the different types of fish that he and his uncle would gather; *manini, aweoweo, uhu*, and *menpachi.* This area was a great place for diving and throw net fishing.

Douglas McDonald Philpotts also refered to the plentiful marine resources at Lanikūhonua where he once lived, fished and threw net. He mentioned that Lanikūhonua was once a thriving fishing village, with a canoe landing and a fishing shrine.

> Our house was actually next to Lanikuhonua near the big banyan tree at Paradise Cove. Then there was my grandfather's coconut plantation where he had young coconut trees everywhere. The place was absolutely beautiful, and some of it still is. Some old maps have labeled hamlet on that spot and I'm sure there was a lot of *wa'a* on the beach there, this is the *makai* part of that *ahupua'a* poster. The fishing was great, and like I said earlier freshwater comes right out of the sand there.

> It really starts way back with Lanikuhonua and fishing. Uncle Sunny, Netty's father, kind of clued me in on throw netting. My Dad taught me how to get the net to open up but Uncle Sunny was the one that taught me how to use my senses to know where fish were. One night I was running out with my pole to set lines and he goes, "where's your throw net?" and I go, "it's dark now, you can't see the fish now." Then he said, "Go get your throw net." So I came back with my throw net and he said, "now where's your favorite spots?" And I said, "well its over there and over there and over there, but you can't see the fish" and he goes, "just go back to your favorite spots, you know every rock underneath there, you don't need to see the place to be able to know your way around." And I said, "yeah I can do that" and he said, "Just go to your favorite spot and stand there and wait until you feel the fish. When you feel the fish, you'll know, you'll feel them."

Hawaiians were very conservative when it came to marine resources. They set *kapu* on certain fish during their time of spawning and made sure that these fish had time to repopulate. The following exert is a passage from Hawaiian Fishing Traditions which talks about the *kapu* on *'ōpelu*:

> An important fishing *kapu* concerned the *'ōpelu* (mackerel) and the *aku* (bonito), two highly prized fish caught in great numbers in Hawaiian waters. *'Ōpelu* was netted from July through January. Walter Paulo and Eddie Ka'anana, two *'ōpelu* fishermen from Miloli'i, told me the best time for catching this fish is in October. 'Ōpelu was placed under *kapu* in February, until the end its spawning season, around July (Moku Manu and Others 1992:xii).

6.9 Wahi Pana (Storied Places)

The concept of *wahi pana*, a place with a story or legend attached to it, is very important in Hawaiian culture because it is a connection to the past and the ancestors. From place names, one can know intimate details about people who lived there, the environment, cultural practices and historical events that took occured. In Hawaiian culture, if a particular spot is given a name, it is because an event took place there that had meaning for the people of that time. Because Hawaiian culture was based on oral traditions, place names and their associated stories were an important way of remembering these traditions and ensuring these stories would be passed on to future generations. In Hawaiian thinking, the fact that a place has a name deems it important. Often, spiritual power or *mana* is attached to a place, which increases its importance. On the subject of *wahi pana*, Edward Kanahele writes:

> As a native Hawaiian, a place tells me who I am and who my extended family is. A place gives me my history, the history of my clan, and the history of my people. I am able to look at a place and tie in human events that affect me and my loved ones. A place gives me a feeling of stability and of belonging to my family, those living and dead. A place gives me a sense of well-being and of acceptance of all who have experienced that place. (Kanahele in James 1995:6)

Analu Kameeiamoku Josephides mentions a *mo'olelo* passed down to him by his *kūpuna* regarding some names of the Waimānalo 'Ili. The area was referred to as five brothers who protected and cared for the island of O'ahu; they were the "Eyes" of O'ahu:

> Another concern that I may have is the place names of this particular area. A story that has been passed down to me from my *kupuna* is that there were five brothers who were the watchers. Their names were Makaīwa, Maka'ike, Makaloa, Maka-Io, and Makakilo. It was known that Makaīwa was to the farthest west and that Makakilo was to the farthest east. That these five brothers were the eyes of the O'ahu people and were their protectors. They would watch for enemy intruders and relay messages to their *makulu* (runners). If enemy canoes were seen the *makulu* would run to the various districts and warn the chief and his/her people. This is why O'ahu was a hard island to conquer in the ancient times. By the time the war canoes of the enemies would reach the shores they would be greeted by the warriors of O'ahu, thus the enemies were never allowed to land upon the shores of O'ahu.

Douglas McDonald Philpotts also spoke about a connection between this area and the other islands through the path of the sun:

> Whether you're a spiritual person or not you will be impressed by the sheer beauty of this place, and the spectacular views from here. But many who come here are surprised by the sense of *mana* here. The view is special here, from the top of Pālehua between Pu'u Manawahua and Mauna Kapu you can see all the islands and all of the mountain tops on those islands, this is the only place in all the islands you can do this. Hermann von Holt showed me the trench that still remains on the Honolulu ridge of Mauna Kapu and said another one in the south was taken out when the road was put in. It was right where the big blockhouse is now. Herman said they were told by the Hawaiians in the ranch camp at Hono'uli'uli this was a most sacred place, and the place of great *mana*, and that is why I think the Hawaiians lived here and their spirits never left. This could be part of the meaning in the name Pālehua. In addition to the unique view of the islands I have observed the annual journey of *lā* (sun) from here. It starts on the first day of the celestial year on the winter solstice. At sunrise the sun can be seen rising from its house Haleakala as it begins its journey northward it rises from the west Maui Mountains and then from East Moloka'i. Reaching O'ahu it rises from Koko Head and moves from peak to valley north through the Ko'olau's reaching its destination Mokumanamana in exactly half a year. Then on June 21st, the summer solstice, the sun sets behind Kaua'i and starts its journey back home. On this solstice line connecting Haleakala, Pālehua and Mokumanamana are also several *heiau*. Twice a year on the equinox the sun sets over Pu'u Heleakala. To me these and many other things seem to be more than coincidence.
>
> I am just starting to understand that there is no other place like this when you add the layer of the winter and summer solstice; there is no other place that lines up like that. So I think the real resource is the view, and the power that comes from that.

6.9.1 Place Names

All place name translations were taken from Place Names of Hawai'i (Pukui et al. 1974) and the Hawaiian Dictionary (Pukui and Elbert 1986), in addition to being supplemented by other sources as well as community members (see Figure 6):

Aimea Name of fishpond in Hono'uli'uli (LCA 9037); Claimant, Kahakai claimed a right to *kalā* (fish) at this pond. The exact location of the pond is unknown.

Anianikū A small cove between Milo and Ka'ula at Lanikūhonua. *Lit.*, stand beckoning (Pukui et al. 1974:12).

Awanui Gulch Name of a gulch just west of Makakilo. The gulch name may pertain to the large *awa* or milkfish (*Chanos chanos*) or may be a reference to the impressive size of the *'awa* (kava) plants (*Piper methysticum*) growing at that location. Kawika McKeague gives another meaning "could reference the 'large passage,' indicative of birthing passage or 'outburst' (alluding to Papahanaumoku/Haumea's birth of the island- geologically one of the main outvents of Wai'anae volcanic eruption)."

Hapanui Name of a pond in Waimānalo, 'Ewa in which *kuleana* were claimed (LCA 9037 Kahakai); *Lit.*, greatest or largest portion.

Kalaipuawa Place name in Waimānalo, 'Ewa in which a taro patch was claimed (LCA 9037 Kahakai)

Kapua'i A high point in the uplands of Hono'uli'uli. Kapua'i is part of a traditional *mauka-makai* trail extending from near Pu'u Manawahua in the Hono'uli'uli uplands through Kapua'i and down to the coast at Kō'olina (1873 Alexander map). One meaning of *kapua'i* is footstep or footprint (Pukui and Elbert 1986: 133), a direct connection to the old trail. An alternative is suggested as "the flow (of water)" (Pukui et al. 1974:12:89) perhaps the source of spring water.

Ka'ula A small bay at Lanikūhonua. 'Ula suggests the sacred red color or perhaps, ghost or spirit (Pukui and Elbert 1986: 367).

Keone'ō'io Gulch in Nānākuli, O'ahu. *Lit.*, the sandy [place with] bonefish (Pukui et al. 1974:108).

Ko'olina Beaches, lagoons. *Lit.*, delightful, lovely; Ko'olina (Clark 2002:198) Ko'olina is also noted as a favorite vacationing spot of Kākuhihewa, with its sacred pools (Clark 1977:76). These pools are located near Kamokila's Lanikūhonua and are natural coves and limestone shelves.

Lanikūhonua An ocean retreat developed by Alice Kamokila Campbell in 1939. She named the spot after the beautiful sunsets, 'where heaven meets the earth' (Clark 2002:210). The rocky shoreline fronting this area is known for the *moi* (*Polydactus sexfilis*) fishing grounds (Clark 1977:76)

Limaloa Gulch in Hono'uli'uli, west of and adjacent to Waimānalo Gulch; *Lit.*, long arm (Pukui et al. 1974:133). Limaloa appears in legends of Kamapua'a as a star-crossed lover (Pukui et al. 1974:133). Known as the God of mirages (Pukui and Elbert 1986:207),. Limaloa appears in a chant offered by Maui's grandfather, Kuolokele, in Maui's attempt to rescue his wife who had been kidnapped by Pe'ape'amakawalu (eight-eyed bat) (Fornander v.5:458-463).

Makaike *Wahi pana* shared by Analu Kameeiamoku Josephides who told the story of five "Maka" brothers, the protectors who watched for enemy canoes from their high perches on the ridges above 'Ewa plains. As inferred by Analu's story, Makaike is assumed to be one of the ridges in between Makaīwa and Makakilo. Maka'ike: *Lit.*, seeing eye (Pukui and Elbert 1986:225). This type of observation is described as having the gift of "second sight" (Pukui and Elbert 1986:225).

Makaio One of the five "Maka" brothers, protectors of O'ahu, who watched for enemy canoes from the ridges above Hono'uli'uli (Personal communication Analu Kameeiamoku Josephides *in* Souza and Hammatt 2006). As inferred by Mr. Josephides' story, Makaio is assumed to be one of the ridges in between Makaīwa and Makakilo. May refer to the *'io*, the Hawaiian hawk (*Buteo solitarius*) (Pukui and Elbert 1986:102). Maka'io: *Lit.*, eyes of the hawk.

Makaīwa Gulch in Hono'uli'uli, east of and adjacent to Waimānalo Gulch; *Lit.*, mother-of-pearl eyes (as in an image) (Pukui et al. 1974:140). The westernmost of the five "Maka" brothers who helped protect O'ahu by serving as lookouts for enemy canoes (Analu Kameeiamoku Josephides). Makaīwa is inferred to be the westernmost ridge of the five ridges. Kawika McKeague gives alternate meaning "I think it's a shortened version of-Maka a aiwa, as in the face (essence) of complete mystery, incomprehensible (as in caught in a wake between two worlds- again transitional, balancing between two worlds)."

Makakilo Crater, land area, gulch, Wai'anae quad., O'ahu. *Lit.*, observing eyes (Pukui et al. 1974:140). Also *Pu'u Makakilo.* Hill above Kapolei; *Lit.*, observing eyes hill (Pukui et al. 1974:201).The easternmost of the five "Maka" brothers noted for their skill as lookouts for enemy invaders to O'ahu (Analu Kameeiamoku Josephides). Makakilo is inferred as the easternmost ridge of the five. Kilo is translated as "stargazer, reader of omens, astrologer; to watch closely, examine, spy" (Pukui and Elbert 1986:151). Kawika McKeague gives alternate meaning "any term with *kilo-* indicative of being able to read *ho'ailona*, second sighters, if you will."

Makaloa One of the five "Maka" brothers, shared in a story by (Analu Kameeiamoku Josephides). The Maka brothers were five brothers who were the watchers and protectors of O'ahu. They warned chiefs of

approaching enemy canoes and kept O'ahu's people safe. Makaloa is assumed to be one of the ridges in between Makaīwa and Makakilo. Makaloa suggests seeing great distances (*loa*).

Mauna Kapu Mountain at the border of Hono'uli'uli Reserve boundary; *Lit.*, sacred mountain (Pukui et al. 1974:148). Kawika McKeague gives alternate meaning "I know some say this is regards to Kakuhihewa's *kapu*. Could be- my *mana'o* is that this point clearly defines what is Wakea and what is Papa, my *mana'o* only...Papa giving birth- woman giving birth-probably the strongest period where Haumea thrives and is more "powerful" or omniscient than Wakea- *kapu* had to be established to protect both male/female sources of identity."

Milo Cove at Lanikūhonua. *Lit* to curl, twist or to whirl, as water; abortion. Possible reference to a common coastal shade tree, *milo* (*Thespesia populnea*).

Pālailai Gulch and hill above Kapolei to the east of Waimānalo Gulch; *Lit.*, the young *lai* fish (*Scomberoides spp.*) (Pukui et al. 1974:176). Kawika McKeague gives alternate meaning "I disagree with Pukui; I don't believe it's the "young of the lai fish"- my *hale* is on the northeast corner of its *kahua*- I believe it's to "experience or be in a state of being calm and clear"- again sensory; having clear vision or thought as something is born in thought through experience."

Pālehua Land division, hill and road in the Wai'anae area; "Lit., *lehua* flower enclosure" (Pukui et al. 1974:177). Kawika McKeague gives alternate meaning "I disagree with Pukui; I don't believe it's only meaning is the *lehua* enclosure; I see two other words prominent- *pale* and *hua*, the idea that this place is where the *hua* is protected or perhaps in another meaning one is protected by *hua*, by jealousy."

Palikea Peak above Lualualei in the Wai'anae mountains, O'ahu; *Lit.*, White cliff (Pukui et al. 1974:177). Kawika McKeague gives alternate meaning "- the cliff of Kea (Wakea)- he is detached from the processes of the childbearing activities that are evident with the form of these *pu'u*- this distinguished "setting aside" of place for Kea further support that the mountainscape down to Pu'uokapolei is female, is lifebearing, is transcending between this life and others yet to be or that have passed before."

Pu'ukuua Hill in the uplands of Waimānalo; "*Lit.*, relinquished hill"; In legend, Pu'uku'ua is famed for Kapo, Pele's sister, who once left her flying vagina here (Pukui et al. 1974:200); Māhele claimant and former *konohiki*, Kahakai, claims Puukuua as part of his *kula* land (LCA 9037).

Pu'u Manawahua Hill in upland of Hono'uli'uli. *Lit.*, swollen stomach (Pukui and Elbert 1986:237). Can also be a place to grieve summoning the deep emotions

that arise from the gut (Pukui and Elbert 1986:237). An 1873 map depicts a *mauka-makai* trail commencing near Pu'u Manawahua, extending through Kapua'i and ending at Ko'olina (1873 Alexander Map)

Waimānalo Name of land division, road and gulch in Hono'uli'uli, 'Ewa meaning "potable water"; also a famous resting place of Kākuhihewa (Pukui et al. 1974:225).

Wai-wanana Name of a place in Hono'uli'uli, 'Ewa in which *kuleana* were claimed (LCA 902); *wai* often pertains to water, though it may also refer to other liquids including liquids discharged from the body (Pukui and Elbert 1986:377). Wanana is indicative of a prophesy or foretelling (Pukui and Elbert 1986:382). The many references by interviewees to fresh water springs in the area, including springs used for family worship suggest a connection between the name and the place.

Kawika McKeague, a member of the O'ahu Island Burial Council and resident of Hono'uli'uli, shares his *mana'o* on the meaning of *wahi pana* and how Hawaiian culture is strongly rooted to their ancestors and *'āina*:

> 1) Spiritual transcendence imbued into physical landscape- there is a fine line of existence and being within the worlds of the ethereal and "reality" within the entire Hono'uli'uli Ahupua'a. This fine line between two worlds of knowing, perceiving, and attaining life essence creates a cultural/spiritual foundation for this area to provide the means for moments of revelation through various sensories. These *ho'ike* reveal themselves through *'ike papalua*, secondary sight/knowledge, *hihi'o, akaku*, and *ho'ike na ka po*.
>
> Even the name of the *ahupua'a* is suggestive of the deep well of knowledge and understanding that comes from the time of Po. Some of the supporting elements to this line of thought of extrasensory "enlightenment" to delve into different plains of being and existence include:
>
> a) Kapo'ulakina'u- (Kapo of the red streaked with dark) the female *akua* that provides inspiration and insight only through one's dreams- her presence demarked by the *ula* rays of the setting sun, which also belongs to Hina/Papa/Haumea;
>
> b) The area of Kaupe'a- the plains of the *ao auana*, where unsettled souls wander and dwell.
>
> c) Hoakalei- area near White Plains Beach- where it is said that Hi'iaka receives vision of the death of Hopoe and the burning groves of *lehua* on Hawai'i Island.
>
> e) Mo'olelo of Kamapua'a- foretells or gives Kamaunaaniho the *ho'ailona* that will reveal his death at Pu'uokapolei- the smelling burning bristles.

2) Sensory exploits of the female persona- you look at the natural landscape and you begin to understand some of the place names are related to physical, emotional, and spiritual cycles that are a natural part of a wahine's passage through and during childbirth. There's multiple loaded *kaona* [hidden meaning] in these place names but there is commonality again in sensory experiences that sustain the cyclic nature between life and death, ignorance and enlightenment, *pō* to *ao*.

c) Pu'umo'opuna- grandchild; offspring; relative or descendant two generations later.

e) Pu'upoulihale- again the reference to *uli*- any dark color, richness of vegetation, of seed banks; also female *akua* of certain sorcery; short for *'ouli*-study of omens; also the name for the developmental stage of a fetus, as the body begins to form. Pouli can mean darkness, sometimes ignorance (modern mental ascription to the night but a more traditional line of thinking could be that of Po, of knowledge beyond the sensory experiences of ao, of being awake, in the light; the knowledge that stems from such a time of antiquity).

f) Akupu- to sprout; germinate; supernatural.

Section 7 Summary and Conclusions

The Waimānalo Gulch Sanitary Landfill was established in 1987. The importation of landfill material over the past fifteen years has most likely eliminated any historic properties and plant resources related to Hawaiian cultural practices and beliefs that may have been present within the bounds of the landfill property. Additionally, the presence of the landfill over the last fifteen years has already precluded any traditionally established access to *mauka* areas through Waimānalo Gulch.

The accessibility of Hono'uli'uli lands, including the present project area, to the Hawaiians for gathering or other cultural purposes would be radically curtailed during the second half of the nineteenth century. As noted above in this evaluation, by the 1870s, herds of cattle grazing across the 'Ewa Plain likely denuded the landscape of much of the native vegetation. Subsequently, during the last decade of the nineteenth century, the traditional Hawaiian landscape was further distorted by the introduction and rapid development of commercial sugar cane cultivation. Throughout the twentieth century sugar cane cultivation was the dominating land use activity within the project area. Cane cultivation – and the sense that the project area was private property – restricted access inside the project area to employees of Ewa Plantation.

The *'ili* of Waimānalo including (Makaīwa, Lanikūhonua, Ko'olina, and the uplands) has been described by community participants in this assessment process as a sacred area of great cultural importance. Many of the individuals contacted or interviewed for this study have expressed concerns about cultural impacts within and beyond the boundaries of the proposed project area. These concerns are based on a traditional view of the Hawaiian landscape as a continuum, in which the *'ili* of Waimānalo is perceived in unbroken relationship between *mauka* and *makai* lands and to the ocean beyond. This relationship is reflected in the oral traditions mentioned by the people of this land, the sites documented within the project area, as well as the many sites *mauka* and *makai*. The current project area is located along an ancient pathway between the *mauka* and the *makai,* i.e., the uplands and the coast. Both of these two general areas contain diverse and abundant resources. This pathway is traversed by Hawaiian ancestors in both the physical and the spiritual form. The *makai* area was rich in estuarine and marine resources including a canoe landing, a *ko'a, ki'i pōhaku* as well as *lo'i* that sustained a thriving fishing village. The *mauka* area is covered with numerous religious cultural sites.

Community particpants have expressed great concern about the Huaka'i Pō Kāne, also known as the Night Marchers, a monthly procession of the spirits of the dead. According to *kūpuna*, the trail of the Night Marchers in this area runs from *mauka* to *makai*. Hawaiian cultural belief is that these trails are significant and must not be impeded for fear of retribution from spirits of the departed. This type of cultural tradition often goes unacknowledged because it is not an accepted part of the dominant Western culture; however it is very real for many people in Native Hawaiian communities. Hawaiian culture acknowledges a spiritual aspect to nature and interprets it in a way that has made certain Kānaka Maoli (native born) very sensitive to natural phenomena.

According to the state OEQC's guidelines for preparation of cultural impact studies, analysis must take into account culturally significant physical and natural features of the landscape. For example:

> Certain landmarks and physical features are used by Hawaiian navigators for sailing and the lines of sight from landmarks to the coast by fisherman to locate certain fishing spots. Blocking these features by the construction of buildings or tanks may constitute an adverse cultural impact. (Office of Environmental Quality Control 2004:47)

Based on the information gathered during the course of this study and presented in this report, the evidence indicates that the proposed project will affect traditional Native Hawaiian stone uprights (SIHP # 50-80-12-6903).

As described in Section 1(Introduction), when the expansion project's CIA consultation was initiated, communication with the project proponents indicated that the proposed expansion area would be 36 acres—the same 36 acres that the project proponents were having surveyed as part of the project's archaeological inventory survey of the expansion area. For this reason, the initial project consultation letters describe the expansion area as approximately 36 acres. It was only later that CSH learned that the expansion area was actually approximately 90 acres. The 36 acres corresponds with the actual foot print of the landfill cells that will be created and used for refuse. Portions of the remaining approximately 90-acre expansion area will be used for the aforementioned appurtenances. Therefore, although the foot print of the proposed area to be disturbed is larger than the 36 acres indicated in the initla CIA consultation, the actual portion of the gulch to be used specifically as a landfill (36 acres) has not changed.

The consultation results contained in this CIA, which refer specifically to the 36-acre area of the landfill proper, will be augmented and expanded prior to preparation of the Final Environmental Impact Statement. The individuals and agencies listed in Table 2 will be contacted again with the new information about the larger project area.

7.1 Recommendations

The following is a list of community concerns and recommendations based on the community consultation process for this CIA for the proposed Waimānalo Expansion Project:

1. If cultural site SIHP # 50-80-12-6903 needs to be removed, a cultural monitor should respectfully care it for. Douglas McDonald Philpotts, Shad Kane, William Ailā, and Eric Enos all agree that the upright *pōhaku* should be removed from its original place during construction, then reunited with its former space and preserved in place. The removal of the *pōhaku* should be conducted in a cultural manner with a cultural monitor and the proper protocols. There should be a preservation plan in place for future cultural access and these community members should be involved in the mitigation process.
2. The traditional view of the Hawaiian landscape as a continuum should be taken into consideration during the planning process. Waimānalo Gulch is perceived as an unbroken relationship between *mauka* and *makai* lands. This relationship is reflected in the traditions of the Waimānalo area mentioned by the community contacts. In this view, any future activity within the landfill property will further distort and diminish the traditional landscape.
3. The *huaka'i pō* (procession of the night marchers) view plane should be taken into account in the planning process. Several community participants in this study stated that

it is very important to keep the pathway clear of visual and structural blockage from *mauka* to *makai* on the east ridge of Waimānalo Gulch and the west ridge of Makaīwa Gulch, in order to allow the *huaka'i pō* to continue. Several participants in this study cited the establishment of visual and physical buffer zones to protect the *huaka'i pō*. CSH recommends this topic should be addressed in greater detail through further consultation with the community.

4. A series of six natural caves and rock overhangs located in the northwestern portion of the project area were examined and documented by CSH during archaeological inventory survey (Dalton and Hammatt 2008). Subsurface testing (excavation) was conducted at two of these features; most do not contain substantial sedimentary deposits. No significant cultural material was observed or discovered at any of these six caves and overhangs; thus, they have not been designated historic properties. However, at least one community participant (see Table 2) has voiced concerns about possible disturbances to burials in these caves. CSH recommends cultural monitoring of any proposed disturbance to these caves by qualified native Hawaiians familiar with the project area.
5. Although the land has been dramatically altered, there remains a possibility that burials and other archaeological sites may be present in and around the proposed project area Efforts need to be made to insure adequate archaeology and cultural monitoring are conducted at this project site. In addition to this cultural impact assessment, CSH is conducting an Archaeological Inventory Survey for this project area that was ongoing at the time of this report's completion (Dalton and Hammatt 2008); its findings and recommendations should be faithfully carried out in accordance with applicable laws and administrative rules governing historic preservation work in the State of Hawai'i.
6. CSH recommends that community members be further consulted about these and other concerns throughout the planning process. Addressing these cultural concerns is part of the City and County of Honolulu's "good faith" effort to minimize the impact of the proposed project on Hawaiian culture, its practices and traditions.
7. CSH recommends that the consultation results contained in this CIA, which refer specifically to the 36-acre area of the landfill proper, be augmented and expanded prior to preparation of the Final Environmental Impact Statement. The individuals and agencies listed in Table 2 (Section 5) will be contacted again with the new information about the larger project area.

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Appendix A Shad Kane

Mr. Shad Kane (SK) was interviewed by Cultural Surveys Hawai'i (CSH) at his residence on December 6, 2002. Mr. Kane has agreed to re-use his interview for this project.

CSH: Today is December 6th, 2002. Can you state your name and where you were born and what year?

SK: The name is Shad Kane and I was born on the island of O'ahu and my birth date is February 23rd, 1945. At that time my parents, Hattie Kane and Tazoni Crowningberg Kane, were living at Pearl City Peninsula. I think my mom gave birth to me at Kapi'olani Maternity Hospital in Honolulu.

CSH: We're going to talk about Waimānalo Gulch. What in your opinion is significant about the gulch?

SK: I think what you need to understand, anytime you have a discussion in regards to Hawaiian culture and trying to get an understanding of some of the things we talk about, their significance and the role that they play, one of the most elementary things you need to understand is that our history is a fragmented history. And it's unique in that sense. Our history is a fragmented one and in order to understand that, you need to understand that the ancient Hawaiian history was an oral one. It was a history that was passed on from generation to generation, from families to families. And so a lot of this information was memorized, almost held by certain individuals, whether it was someone important within that community or whether it's someone within a family structure whose responsibility was to preserve the genealogy of a family. But we need to remember that it was an oral history. When Cook first came there were a lot of people living here. And in a short amount of time, by 1920, I think there were only some 20,000 Hawaiians in the islands. The significance of that, the purpose of that, is that so many people died for different reasons. We know a lot of them simply died from smallpox. That's the situation in this area we're talking about – Waimānalo, Palehua, Kaupea, Ko'olina – this whole area. There were significant numbers of people who lived in this area that died for a number of reasons. The challenges they could not deal with, the western challenges. Plus a lot of them died as a result of invasions from outside islands – Kahekili, Kamehameha. So O'ahu's history is one that's almost totally annihilated.

The interesting thing about the O'ahu history is its close ties to Tahiti. Because of the many Tahitian associations with the island of O'ahu. Especially this area, the area we're talking about. After having said that, anytime there's a discussion in regards to the things we're going to talk about, in ancient Hawai'i a lot of things were explained in terms of relationships and that there's many different kinds of relationships. One, the most elementary relationship is the *mauka-makai* relationship. There's relationships between us living today, our relationship with our ancestors. Our relationship with the people, our children who are unborn. Today we don't think about these things but these things were important in ancient history. So, when things were done, when structures were built, or events were played out in ancient culture, it was done with an understanding of these many different relationships.

One of the most elementary relationships in ancient times was the *mauka-makai* relationship. And the reason why I bring this one up is because it plays a very important role in having an understanding of the area surrounding Waimānalo Gulch. It's not to say that it wasn't important elsewhere. It may have been. Or I would say it was important all over, that *mauka-makai* relationship. But what makes this area unique is the fact that we have evidence, we have structures that support that *mauka-makai* relationship. Most places most of these kinds of structures – stonewalls, habitation structures, cultural resources – most places they've largely been disturbed or destroyed. But in this respect, this particular *mauka-makai* relationship, there's, I think, sufficient structures that still exist today that you and I can look, see, feel and touch, that supports that *mauka-makai* relationship. And I think if we had a map, if you were to draw a line from the approximate area that may today identify as Ko'olina – If we were to draw a straight line from Ko'olina to Mauna Kapu you'd find that that passes along the northern ridge of Waimānalo Gulch, goes straight up to the ridgeline at Pu'u Manawahua, and follows pretty much a straight line to Mauna Kapu.

There's several events in ancient history that makes this discussion important. One was, with an understanding of the significance of the *mauka-makai* relationship. Some of the information I'm going to share with you, you've probably heard before from other people that you've come to, other informants. And one of this is Waimānalo o Ko'olina was considered one of Kākuhihewa's favorite vacation places. It's a place where he enjoyed coming to and spent a lot of time there. I think he also had a kahuna by the name of Napuaikamau who served as caretaker of Ko'olina. Now, he liked this place so much that he placed a *kapu* on it. And that's documented. We know that he did this. He placed a *kapu* on this place. Today we have difficulty understanding this kind of cultural information. And we've lost the ability to appreciate ancient Hawaiian thought. But the significance of what he did there is that during this period of time, when one places a *kapu* on a shoreline that *kapu* extends out into the ocean and that *kapu* extends up to the tallest mountain in that lineal relationship.

CSH: The whole *ahupua'a*.

SK: The whole *ahupua'a*, that lineal relationship. So the *kapu* is not one spot. We think of it in terms of this one beach but no, in ancient Hawai'i it was not just the beach. Because the ancient understood that all the things up above and everything out in the ocean, surrounding area, impacts this particular site. So when he placed the *kapu* on it that *kapu* preserves the landscape. So he did this. Don't hold me to dates but I think Kākuhihewa lived around the 1600s, around that time. So this particular *kapu* is that old. Now the *kapu* extends up to the tallest mountain in that area. The tallest mountain in this lineal relationship is Mauna Kapu. Now there was another documented site that myself and Nature Conservancy and a bunch of other people tried looking for a particular site or small *heiau* that was built on the slopes of Mauna Kapu. It's in Sterling and Summers' *Sites of O'ahu*. I think it's McAllister's – It's referred to as a *heiau* but it was a small one. I think it was four feet by six feet so it must have been something small, a small little platform. But perhaps they may have had a koa on it or a shrine. But the significance of

this particular structure is not so much its size but the location that it was built, and when it was built, when it was laid out. This particular *heiau* which is one of the few – and the only one that I know of – I don't know about any other this particular small little platform was built of both basalt and also coral. Which is unusual. Now to most of us today, that will go right by us. But the significance of the coral is the fact that it ties Ko'olina to this place. So what it does, it provides supporting evidence for the idea of the *mauka-makai* relationship in ancient Hawaiian times. Now, this lineal relationship, there's a number of documented sites and there's a whole bunch of undocumented sites within this lineal relationship between Mauna Kapu and Ko'olina. There's one undocumented *heiau* that's maybe a hundred feet by hundred feet. And its walls are probably, if you take into consideration the amount of erosion and the amount of soil that's been deposited within the *heiau*, it's about four feet – the walls sticking up above the surface. So depending on where the cultural layer may be within this structure, we suspect within this whole one hundred by hundred feet, the cultural layer may vary from perhaps just a few inches below the surface to maybe a foot to two feet below. That being the case, the walls and inner walls would be perhaps, it's probably like around five or six feet. So it's a substantial structure that exists today.

The only documented information up here is Mauna Kapu. Now between Mauna Kapu and Pu'u Manawahua there's a whole bunch of undocumented sites. But before we get to that, let me just share the information on this particular structure. It's about a hundred feet by hundred feet. The walls perhaps four to five, maybe six feet. The interesting thing about this particular structure is that it has enclosures on four of the corners. And there's also shrines. That's very obvious, even to someone who doesn't know anything about Hawaiian cultural resources. There's a central stone in this particular structure. The stone is facing almost due north. So, some of the people that I've shown this site to, there's several opinions about it. And the thing about Hawaiian stuff is that I don't think anybody can really say with certainty today what we're looking at. So what we try to do is to share the information. And we try to get each other's opinion in regards to what we may be looking at. And we try to come to some kind of consensus amongst ourselves where we can agree on with respect to what we're looking at. With respect to this particular *heiau* I think most of us agree on it serving two purposes. One, it may have been a navigational *heiau* because of the central stone. And there seems to be a lineal relationship, the way it's set up, in the rising and the setting sun. Now, in addition to that, that supports the fact that it may have been a navigational *heiau* is the fact that, when we think of all major islands, there's places on the south side that is referred to as a point of departure. For example, on the Big Island, South Point, Ka'ū, the shoreline and the rocks. Kaho'olawe. Kealaikahiki Channel. It's all on the south side. So, likewise, this is basically the same kind of location with respect to the other islands, when you compare all the other islands. Now what makes it interesting is the fact, again, is the Tahitian connection with the island of O'ahu. Kūkaniloko is built here, the island of O'ahu. I think Marion Kelly refers to 'Ewa as the celebrated land of our ancestors. And other people too make references to 'Ewa as the land of the ancestors. And when they use that term ancestors, they refer to our Tahitian ancestors. There's a lot of Tahitian associations, Tahitian stories that's associated with this region. There's also structures associated with this region. I'm just trying to give you some understanding of the connection with this

heiau, what it may be, and that it may have been a navigational *heiau*. In terms of pointing the way home. There's a number of structures in Kalaeloa, the former Naval Air Station Barbers Point, an area that we know had the ancient name Kanehili. But the interesting thing about all the structures in the former Naval Air Station is the fact that not only is it made entirely out of coral, but when you take a look at some of the structures – For example when you take a look at the habitation structures and you take a look at one particular *heiau*, you find differences in the construction. Most Hawaiian stone masonry, dry stone masonry, the stones are laid flat and they tend to lock in the corners. Tahitian stone masonry, what they simply do is they take upright stones and they stand them up on the outside and they fill them up. And this particular *heiau* and some of the structures in Kalaeloa, what you find is an integration of Hawaiian stone masonry and Tahitian stone masonry. So it supports the Tahitian idea that they're associated with this region. There's a number of *mo'olelo* that ties us to Tahiti. One that really makes it clear is the story about – Kahai is one of the Tahitian chiefs who's credited for bringing the first *ulu* tree to the island of O'ahu. There's different stories, different places where he may have planted. But nevertheless the stories are real stories. And there's one particular story that refers to – It's a story about Nāmakaokapāo'o, who's the son of Kahai. You also need to understand that Kahai is also the son of Mo'ikeha. And Mo'ikeha is the brother of Olopana, who was killed by Kamapua'a. So you got to feel of how everything fits together. So, in this particular story, apparently Nāmakaokapāo'o and his father Kahai were somehow separated when he was young, as a boy. And he goes off and he lives his own life. And the story is that Kahai takes his *'ahu'ula*, his feather cape, and some other items and buries it beneath the *ulu* tree somewhere in this particular area. And the story is, if Nāmakaokapāo'o wanted to know his father, he would need to seek out an ulu tree and look for the father's *'ahu'ula.* And if he finds it, then he would know who he is. Okay, Kahai's name is – Hawaiians in ancient times, their names were long. So Kahai is also referred to as Ka'ulu o Kahai, the ulu tree of Kahai. If you say that name quick enough it almost sounds like Kualaka'i. So Kualaka'i may be a corruption of the word Ka'ulu o Kahai. So Kahai is credited for going to Tahiti or to Samoa and getting that ulu tree and coming by way of Tahiti and planting it at a place called Kualaka'i in Barbers Point Naval Air Station, which we know of today as Nimitz Beach. Now the significance of this story is that Nāmakaokapāo'o needs to find out who he is. And the deeper meaning to this is not just Nāmakaokapāo'o to find out who he is, it's for all of us to find out who we are. The story is, he did not go to Tahiti to get the *ulu* tree. He went to Samoa to get the *ulu* tree. Now this story is not unique to just Hawai'i. It's a story you find all over the Pacific. The story may vary a little-bit. But the significance of the *ulu* is the fact that it's viewed as, it's symbolic of rebirth or renewal. That's the significance of this story. The significance of the story is that we may have come from Tahiti but if we go back farther, we came by way of Samoa. I think only recently are we beginning to realize that the migrations of the people into this region came by way of Samoa. There's actually two migrations I think. One from this region and one from further up north.

Getting back to the *heiau*, because of our oral tradition it's so important that our children – If we take ourselves back– three, four hundred years ago – it's so important that our children know where you came from. So we need to know – if you got to go home – where home is. So that's the significance of navigational *heiau(s)*. This particular *heiau*,

like others in our islands, is pointing the way back home. Within this *heiau*, in addition to enclosures of the four corners and the central stone, on one side there's a lot of stones that we feel we're looking at just the top of them. If you look at this particular *heiau*, at least for me and my friends who are close to me and who look at this kind of cultural resources, we try to look through what has been disturbed and look for undisturbed sections of the *heiau*. So, if the cultural layer is about a foot down, and we got a stone that's buried within a major portion of this *heiau*, and it's buried in that cultural layer, the first thing that comes to mind is it was put there. If it's on the surface, our best guess is that it doesn't belong there. It just somehow ended up there. But there's a whole row of stones. And they kind of run *mauka-makai* and they run, as you're standing from the top stone and you're looking *makai* at these stepping stones in the *heiau*, you're looking southwest, that general direction. Not that it may be accurate but in a symbolic term it's important. Because, if in fact these stones were placed there, they were placed there for a reason. Because everything else in this *heiau* is cleared with the exception of the central stone. But, if in fact, the central stone and you got this series of stones on one side, in a row – If it's a navigational *heiau* there would be a map there. So we were searching for a map. And one particular stone, initially we thought had represented the island of O'ahu but it would be an excellent stone to represent all of the islands because of similarities with all the islands. Similarity – Not so much Kaua'i, because Kaua'i is an older island. It's been further eroded. However, when you take a look at O'ahu, Maui, the Big Island –

Much of what I'm sharing with you I realize it's hard for you to get a picture of what I'm saying. There's one particular stone that's maybe two and a half feet by two and a half feet. And it's shaped like the island of O'ahu in a sense that what you have, you have two high points in the stone and you got a saddle in the middle. One high point, in our opinion, represents the Ko'olaus. The other high point represents Wai'anae. The saddle represents the central plains of O'ahu. You use the same thinking, the other islands. Maui – West Maui mountains and Haleakala. The central plains representing the center of the island. Same stone can represent the Big Island, representing Mauna Kea, Mauna Loa, Hualalai and the saddle. In a sense it could also be representative of Moloka'i, but perhaps maybe not as clear. Likewise, Kaua'i because Kaua'i has been much more eroded. But our opinion is we're looking at the best representation of the islands, of all the islands. And this if this is a navigational *heiau* a map would be important. Now, when we look at this particular stone, and we're standing on the island of O'ahu and we're looking south, behind us is several stones embedded in the cultural layer. As we're looking at the other stones in the cultural layer, the first thing comes to mind – And every one is interesting, when you look at it. One has a big hole in the center and, in our opinion, it perhaps represents an atoll somewhere south of us. And then there's other stones, in our opinion, represent way finders or voyagers that they used, places to pick up on their travels. In addition to using the stars, these were stops that they would use to find their way around. So, in our opinion, because of all of this – the stones, the central stone, and everything else – we feel this may be a navigational *heiau*. One of the other things that we think that this *heiau* was used for – as a place of sharing information, because of the enclosures, four enclosures on the outside corners. On these enclosures we have four walls, elevated platform with upright stones that's a part of the elevated platform.

CSH: Did you say the walls were four feet high?

SK: The main structure – about a hundred feet by hundred feet – it's almost a perfect square. That particular wall, in some areas right now it's about four feet. But our thinking is that a couple hundred years of erosion – Our thinking is that some of that the walls are buried. So our best guess is that maybe this structure is about four feet from the inside. But the corners is what makes it extremely interesting because in the corners we have enclosures that's built onto the outside corner. And it's a very obvious enclosure. It's not a habitation structure. There's an elevated portion on it. We suspect if were to clean it out we'd probably find smaller stones on the top. There's very obvious shrines and *koas* that's associated with elevated platforms. But one of the other things we feel it may have been used for was a place for passing on information. Whatever that may be. That may simply be somebody sharing navigational information. Or it may be somebody sharing medicinal information. Or it may be somebody sharing religious or genealogical information. Whatever that might be. But it's very obvious that it's a place for sharing important information. Elevated platform, the *koas*. In our opinion the *koas* obviously serve as a podium. The *koas*, in our opinion, because it's oral history, it's very important that when you speak, you're heard. So you want the people you're talking to, you want their attention. If you're going to say something, they need to hear what you're saying and they're going to have to remember it because you're not going to say it again. These structures were built in a manner to get one's attention. So, in other words, when that person, whoever he is, who's standing on this elevated platform and speaking, is not speaking alone. He has others with him. He has a *koa*. He has his ancestors and everyone else. People know that in ancient time. We don't understand this kind of thinking today. We're getting lost but our *kupunas* knew this. So they understand how important it is to remember, how important it is to speak that's what the Niho Palaoa is. It gives one the authority to speak. Something so simple yet we don't understand how important it is to speak and be heard. These simple things was so important to our *kupunas*. So when they built these kinds of places, unless you have that kind of understanding you don't know what you're looking at. If you look at it in scientific terms, it's just a bunch of stones sitting there. And if you can understand the thinking three hundred years ago, all of a sudden the bunch of stones become – Oh, it's very interesting, all of a sudden. And you see that if you have that kind of understanding and you go to this place. And you look at these stone structures. It shouts out to you what these are. So these four enclosures, in our opinion – It's not Shad Kane's but a bunch of other people who've sat down and talked about – It's very obvious it was a place of sharing information. What makes it very special and this ties it to Waimānalo Gulch – If you take a look at this map, take a look at this photograph, all these gulches here, you think of this place as a barren region. As a matter of fact, one of the reasons why they chose Waimānalo Gulch is because of water. Right? Today the most obvious thing when I look at this is that there was water here. In order to gouge this thing out, there had to be substantial amount of water. Okay, getting back to the *heiau*, there's many – You read *Sites of O'ahu* or you read a lot of the other stories with respect to this region, you find out there's a lot of stories with respect to water, a lot of stories with respect to springs. This *heiau* – Two of the *makai* – This structure is kind of – It's not perfect flat. One portion, the *mauka* portion, there's an entrance on the *mauka* portion and there's an entrance on the *makai* portion. The two

enclosures on the *makai* portion, they have *tī* leaves growing in them, full-grown *tī* leaves. So we know they've been there for a long time. Another thing about *tī* leaves, the significance of *tī* leaves, is the fact that we know it's difficult to propagate from seeds. So somebody had to stick them in the ground. And we know it wasn't a cowboy. And we know it wasn't anybody recent who did that. So we suspect it had to be one of the *kūpuna* that planted it. Now, on one of them, the one on the Wai'anae side, there's the full-grown *tī* leaf and there's a whole series of boulders on the *makai* side of this enclosure. Now, most people, most of our *kupunas* in ancient times, when they built structures, from our experience in looking at them, they were basically geometrically shaped. We find them like square, rectangle, or triangle sometimes. They were basically geometrically shaped. In some cases you might find something that's round. But not very often. Normally square, rectangular kind of stuff. But not very often you're going to find an irregularly shaped one. Amongst those boulders, where this old-grown *tī* leaf is, there's an irregular-shaped wall. And we've had several people come up and take a look and try to figure out what the heck is this irregular-shaped wall. Because we know they don't generally build something like this. And one of the people that came up was a lady by the name of Mikilani Ho. She's a Hawaiian archaeologist and she has a number of publications out. But she's considered an expert in petroglyphs. So she came up and took a look at it. But she was there to look at petroglyphs. Because our thinking was, this *heiau* is on a trail, *mauka-makai*, so we're looking for petroglyphs to support the trail idea. So she came up there and she came up with something totally different. And when she brought this up, everybody seemed to understand exactly what she said. And when she took a look at this irregular shape wall, she said it was used to contain water. It was not necessarily used to stop it, but it was used to slow it down. But she was saying that was the beginning of a spring. And when you walk through the grass below the spring, this wall, was a riverbed. It's a riverbed that went all the way down and dropped off on the side of the wall that drops down into the valley. Not to say that's the only spring. There may have been hundreds. But what she said is that this *heiau* was built on a series of springs. And we tried to understand – When we first started looking at the amount of effort – It took apparently a lot of effort to build this one structure. We can't imagine people putting in that amount of effort and not having water. So the feeling is that this particular place is built on several springs. On the opposite side, the other enclosure on the Honolulu side, similar situation. Series of boulders, no wall, old-grown *tī*. But when we started walking through the grass there's a dry riverbed that goes all the way down. Stones all over. On the sides it's dirt but as you come into the lower area depression it's all stones – river-worn stones. So, the feeling is that this particular area was built on water, built on several springs which supports the fact that at one time there might have been a substantial amount of water that actually created Waimānalo Gulch. I've shared a whole lot of information on only one structure. I don't know how much time you have but that's only one. There's some other *heiaus* up there. Now you might be wondering how come it's not documented. We don't know. We don't know why it's been hidden. But what we do know is that it has been hidden for a long time and it's only been recently that it's been found. And it's buried under California grass and weeds for the longest time. There's a whole story on how we found this but that's another whole story, how it was found. Now the big question mark is what happened? Why is this a place that was totally disappeared.

And what makes this whole place up above the landfill important is the fact that nowhere else can you find a place in all the islands where you find so much cultural structures that supports that *mauka-makai* relationship. Below this *heiau* there's other enclosures. Marion Kelly referred to one as a *heiau* – two of them she referred to as a *heiau*. They're small. One I would say is about thirty by thirty feet. It's a terraced structure – a lower portion, upper portion. The lower portion is all paved with stones. The upper portion is paved with small stones, *'ili'ili* stones. And the lower portion, there's an upright stone that's actually laying on its side but we suspect it may have been standing up at one time. There's another *heiau* further down the valley, directly in line with Waimānalo Gulch that's set up – This particular structure – We got the opinion of *kumu hula* John Kaimikaua because John Kaimikaua – He's not too familiar with the O'ahu tradition but he's very familiar with the Moloka'i tradition. So when he speaks, he speaks in terms of what he knows of Moloka'i. But our thinking is that there may have been similarities here. Now, Moloka'i, they have several *hula heiaus* that are still in place up there. And, in any case, the *hula heiau* is built on a slope. It's built on a hill. So there is one *heiau* that's up above Waimānalo Gulch that's built on a slope. And I would say it's about fifty feet long and then it goes into the hillside, because it's a slope. So it has a high wall. In one portion the wall, I would say, is maybe about twelve, fifteen feet, on the slope side. Then the paved portion actually disappears into the hill. We suspect that because of the amount of erosion, we suspect that the paved area may be a little bit bigger. The actual exposed portion of this paved area is maybe about twelve feet. Maybe a little bit more than that. But we suspect it may go further in. The actual length of this particular structure is about forty, fifty feet long. And what makes it interesting is it looks like they gave up building it because we can see a portion of it that they did not finish. So we're actually looking at the inside, not the finished wall. Which makes it interesting because I can't think of anyplace else where you actually have a *heiau* that stopped being built while it was under construction. They decided to stop. Why they stopped, we don't know. But John Kaimikaua's opinion is that this is a *hula heiau* we're looking at. And Marion Kelly said the same thing. Marion Kelly looked at it. She supported that it's a *hula heiau*. Simply because it's on a slope. And both Marion and *kumu* said that in ancient times what they used to do, is that so that everybody has an unobstructed view, they go on a hill. And you watch across the hill to watch the performance, whatever the performance might be. So it's that kind of place. That's one. And there's a whole bunch of other structures in this particular area. And anyway, is that enough? This is just supporting information with respect to that *mauka-makai* relationship. And these are structures that are there today, to be seen. I'm sure that in time more people will be able to have a chance to take a look at it.

CSH: Can we talk about the trail that goes from here to the ridge?

SK: Okay, a lot of the information that I shared too are things that you can actually find from different resources. And this is one. In ancient times there were several trails that people would take to come from Honolulu to come to this side of the island. I think there were three ways to get to Wai'anae. One was by way of Kolekole Pass. One was by way of Pohakea. Another was by way of Pu'u Kapolei. Three trails. Obviously, another one along the shoreline which was the longest way to travel. Farrington Highway is very

obviously a trail. Now, in the context of Waimānalo Gulch, what makes this extremely interesting is the fact that there's a series of petroglyphs that was preserved by the developer of Ko'olina or West Beach Estates. When they first started developing – There were a number of archaeological surveys that were done early on. And one of the key persons was Aki Sinoto. I've read a lot of Aki's work. Very interesting cultural information that he found – that whole area over there. And several other people. The interesting thing is that the first archaeological survey that was done was 1930 by Gilbert MacAllister. Between 1930 up until the '70s nothing was done. So 1970 was the start of all this discussion in regards to building in this whole region. And because of the requirements for the EIS and doing a cultural assessment – All of a sudden, since the 1970s until now, and the development of the Campbell Industrial Park and Kapolei and the resort area, we had all these archaeological surveys that came up. So Aki Sinoto is one of them, amongst others. But one of the things they discovered is the fact, in addition to all the information in the lower plains, in addition to the sinkholes and the bird bones, they also found what I think they refer to as the alluvial level or the higher elevation up above the coral plains. And what they found, they found habitation structures, they found burials, and some petroglyphs. I think they actually found two. I think they found one that's actually inside Waimānalo Gulch, up on the higher ridge. I've never seen it. Another one they found that was preserved at the entrance to Ko'olina. Now the interesting thing about petroglyphs is that most of them are built identifying trails. And you find them along ancient trails. And the significance of these particular petroglyphs here is that it actually defines the intersection of two trails – Farrington Highway and the *mauka-makai* trail. That *mauka-makai* trail is supported by everything else that I've shared with you in respect to the cultural sites up above. We need to understand the significance of that *mauka-makai* relationship because that was one of the relationships in ancient times. In ancient times, it was matter of life-or-death resources. It was food. So it was establishing that relationship between the people up above and the people at the ocean. So these were your closest friends. These were the people – So you don't have to go dive for fish. You just go down and you take what you got to share. You get fish from people down below. So these were your neighbors. So obviously there would be *mauka-makai* trails all over the islands. The significance of this one is the fact that you have structures that supports that idea, that's still intact today. And the petroglyphs along Farrington Highway is one of those supporting pieces of information.

CSH: We need to document access. So when you guys go up there, which way do you guys go?

SK: In terms of gathering resources today?

CSH: Or to go up to these places up here, up to the *heiau* that are undocumented?

SK: We go through Palehua. That's why I say I've hiked most of it. The only area I haven't hiked was actually the stretch from Farrington Highway up to the Timberline intersection – of the Palehua and Timberline.

Sometimes when you've seen a lot of different structures, and you have something to compare it to, a lot of time all you need is two or three stones to get an idea of what might have been there, that might still be intact. So a lot of times we just look at the surrounding area. If we find two or three stones that seems to be aligned and then we look down slope

and we start seeing stones scattered all over the place down below – And if it looks like a place that may have stopped some erosion or it may have been a place where soil might have come down and then hit an obstruction that caused soil to deposit, then there may be cultural information buried there. But then when you look at a slope, you look at an area, you can tell whether the soil passed over it and went further down. Or may have stopped up against an obstruction. But you can only get a feeling for this by actually walking up and looking around.

CSH: Did night marchers come up in any of the stories?

SK: No. I know a lot of stories associated with that. Especially this area right here. And the significance of this area in terms of night marchers – You want me to share a little bit about that? One of the things we've done and we're still trying to do, we're trying to get support for restoring the ancient Hawaiian names. And I think that's happening all over the place right now. We've been able to restore one name so far. We've been able to change the name of Barbers Point to Kalaeloa. We did that. We changed that. But there's other names we want to change, to restore. There's a lot of them in this area. The significance of ancient names is the fact that – There's a lot of stories, mo'olelo, there's a lot of resources, legends, all these stories refer to different places by name. When you read these stories you don't know what they're talking about unless you know where the places are. So the thing is that we do have a history but it's hidden in ancient names. So in order to get people to understand that every area of this island, of all the islands, there are stories and histories of that place. But it's hidden. So one of the names of this region is Kaupea. And there's actually two ways of defining Kaupea. In order to understand the significance of Kaupea is kind of understanding how ancient Hawaiians thought in terms of life, death and sleep. Our *kupunas*, the ancient Hawaiians, believed that life, death and sleep overlap. The thing is, trying to explain this in western terms is hard because there's no real word to explain it. The words may be confusing so try to see through the words. In ancient Hawaiian there's two energies in all of us. One was defined in terms of the dream spirit. So when you go to sleep, when you dream, our *kupunas* felt that that dream was something real. In other words, you had actually visited – Your dream spirit would leave your body and travel. And you had an opportunity to visit different people. You may have an opportunity to visit a departed loved one, a grandmother. So if you were a pregnant lady and you woke up in the morning and you had a dream about your grandmother or your great-grandmother and she shared a name with you, you took that seriously. You actually visited her. She's telling you this is what you should name your child. And, likewise, if you were a *kahuna la'au lapa'au* and you dreamt about someone sharing thought with you in regards to using a particular plant to serve a particular purpose, you took that seriously. That was real to you. Somebody's giving you good information. Now, in order for you to wake up from your sleep, that dream spirit got to come back. Because the other energy within you is the energy that supports all your life functions – your breathing, your heart, your circulation. Without that dream spirit coming back – That simply defines death. You die. So that's why in ancient times when the first sailors came over here, they would come across a family, they would be chanting over the body. What they're doing, they're trying to get the spirit to come back. We refer to it as spirit but it could also be – We could also look at it in terms of one's spirituality. In a

Christian sense – I hate comparing Christian with Hawaiian thought but sometimes in order to help some of us today to understand, sometimes we need to do this. But we all as Christians today know that we all got souls. Is this what they're talking about? Now, what they also believe is – Say your dream spirit would not come back and you're basically dead, the ancient Hawaiians felt that if you were respectful of your *'aumakua*, you were respectful of your parents, you were basically a good Hawaiian, you had the benefit of your *'aumakua* to carry you somewhere. Take you to a place that is referred to as Laina Kauhane. Every island has it. On this island, the one that I know of for sure is the leina stone of Ka'ena Point leinaaka'uhane. The interesting thing about that stone is that it follows the ridge line of the Wai'anae Mountains. If you look at the map and you follow the ridge, the peaks all the way, and you come down Ka'ena Point, right down the slope, you land right on the *leina* stone. Now if you follow that same ridge line back up the mountain range and you come all the way across these mountains over here, you come straight down, you come right down to Kaupea. Pu'u o Kapolei sits right at the bottom of this hill. Kekuapo'i, when she wrote a kanikau with her husband Kahahana, one of the things she said in this very lengthy kanikau, she said that her husband's spirit entered that *milo* by way of Pu'u o Kapolei. Us trying to understand what she said, and having talked to a number of different people, she was saying that perhaps Pu'u o Kapolei is a conduit to another world, right in the middle of Kaupea. Okay, so on one end you got the leina stone and on the other end you got Pu'u o Kapolei that may have served as a conduit also, surrounded by Kaupea. Now, if you're respectful of your *'aumakua*, you will have the benefit of them taking you to a *leinaaka'uhane* and helping you leap into the next realm, a better place. If however, you were not respectful of your *'aumakua*, you were not a good person, you were a sinful person, you would not have that advantage. So our *kūpuna* felt that in that case you would be banned to barren and deserted places such as an Aokuewa . Aokuewa is a place of wandering spirits. Aokuewa is Kaupea. So, if you did not have the advantage of getting to the next realm, you would be doomed to live at Kaupea right back here. In a Christian sense, you got heaven, hell – You got one more place. The third place is purgatory. Okay, in Christian thought, purgatory is somewhere else. We don't know where but somewhere else. Our *kūpuna* said purgatory is here. Kaupea. Is Kaupea purgatory? So a lot of the stories that's associated with night marchers, most of them are associated with Aokuewa. These are the places that these kinds of things happen. To make it more real for you, in the context of what we're talking about here, I just retired from the police department a couple of years ago. So I've read all the police reports. That was my job – reading all these kinds of police reports. More than anyplace else on the island of O'ahu, the police reports over here were the accidents. We had so many unexplained accidents right along this intersection, passing through Kaupea, where we can't explain why the guy decided to make a ninety degree turn – No alcohol, the guy's okay, not a wacko, an average citizen, he just decides to make a right turn and drive off and hit the telephone pole and kill himself. So many. In addition to that, some of the recent information is that when they first started building the Kapolei Middle School, they spent I don't know how much money – Because the Kapolei Middle School is a high-tech school, it's all air conditioned, and every classroom has computers. So they spent a lot of money on a security alarm system in certain rooms because of the amount of computers, the amount

of stuff in there. They got audio, they got video monitors in the rooms. Not just sensors. Not just motion detectors. Not just that. But they also got audio that triggers, and they got video monitors that kick on in certain rooms. When they first opened up they had an incident – one o'clock, two o'clock in the morning – where it's monitored by somebody at the main office in Sand Island. This particular lady was watching this monitor. All of a sudden this red light comes on and she checks and it's an indication that someone is breaking into a room at Kapolei Middle School. She puts on some equipment and then video comes on. And then audio comes on. And she hears kids having a good time in the room. Lot of noise of kids yelling and screaming. And when she puts the video on she sees figures moving around. It's dark in the room but she can see little figures moving around. So she calls the principal. She calls 911. She calls everybody, the custodian. The principal lives in Kailua, drives all the way out there. The custodian gets there. They go in the room. They open the door. Nothing in that room. Everybody's upset. Check with the lady. The lady says "I got the video." They go into town. She switches everything on. Guess what? Nothing. That's typical of these kinds of places. Now, when they first shut down Barbers Point Naval Air Station they had to hire private security guards. And they had a hard time keeping them. Because the security guards – When the Navy moved out, they had a lot of abandoned buildings. The security guards were chasing children around in these abandoned buildings. And then the kids would disappear in the locked room. They go in the room, open them up, nothing. I mean, these guys were so scared, upset about it, that they actually called the police department. Most people, when that happens to you, you just – and don't call the cops. But these guys took it so seriously, that they were certain the kids were there that they called the police department up. Similar stories happened at the water park. The new building they just built, Kapolei Hale, they must have blessed it two or three times already. There are stories about that place – about drawers being left open and stuff like that. But, anyway, these stories that I've shared with you are recent stories that go way back. But they're typical of Aokuewa's around the island. That's what Kaupea is.

The next thing about Kaupea. The name Kaupea, if you take it literally, refers to the Southern Cross. One of the constellations that the Polynesian voyagers used in their travels, both north and south, is the Southern Cross. The Southern Cross is a very important constellation. It didn't necessarily tell them what to look for but it told them if they're going in the same general direction. So, in other words, the higher latitude you go, the Southern Cross is lower on the horizon. The farther south you go, the Southern Cross is higher up above you. So it basically tells you whether you're moving in the right direction. If you're going south, then you should see the Southern Cross. It should get higher up in the heavens. So, the ancient Hawaiians, when they did things they lined everything up. Not only did they line up heiaus, the *mauka-makai* relationship, the rising sun, the setting sun, structures – They're all connected. And what they also did, the *ahupua'a* lines, the *'ili* lines, also had a significance. We suspect – and not just me but I think I talked to Marion Kelly and a bunch of other people – These are things that we lost. Agriculture came in and they started bulldozing they destroyed all the boundary markers and things like that. So we have no idea where Kaupea may have been. But because of the name, because of the name Kaupea, we suspect that it may have been a marker pointing to the Southern Cross. So these are the places that surround Waimānalo

Gulch. So I'm talking about this because it's important to us. It's important to us as Hawaiians. And it's important for us to have a sense of direction in our lives. And it's important to us in terms of connecting with our *kupunas* and being able to share this information with our children. It's not about us. It's not about you and me. It's about everybody after us.

CSH: Thank you.

Appendix B Douglas McDonald Philpotts

Interview took place on August 12, 2007 at Douglas McDonald Phillpott's *hale* in the *ahupua'a* of Hono'uli'uli and the *'ili* of Waimānalo. Interview conducted by CSH staff Kēhaulani Souza and K. Lehuakeaopuna Uyeoka.

CSH: Can you please tell us your full name and your connection to this area?

McD: My name is Douglas McDonald Philipotts, but I go by McD. I live in Pālehua and I've been here since 1970, July 1st, which happens to be my 12th birthday. Prior to that we lived at what's now Paradise Cove next to Lanikuhonua. This is where I learned to swim and took my first steps. Lanikuhonua was my great grandmother Kamakila's house; her parents James and Abigail also had their ranch house in Hono'uli'uli so my children are now the sixth generation here. I also believe are Hawaiian genealogy from Kauai comes back here many generations earlier.

CSH: What are some of the sources or who are some of the people that have shared knowledge with you about this place?

McD: I've gotten most of what I know from just being here, and having an intense interest in the place and its history. I think compared to most places very little has been written about this area. Ida Von Holt's *Stories of Long Ago* is probably the best historic material I've read about this area. *Sites of Oahu* contains some material on this specific area - however it's also self-contradictory and very fractured. Kehau, the land claims you have provided me along with *mo'olelo* from Kupuna like Analu's, stories of the five brothers and the night marchers are also very insightful. Many old maps showing historic water tunnels and reforestation efforts also help to understand the water resources that were here to support pre-Contact populations. Ida's son Herman Von Holt also shared many stories of this place with me; he also spent most of his life on this land and like his father became manager of the Campbell estate for some years. Jimmy Greenwell who was the manager for Hawaii Meat Company, the ranch here in the 1930s and 40s, also had lots of good information as well as building its ranch house that we live in. But by far the greatest resource to share with me has been this place and to have the great fortune to spend a lifetime and now raise my children here.

CSH: Can you share with us your *mana'o* about why this place is so special?

McD: Whether you're a spiritual person or not you will be impressed by the sheer beauty of this place, and the spectacular views from here. But many who come here are surprised by the sense of mana here. The view is special here, from the top of Pālehua between Pu'u Manawahua and Mauna Kapu you can see all the islands and all of the mountain tops on those islands, this is the only place in all the islands you can do this. Hermann von Holt showed me the trench that still remains on the Honolulu ridge of Mauna Kapu and said another one in the south was taken out when the road was put in. It was right where the big blockhouse is now. Herman said they were told by the Hawaiians in the ranch camp

at Hono'uli'uli this was a most sacred place, and the place of great mana, and that is why I think the Hawaiians lived here and their spirits never left. This could be part of the meaning in the name Pālehua. In addition to the unique view of the islands I have observed the annual journey of *lā* from here. It starts on the first day of the celestial year on the winter solstice. At sunrise the sun can be seen rising from its house Haleakala as it begins its journey northward it rises from the west Maui Mountains and then from East Moloka'i. Reaching O'ahu it rises from Koko Head and moves from peak to valley north through the Ko'olau's reaching its destination Mokumanamana in exactly half a year. Then on June 21st, the summer solstice, the sun sets behind Kaua'i and starts its journey back home. On this solstice line connecting Haleakala, Pālehua and Mokumanamana are also several *heiau*. Twice a year on the equinox the sun sets over Pu'u Heleakala. To me these and many other things seem to be more than coincidence.

This area has great value in the collective because there is a window into the life of our culture pre-Contact. It's not just about how they built their house sites, what's important is where they built their houses in relationship to where the water was located. They built their houses out there, in the wind, with the risk of it blowing away in a big storm, because they wanted the view. The five brothers, the watchers, their house sites are still there. It's all about the view. How can we relate to these stories if the house sites are gone, or if you don't know where the spring is, or if you don't know where their food was? This is the whole picture, like that beautiful *ahupua'a* poster that Kamehameha Schools has, and it is right here you can walk on it! Due to the land use being limited to forestry, watershed and ranching, the area's pre-Contact archaeological sites have been preserved. For those who have an interest in really understanding or trying to step back in time, just for a moment, for a visit, they can. You can walk from the fishing ko'a to the lo'i or you can stop at the spring or the shelter cave or the ahu the *heiau* the *pā*. You can go a to the forest for lapaau and you can watch the sunset from the front of their hale and if you employ the right senses you can do all this with them, they are still here, that is why this place is so special.

CSH: Can you talk about when you were younger and some of the things you learned from the people and the resources here?

McD: It really starts way back with Lanikuhonua and fishing. Uncle Sunny, Netty's father, kind of clued me in on throw netting. My Dad taught me how to get the net to open up but Uncle Sunny was the one that taught me how to use my senses to know where fish were. One night I was running out with my pole to set lines and he goes, "where's your throw net?" and I go, "it's dark now, you can't see the fish now." Then he said, "Go get your throw net." So I came back with my throw net and he said, "now where's your favorite spots?" And I said, "well its over there and over there and over there, but you can't see the fish" and he goes, "just go back to your favorite spots, you know every rock underneath there, you don't need to see the place to be able to know your way around." And I said, "yeah I can do that" and he said, "Just go to your favorite spot and stand there and wait until you feel the fish. When you feel the fish, you'll know, you'll feel them."

So I think that was the first thing that clued me into knowing that we have this other sense. So when hiking up here and going through the grass I feel things and I just turn

right or left, or just open the grass in front of me and there's a huge ahu or a cave sometimes I think they led me right to it. So that's been the path, the journey about knowing, and learning and seeing different things and getting chicken skin many times. When I was younger I spent a lot of time out there in the woods at night just cruising, checking it out. I got spooked every so often out there, but then I get used to it.

CSH: What were some of the most abundant and important resources for this area?

McD: By far the most important resource is always wai, freshwater, and with no year-round streams here it was definitely not an abundant resource. As you know *makai* there were sink holes with freshwater on the 'Ewa plane. Near Lanikuhonua, fresh water comes out right in the sand, between the rocks there. You can turn a gourd upside down in the ocean and get fresh water if you know where. Knowing where is the key, it's the same thing up *mauka,* there are no streams. There is what geologists call perched water. Places were water flows to the surface on top of impermeable layers of soil covered by a layer of fractured rock. A few of these at lower elevations still produced water today even in the driest times of the year. The greatest number of these springs are found between 1,200 and 1,800 foot elevations. However due to the reforestation efforts in the 1920s these springs no longer produce water year-round. This is also the elevation with the greatest concentration of archaeological sites. Most of these springs still have terraces and loi' walls around them. The forests above also held substantial resources, but the ocean below by far had the most substantial resources and the leeward exposure provided the best conditions to exploit them. I believe when compared to other ahupua'a in ancient times this area was not seen as desirable for its abundant resources. With the commanding view from this place and the limited water resources on the 'Ewa plane this community was highly defendable.

I am just starting to understand that there is no other place like this when you add the layer of the winter and summer solstice; there is no other place that lines up like that. So I think the real resource is the view, and the power that comes from that.

CSH: Can you share any of your knowledge about cultural sites you have come across or heard about in this area?

McD: There are so many cultural sites here and all of these sites and their relationships between each other is what's valuable. It is in the collective relationship between all the sites. Studying this area gives us the opportunity to have a deeper understanding of those who lived here because it's still pretty clear. Their footprints are still right there. I think this place has revealed how much potential it has, and the value of how much it has yet to share. I really want to make sure that the cultural sites and what they tell us doesn't get erased.

CSH: Can you talk about the sights and trails above Waimānalo gulch?

McD: The center of this *mauka* community was here above Waimānalo and Makaiwa. Ida Von Holt writes that they were told the area was quite heavily populated before the smallpox epidemic of 1840 and that there was a school for over 40 children where the pā is now. This appears to be the case when compared to the size and number of structures in the area. Some of the adjacent pastors were cleared for pineapple years ago these pastors

more than likely contained many sites and now they are lost forever. The main trails from this community to *makai* were in both Waimānalo and Makaiwa. These trails had water and springs there and were probably used more for uphill travel. The ridge between them was faster but there was no water so it was more than likely used for downhill travel. Another was down by Awanui just west of Pu'u Palailai and another was on the up side of Kaloi. The main trails had a spring or two along the way and if there was enough water something was grown there.

CSH: Can you talk about your house at Lanikuhonua?

McD: Our house was actually next to Lanikuhonua near the big banyan tree at Paradise Cove. The house was surrounded by a big field which is basically the whole area that is now Paradise Cove. Then there was my grandfather's coconut plantation where he had young coconut trees everywhere. We were hidden from the view of Farrington Highway by sugarcane fields. The place was absolutely beautiful, and some of it still is. Some old maps have labeled hamlet on that spot and I'm sure there was a lot of wa'a on the beach there, this is the *makai* part of that ahupua'a poster. The fishing was great, and like I said earlier freshwater comes right out of the sand there.

CSH: Do you know of any *mo 'olelo* or *wahi pana* about this area?

McD: You have the *mo 'olelo* about the night marchers and I've heard several people say they've heard children or at least their voices in the forest in the *pā* area where the school was. Observing all of the house sites and everything that I know collectively, I have an opinion about how these people left this place and how it went down, and a lot of it is supported by historical records. Ida wrote that the *pā* was a school and you know we'll never know because she's not here nor the people that told her this. I think that when you give the collective, cooperative existence to the community up here, you understand that they all had to participate. 'Ōlelo supports this by hinting that there really wasn't a strong caste system of *ali 'i* hierarchy up here. Everybody had to have a specialty here, everybody had to contribute here to exist and they all did it because this place had the *mana* that kept everybody in line. We had two systems, we had a spiritual system and we had an *ali 'i* system. So these people all had to be close together and once some started to perish from the plagues, small pox and all the others, their system collapsed. The farmer was gone, the *kahuna lapa 'au* was tending to so many people, he got it. This community was pretty much erased, and those who survived probably left, but the spirits of those who didn't along with all those who came before the Lehua, are still here, the watchers, in the watching place, Pālehua the place of *mana*... look at all the clues they left in the place names here, and those you see from here. Do you feel *mana*? Are you a watcher too?

Place names of the area given by Douglas McDonald Philpotts:

Pa lehua	Mauna Loa
Mauna Kapu	Mauna Kea
Puu Manawahua	Hualalai
Puu Moopuna	Haleakala
Puu Heleakala	Puu Kukui
Puu Hapapa	Kamakou
Puu Kaua	Puu Konahuanui
Puu Kuua	Kukaniloko
Puu Poulihali	Kaala
Puu Makakilo	Waialeale
Puu Kapolei	Niihau
Makaiwa	Kaula
Waiwanana	Lehua
Moku Manamana	

Appendix C Office of Hawaiian Affairs

PHONE (808) 594-1888 FAX (808) 594-1865

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OFFICE OF HAWAIIAN AFFAIRS
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HRD06/2765

November 2, 2006

Kēhaulani Souza
Cultural Surveys of Hawai'i, Inc.
P.O. Box 1114
Kailua, HI 96734

RE: Request for Information on a Cultural Impact Assessment for Waimānalo Gulch Sanitary Landfill Expansion Project, 'Ewa, O'ahu; TMK: 9-2-003:073

Dear Kēhaulani Souza,

The Office of Hawaiian Affairs (OHA) is in receipt of your October 16, 2006, request for comments on the above-referenced project, which would allow for an approximate expansion of the Waimānalo Gulch Sanitary Landfill by 36 acres. OHA offers the following comments.

OHA recommends that the applicant contact Alika Silva and Glen Kila (Koa Mana), Tom Lenchanko (Kukaniloko), Alice Greenwood (O'ahu Burial Council), William Ailā (Wai'anae Harbormaster), Nettie Tiffany, and Micah Kane (DHHL) to improve the consultation component of your Cultural Impact Assessment (CIA). We also recommend that you conceive of the project area as a portion of a larger traditional cultural landscape; and, that the possible presence of one or more Traditional Cultural Properties (TCPs) is considered in your CIA.

OHA further requests that if this project goes forward, should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. If you have further questions, please contact Kai Markell, Lead Advocate – Culture, at (808) 594-1945 or kaim@oha.org.

Sincerely,

Clyde W. Nāmu'o
Administrator