

## Section 4 Previous Archaeological Research

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The following discussion of previous archaeological studies and finds pertaining to the HHCTCP Airport (Section 3) study area is presented in terms of four geographic areas: Hālawā Ahupua‘a, the intensively studied former Hickam and Fort Kamehameha lands, the intensively studied H-3 corridor and studies in Moanalua Ahupua‘a.

### 4.1 Hālawā Ahupua‘a Previous Archaeological Research

#### 4.1.1 Early Archaeological Research at Hālawā

The first recorded sites at Hālawā were documented during the pioneering attempt at a comprehensive survey of archaeological sites on the island of O‘ahu by J. Gilbert McAllister of the Bishop Museum in the 1930s.

McAllister (1933:101-102) recorded 10 sites (nine coastal fishponds and Ford Island – known to the Hawaiians as Moku‘ume‘ume) within Hālawā Ahupua‘a, giving their approximate locations and describing their conditions at the time of the survey (Figure 25). The sites include the following:

##### Site 94 Loko Waiaho

Loko Waiaho, known as Queen Emma’s pond, was located near Watertown. The walls were of coral and sand, 6.5 feet wide, 2 feet high, with five outlets (*mākāhā*). It covered an area of 32 acres. (McAllister 1933:101)

The former Loko Waiaho lies near the east side of the entrance to Pearl Harbor, approximately 2.1 miles (3.4 kilometers) southwest of the nearest point of the HHCTCP Airport (Section 3) study area.

##### Site 95 Loko Ke‘oki

Loko Ke‘oki was a pond near the present site of Watertown in Hālawā. It had narrow wall of coral rock and sand. It has been filled in. (McAllister 1933:101)

The former Loko Ke‘oki also lies near the east side of the entrance to Pearl Harbor, approximately 2.1 miles (3.4 kilometers) southwest of the nearest point of the HHCTCP Airport (Section 3) study area.

##### Site 96 Papiolua Fishpond

Papiolua fishpond was located in Hālawā opposite the tip of Waipi‘o Peninsula. It was a small pond, about 1 acre in area with a wall 150 feet long, 4 feet wide and high. There were no outlet gates (*mākāhā*). (McAllister 1933:101)

The former Papiolua fishpond lies on the east side of the entry channel into Pearl Harbor, approximately 2.0 miles (3.2 kilometers) west of the nearest point of the HHCTCP Airport (Section 3) study area.

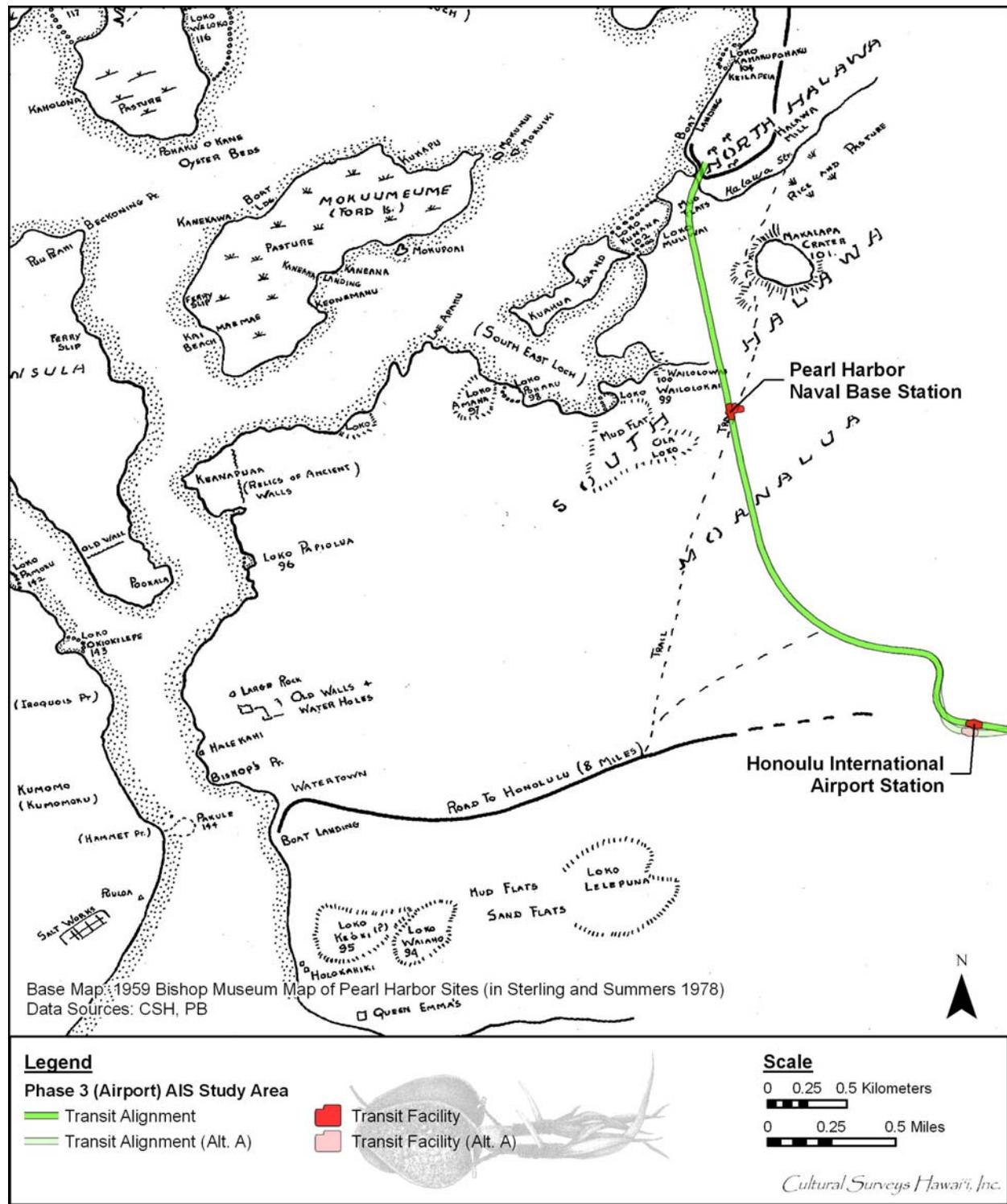


Figure 25. Map showing location of McAlister-designated sites in the vicinity of the Hälawa portion of the current study area (adapted from Sterling and Summers 1978)

**Site 97 Loko-a-Mano or Loko Amana**

Loko-a-Mano or Loko Amana, filled in before 1900, was located at the present site of the Navy yard. (McAllister 1933:102)

Loko-a-Mano lies on the south side of the Southeast Loch of Pearl Harbor, approximately 1.1 miles (1.8 kilometers) west of the nearest point of the HHCTCP Airport (Section 3) study area.

**Site 98 Loko Pōhaku**

Loko Pōhaku was a small pond of 2.5 acres at the present site of the Navy yard. (McAllister 1933:102)

Loko Pōhaku lies on the south side of the Southeast Loch of Pearl Harbor, approximately 1.0 miles (1.6 kilometers) west of the nearest point of the HHCTCP Airport (Section 3) study area.

**Site 99 Waiolokai Fishpond**

Waiolokai fishpond was another very small pond at Hālawā. (McAllister 1933:102)

Waiolokai fishpond lies on the southeast side of the Southeast Loch of Pearl Harbor, approximately 0.4 miles (640 meters) west of the nearest point of the HHCTCP Airport (Section 3) study area.

**Site 100 Waiolowai Fishpond**

Possibly the site of Waiolowai fishpond. (McAllister 1933:102)

Waiolowai fishpond lies on the southeast side of the Southeast Loch of Pearl Harbor, approximately 0.4 miles (640 meters) west of the nearest point of the HHCTCP Airport (Section 3) study area.

**Site 101 Makalapa Crater**

Makalapa Crater, now being used for a freshwater pond. Believed to be recent. (McAllister 1933:102)

Makalapa Crater lies adjacent to the east side of the HHCTCP Airport (Section 3) study area, just south of Hālawā Stream (the crater rim is approximately 300 m east of the Kamehameha Highway alignment).

**Site 102 Loko Kunana and Loko Muliwai, between Hālawā and Kuahua Island.**

Kunana has been partly filled in but was formerly 25 acres in extent. Kuahua island forms one side and the opposing wall is formed Hālawā. The two walls running between the land and the island are 1800 feet and 1950 feet long, approximately 5 feet wide, and 3 feet high. Loko muliwai is only 4 acres in extent, a portion of which has been filled. Its wall is 500 feet long with one outlet (*mākāhā*). (McAllister 1933:102)

Loko Kunana and Loko Muliwai lie adjacent to the east side of the East Loch of Pearl Harbor, just south of Hālawā Stream a quarter mile (400 meters) west of the nearest point of the HHCTCP Airport (Section 3) study area.

**Site 103 Moku'ume'ume Island (Ford Island), Pearl Harbor** [Note some sources place Moku'ume'ume within Waimalu Ahupua'a].

Moku'ume'ume Island is said to have obtained its name "Isle of Strife" from the fact that among former chiefs it was the center of contention over certain fishing rights. It was visited in 1819 by Peter Corney, who gives the following information:

"Mr. Manning [Manini] had an island in Pearl River...it is about two miles in circumference, having a large cave in the center...Only one family resides there...One evening after supper the man gave us an account of a singular affair, which occurred to him when he first got charge of the island. He was one night awakened by some person calling him by name, and telling him to attend to what he said; he looked up and was much terrified on beholding the pale form of the late King Pereoranee [Peleioholani] before him, who told him as he valued his life so must he perform what he enjoined; which was to go to the cave, where he would find his bones with the bones of several great chiefs; he was to take them from thence and convey them to a place of safety, out of the reach of a chief Tereacoo [Kaleioku], who would come the next day with a party to search the island for the bones of the king and chiefs, to make points for their arrows to shoot rats with...

"The next day, according to the prediction, the chief came and searched the island; the man told him that as the island and all that was on it belonged to a white man of whom Tameameah [Kamehameha] was very fond, he ought not to come there to search for bones, when there were too many on the main island. The chief took no notice, but searched and took several bundles of bones with him, though not those of the king and chiefs. Tereacoo departed, and on the ensuing night the deceased king and many chiefs appeared to the man, and thanked him for what he had done, assuring him that the white men would protect him and that he should one day become a great man...The next morning I went round the island, which seems as though it had been kept for a burial place, for I saw hundreds of bundles of human bones, wrapped carefully in cloth, and laid in the crevices of the rocks." (McAllister 1933:102)

Moku'ume'ume Island (Ford Island) lies in Pearl Harbor, approximately 1.8 kilometers west of the nearest point of the HHCTCP Airport (Section 3) study area.

The nearest of these sites to the current study area is Makalapa Crater at a distance of 300 m west, and again McAllister (based on his 1931 fieldwork) did not believe that pond was of any great antiquity. Bishop Museum records (Sterling and Summers 1978:47) assert that Makalapa Crater was "swampy and overgrown" in July 1957 suggesting it was not an actively maintained fishpond at that time.

#### **4.1.2 Other Archaeological Studies at Hālawā**

Table 5 lists the relatively few archaeological studies of Hālawā Ahupua'a other than at Hickam AFB or for the work on the H-3 project.

Table 5. Archaeological Studies of Hālawā (for Joint Base Pearl Harbor Hickam Hālawā studies see Table 7)

| Source                   | Type of Investigation                                  | General Location  | Findings   |
|--------------------------|--|---|--|
| Cluff 1970               | Archaeological Survey                                  | Hālawā Interchange with H-1 Freeway   | Survey focused around vicinity of Saratoga Drive. Surface survey identified: one possible <i>heiau</i> , one historic house platform, a stone wall, and several burial structures (two family plots, three mounds, one concrete enclosure). Subsurface excavations of the possible <i>heiau</i> structure were inconclusive. |
| Ayres 1971               | Archaeological Survey and Excavations                  | South Hālawā Valley   | Identified 48 sites: 16 agricultural terraces, seven house platforms, two walled house structures, four caves, two agricultural clearings, three walls, three mounds, one c-shape, nine historic sites, and one stream diversion.  |
| Barrera 1971             | Archaeological Site Survey                             | Proposed Honolulu Stadium   | No finds, but notes accounts of unmarked graves along Saratoga Drive.  |
| Denison and Foreman 1971 | Archaeological Investigations                          | South Hālawā Valley   | Includes site descriptions of 20 sites noted by Ayres (1971): seven platforms, six terraces or terrace systems, two mounds, two walled house sites, and three caves.   |
| Crozier 1972             | A Preliminary Report on the Phase II, Part 2 Survey of | H-3 Highway Corridor in the South Hālawā Valley   | Restoration work at two <i>heiau</i> and excavations at a residential and agricultural site, and a large residential enclosure   |
| Barrera 1979             | Archaeological reconnaissance                          | HECO 138 KV transmission line from Hālawā sub-station to the Pūkele sub-station in Pālolo | Mention six sites that were located by Ayres   |

| Source   | Type of Investigation  | General Location   | Findings  |
|--|--|--|---|
| Avery, Brennan, Denham, Kennedy, and Ward 1994 | Paleoenvironmental Reconstruction Monitoring Report                  | Adjacent to the mouth of Hālawā Stream and Waiau-Makalapa No. 2 138 KV Overhead Lines (Phase II) corridor along Kamehameha Highway | No cultural materials were observed, but the results of pollen analysis are presented   |
| Hammatt and Winieski 1994                      | Archaeological Reconnaissance Survey                                 | Proposed Hālawā Well immediately SE of stadium   | No significant finds; notes major impact of commercial sugar cultivation  |
| Williams and Dye 1994                          | Subsurface Testing   | Pearl Harbor NAVBASE, Kunana and Wailolowai Fishponds  | Kunana Fishpond core indicated fishpond sediments; radiocarbon dated pond construction between A. D. 1200 to 1400   |
| Anderson 1995                                  | Archaeological Monitoring  | Kuahua Peninsula, Naval Submarine Base   | Identified fishpond deposits associated with Wailolowai Fishpond (50-80-13-100)   |
| Williams and Dye 1995                          | Study of archaeological models and applied Bayesian analysis (draft) | Loko Kunana fishpond at margin of Pearl Harbor   | Study of modeling of dates from a core of fishpond  |
| Bishop Museum 1997                             | Archaeological Inventory Survey                                      | H-3 corridor North Hālawā  | Discusses 70 archaeological sites   |
| Dye 1999                                       | Archaeological Resources Survey                                      | Kamehameha Highway Hālawā Bridge   | No significant finds; major twentieth century landscape modifications to vicinity noted   |
| McGuire, Shideler, and Hammatt 1999            | Archaeological Assessment  | Queen Emma Foundation approx. 1,728 acre parcel, South Hālawā Valley   | Re-examined certain previously identified sites and newly reports six sites incl. -5737 a burial cave, -5738 a terrace complex, -5739 a C-shape enclosure, -5740 a rectangular enclosure, -5741 a habitation & agricultural site complex, and -5742 a round enclosure |

| Source             | Type of Investigation             | General Location                  | Findings  |
|--------------------|-----------------------------------|-----------------------------------|---|
| Athens et al. 2000 | Archaeological Studies and Coring | Pearl Harbor Fishponds            | Coring of 21 Pearl Harbor Fishponds, including Loko Kunana, Wailolokai and Wailolowai   |
| Athens 2002        | Paleoenvironmental Investigations | U.S. Navy's Pearl Harbor Shipyard | Investigations of an unnamed fishpond consisting of two cores and two trenches. Core samples identified natural wetland and fishpond sediment, with transition date estimated at A.D. 1299-1407 |

In 1970, Deborah Cluff of the DLNR conducted an archaeological survey of the proposed Hālawā Interchange with the H-1 Freeway. The impetus for the archaeological survey arose from concerns of the community members who described numerous graves within the area, including family graves. As the majority of the study area encompassed previous cane field lands, the survey concentrated along the immediate vicinity of Saratoga Drive. Eight sites were identified, including historic grave structures and one stone house platform. Residents of the area also noted that a *heiau* was known to have been in the vicinity. Cluff identified a possible *heiau* structure and conducted subsurface excavations; however, the function of the structure remained indeterminate.

In 1971, William Ayres did an archaeological survey and excavations in Kamana-nui valley, Moanalua, and South Hālawā valley. The South Hālawā portion of the study area consisted of a 500 ft.-wide strip along the valley bottom, beginning approximately 550 meters (1800 ft.) WSW of Hālawā jail and running ENE 2.25 kilometers (1.4 miles), to end 122 meters (400 ft.) south of the Hawaiian Electric Company (HECO) substation. Forty-eight sites were recorded within the survey area: 16 agricultural terraces; 7 house platforms; 2 walled house structures; 4 caves; 2 small agricultural clearings; 3 walls; 3 mounds; 1 c-shaped structure; 9 historic sites (i.e., paved road with stone curbing, animals pens, and a well); and 1 stream diversion feature. Limited test excavations were carried out due to the unexpected number of sites found and time constraints.

In October, 1971, David Denison and Arthur Foreman conducted a Phase II archaeological investigation based on Ayres' recommendations. Of the 48 sites Ayres located, 20 were recommended for mapping and excavation. Sixteen of the 48 sites were noted to be concentrated in a small area bounded by Hālawā Stream and a major side stream. This well-watered area just south of the present HECO substation studied by Ayres (1971) and Denison and Foreman (1971) appears to have been a focus of habitation, ritual activity, and burial in pre-Contact Hālawā Ahupua'a.

William Barrera (1979) conducted an archaeological reconnaissance for Chiniago Inc. related to HECO's 138 KV transmission line from Hālawā sub-station to the Pūkele sub-station in Pālolo. The study area went through HECO's right-of-way through Hālawā and was limited to areas of most probable usage. Due to the nature of the reconnaissance, Barrera does not give descriptions of the sites he located, as these were previously documented in the Ayers 1970 report published by Bernice Pauahi Bishop Museum. Barrera does mention six sites that were

located by Ayers. The sites consisted of walls, an agricultural terrace, a possible house platform, a clearing or probable garden plot, and a mound or possible grave (Barrera 1979:A1-A2).

Williams and Dye (1995) report on archaeological modeling and Bayesian analysis of a sediment core from the Loko Kunana fishpond.

In 1995, Lisa Anderson of Ogden Environmental and Energy Services Company, Inc. conducted monitoring of a sewer installation project (MILCON P-115) within Kuahua Peninsula, Naval Submarine Base. Fishpond deposits associated with Wailolowai Fishpond (SIHP # 50-80-13-100) were identified.

Avery, Brennan, Denham, Kennedy, and Ward (1994) reported on a paleoenvironmental reconstruction adjacent to the mouth of Hālawā Stream in a Monitoring Report of the Waiāu-Makalapa No. 2 138 KV Overhead Lines (Phase II) project that ran along Kamehameha Highway, from Aloha Stadium to Makalapa, 1.3 kilometers west of the current study area.

Hammatt and Winieski (1994) carried out a reconnaissance survey for a proposed Hālawā Well just southeast of the Aloha Stadium but identified no sites, noting that all evidence of earlier activity was probably eradicated by commercial sugarcane cultivation.

McGuire, Shideler, and Hammatt (1999) conducted an archaeological reconnaissance and assessment of a portion of South Hālawā Valley. The purpose of this reconnaissance and assessment was to address concerns associated with the probable increased public access to these lands following the opening of the H-3 access road to the public, as well as possible recreational educational use (i.e., guided hikes, educational walks) of these lands by the Queen Emma Foundation. The McGuire et al. (1999) study area consisted of approximately 1728 acres, including the main drainage of South Hālawā Stream and a major tributary gulch to the north of South Hālawā Stream. Particular attention was given to the relatively flat bottom lands of South Hālawā Stream and the less steep portions of the major tributaries of South Hālawā Stream, which were understood as the areas most likely to be impacted by the proposed activities of the Queen Emma Foundation. The cliff face on the west side of the valley, which was known to contain burial caves, was also explored for the possibility of both previously reported and unreported burial caves. Selected sites within the study area, which had previously been identified in earlier surveys, were re-identified to check on the current condition and status of these sites. As the nature of the project was reconnaissance and assessment, sites were identified, photographed, and mapped. No testing, excavation, or data recovery was performed. Six sites were newly identified including -5737 a burial cave, -5738 a terrace complex, -5739 a C-shape enclosure, -5740 a rectangular enclosure, -5741 a habitation & agricultural site complex, and -5742 a round enclosure.

## 4.2 H-3 Archaeological Studies in Hālawā Valley

The Bernice Pauahi Bishop Museum's H-3 archaeological work included extensive studies of North Hālawā Valley (and some preliminary study of South Hālawā Valley) (Table 6).

In 1976, an archaeological reconnaissance survey was conducted by Neal Oshima. The survey identified seven sites within the proposed path of the H-3 freeway. A Phase I survey of these seven sites was recommended. The report concluded that North Hālawā valley was used primarily for agriculture during the pre-Contact and early post-Contact time periods.

Table 6. H-3 Related Studies in Hālawā Ahupua‘a

| Source               | Type of Investigation                | General Location   | Findings   |
|----------------------|--------------------------------------|--|--|
| Oshima 1976          | Archaeological Reconnaissance Survey | Portions of North Hālawā Valley  | Identified seven sites within the proposed path of the H-3 freeway   |
| Sinoto 1976          | Archaeological Reconnaissance Survey | Three-mile portion of east section of (South) Hālawā Valley  | Identified pre-Contact (a wall, a house platform, three circular walled enclosures, and agricultural terraces) and post-Contact sites (a charcoal oven and earthen terraces) |
| Dye 1977             | Phase I survey of Oshima 1976 sites  | Floor and lower slopes of North Hālawā Valley from the Board of Water Supply pumping station to the back of the valley | No pre-Contact surface features found. All sites found were relatively late and no further archaeological work was recommended.  |
| Klieger 1995         | A History of Hālawā Ahupua‘a         | Hālawā Ahupua‘a  | A historical study prepared in Association with the Bishop Museum's H-3 work   |
| Bishop Museum 1992   | Preliminary Summary of Sites         | North Hālawā Valley Sites 50-80-10-2137 and 50-80-10-2010  | Discussion of two sites interpreted by some as a <i>heiau luakini</i> and a <i>Hale o Papa</i>   |
| Bishop Museum 1997   | Inventory Survey report (draft)      | North Hālawā Valley  | This draft appears to have been finalized in 2003 (below)  |
| Hartzell et al. 2003 | Inventory Survey report              | North Hālawā Valley  | Presents an overview, recommendations and appendices   |

In 1976, Aki Sinoto conducted an archaeological reconnaissance survey through a portion of South Hālawā valley for Parsons Brinckerhoff-Hirota Associates. At the time, portions of South Hālawā were being considered as an alternate route for the H-3 freeway. Prior to this, all previous archaeological studies had been contained to the lower valley portions ending at the HECO sub-station. The Sinoto survey area was a 3-mile portion of the valley, which started at the aforementioned sub-station and ended at about the 2000 ft. elevation near the valley head. Findings concluded that the majority of the sites occurred along the valley floor and the flood plain area, and bordered the stream. Both pre-historic and historic sites were identified during this survey. The prehistoric sites consisted of a wall, a house platform, three circular walled enclosures, and agricultural terraces. The historic sites included a charcoal oven and earthen terraces (Sinoto 1976:2-4). As this project was only a reconnaissance survey, sites were merely

identified and no further work was done. Recommendations were made for a Phase I intensive survey including: instrument location and plotting of all sites and features; detailed site descriptions including mapping, profiles and photographs; surface collection of cultural materials (i.e., midden, soil samples, artifacts); and selective test excavation. Sinoto concluded that the individual sites were not unique in and of themselves, but maintained that when viewed as a whole agricultural complex, the sites do have research potential (Sinoto 1976:4).

As a result of Oshima's initial survey, Thomas Dye (1977) did a Phase I survey of the above-mentioned sites. The survey area included the floor and lower slopes of North Hālawā Valley, from the Board of Water Supply pumping station to the back of the valley at the base of the Ko'olau range. No pre-Contact surface features were found, and all sites were determined to be post-Contact. Four caves were explored in the northwest wall of the lower valley. Midden and historic refuse were found in only one cave. No caves were located in the southeast wall of the valley. The report concluded that there were no pre-Contact surface features found. All sites found were relatively late and no further archaeological work was recommended.

Paul Chistiaan Klieger prepared his (1995) *Nā Maka o Hālawā: A History of Hālawā Ahupua'a* study as a historical background for the B. P. Bishop Museum's H-3 archaeological work in North Hālawā valley.

The "Imu, Adzes, and Upland Agriculture" archaeological inventory survey report (Hartzell et al. 2003 editors), summarizes Bishop Museum work conducted between 1987 and 1993 describing 70 archaeological sites along the H-3 North Hālawā corridor. The sites were widely distributed in the lower, middle, and upper valley and spanned the past seven hundred years. More than 2,000 features and 1,000 test units are summarized (Hartzell et al. 2003: 1).

This study (Hartzell et al. 2003: 351-354) summarizes *ahupua'a*-wide patterning for Hālawā concluding that:

- Use of the coastal region was well under way by A.D. 1200s or 1300s, but that it is likely that use of the upper valleys of North Hālawā and South Hālawā was relatively incidental in the period prior to A.D. 1200,
- Agricultural use and at least one early habitation in North Hālawā Valley was indicated in the A.D. 1200s or 1300s,
- After about A.D. 1500 archaeological data from North Hālawā Valley appear to document a considerable increase in the use of the upper valley for dryland agriculture and for habitation,
- Sometime prior to the late 1700s, two major *heiau* were constructed in the lower valley,
- By the mid-1800s North Hālawā Valley and likely, South Hālawā Valley as well, had few inhabitants and little emphasis on agricultural pursuits. "The exact timing of the virtual abandonment of the upper valleys of the ahupua'a is not known; it occurred either during the very late pre-Contact or very early post-Contact period." (Hartzell et al. 2003: 353). Settlement in the mid-1800s was almost exclusively in the lower (coastal) valley,
- Subsequently activities in the H-3 project area were largely focused on grazing, Chinese rice growing, and large scale commercial sugar cultivation.

As a generalization, the conclusion was that North Hālawā Valley exhibited “approximately the same general patterning with respect to the pre-Contact period” as indicated by studies in other large valley systems of O‘ahu such as Kahana, Anahulu, Mākaha, Moanalua, and south Hālawā (Hartzell et al. 2003: 360).

### **4.3 Joint Base Pearl Harbor-Hickam Archaeological Studies (Hālawā and Moanalua Ahupua‘a)**

The former Hickam AFB (now part of Joint Base Pearl Harbor–Hickam; JBPHH) lies adjacent to the southwest of the HHCTCP corridor. The former Hickam AFB straddles the *ahupua‘a* of Hālawā (‘Ewa District) and Moanalua (Kona District) and has been the subject of approximately 100 archaeological studies (many of these studies were produced as drafts that did not go “final” for several years). Particular concern was generated for the greater Hickam area by the discovery of at least 87 burials at Fort Kamehameha. It now appears that the area of burials was fairly localized and far from the HHCTCP corridor. A particularly important and relatively early study was the Anderson and Bouthillier (1996) work, which attempted a synthesis of historical and archaeological documentation and produced an archaeological/ historical resources sensitivity map for the base.

Analysis of the results of approximately 70 archaeological studies that have taken place at Joint Base Pearl Harbor-Hickam since Anderson and Bouthillier (1996) produced their sensitivity map suggests that the designation of a large inland portion of Hickam AFB, as of high and moderate archaeological sensitivity, may not be the case (Figure 26). We now know a great deal more about the likelihood of significant subsurface deposits in inland Hickam, which appears to not be high or even moderate but, as a generalization, may be expected to be rather low. Below is a summary table (Table 7) of Hickam AFB archaeological studies, and Figure 27 depicts the location of several of these studies.

Table 7. Previous Archaeological Studies at Joint Base Pearl Harbor-Hickam and Fort Kamehameha Arranged Chronologically (seaward portions of Hālawā and Moanalua Ahupua'a; presentation builds on work of Anderson and Bouthillier 1996 and Jourdan and Dye 2006)

| Source                               | Type of Investigation                             | General Location  | Findings   |
|--------------------------------------|---|---|--|
| Cobb 1905                            | Fisheries Inventory                               | Territory-wide  | Fishponds in Hālawā were noted to include: Kunana (25 acres, partly filled); Pōhaku (2.5 acres, partly filled); Waiaho (32 acres); Name not known (five acres, partly filled). Fishponds in Moanalua include: Lelepaua (332 acres, mostly filled up); Kaihikapu (258 acres). |
| Stokes 1909                          | Study of walled fish traps                        | Pearl Harbor  | Located former fish trap at Bishop Point   |
| McAllister 1933                      | Early survey                                      | O'ahu Island  | Site 81. Kaihikapu Fishpond; Site 82. Lelepaua, a large inland fishpond at Moanalua; Site 94. Loko Waiaho, known as Queen Emma's pond; Site 95. Loko Ke'oki was a pond near Watertown; Site 96. Papiolua Fishpond in Hālawā  |
| Jordan 1980                          | The Land on Which Hickam Was Built (manuscript)   | Hickam AFB  | Historical survey  |
| Hammatt, Borthwick and Shideler 1986 | Archaeological subsurface testing                 | Proposed water main replacement, Fort Kamehameha                | Gleyed soils interpreted as fishpond sediments dating to A.D. 1340-1650. Cultural materials included a possible pearl shell fishhook, three polished basalt beads or sinkers, and various historic artifacts.  |
| Watanabe 1986                        | Archaeological site survey and subsurface testing | FY 87 Sell/Replace Program, Fort Kamehameha                     | Located concrete foundations, walkways, roadway, ammunition storage bunkers, air raid shelter and dump piles. Testing identified sediments from embayed ponds and marsh environment.   |
| Hammatt and Borthwick 1987a          | Archaeological subsurface testing                 | Proposed power check pad with noise suppressor, Fort Kamehameha | No significant finds   |

| <b>Source</b>                        | <b>Type of Investigation</b>                                | <b>General Location</b>   | <b>Findings</b>   |
|--------------------------------------|---|---|---|
| Hammatt and Borthwick 1987b          | Archaeological subsurface testing                           | Proposed F-15 flight simulator                                  | No significant finds  |
| Hammatt and Borthwick 1987c          | Archaeological subsurface testing                           | Proposed apron addition   | Only historic materials dating to the 1920s and 1930s   |
| Hammatt and Borthwick 1987d          | Archaeological subsurface testing                           | Proposed Avionics/weapons release facility and new by-pass road | Fishpond sediments; no cultural materials   |
| Hammatt, Shideler and Borthwick 1988 | Archaeological monitoring report                            | Water main replacement, Fort Kamehameha                         | Gleyed soils interpreted as fishpond sediments dating to A.D. 1385-1655   |
| Streck and Watanabe 1988             | Excavation for recovery of human remains                    | Quarters # 14, Fort Kamehameha                                  | Excavation of one adult and three juveniles   |
| Davis 1990                           | Archaeological Assessment                                   | Pearl Harbor NAVBASE Shipyard                                   | Archival research and brief field inspection  |
| Shun and Schilz 1991                 | Subsurface archaeological survey                            | Wastewater treatment plant, Fort Kamehameha                     | Single adult human burial, an adze perform, and a polished adze; documented pond sediments  |
| Watanabe 1991                        | Archaeological site survey and subsurface testing           | MIDPACK T-1 Network project, Fort Kamehameha                    | No significant finds  |
| Drolet 1992 (finalized in 1996)      | Phase I Archaeological subsurface testing and data recovery | Wastewater treatment plant, Fort Kamehameha                     | Component I: single human burial, seven pit features & cultural materials dating to A.D. 1200 to 1550;<br>Component II: Nine human burials dating to A.D. 1450-1900;<br>Component III: post-1900 historic materials |
| Drolet and Schilz 1992               | Emergency Data Recovery Project                             | For a Fort Kamehameha Wastewater Treatment Plant                | Documents cultural deposits and 11 burials  |

| Source                                  | Type of Investigation  | General Location   | Findings   |
|---|--|--|--|
| Erkelens, and Athens 1992               | Archaeological Review and Recommendations Plans                          | For the Fort Kamehameha Sewage Treatment Plant Expansion and Housing Relocation              | Summary of historical data with analysis and recommendations   |
| Kennedy and Denham 1992                 | Archaeological monitoring report   | MIDPACK T-1 Network project, Fort Kamehameha   | No significant finds   |
| Drolet 1993 (finalized as Drolet 1999a) | Phase II Archaeological subsurface testing and data recovery             | Wastewater treatment plant, Fort Kamehameha  | SIHP # 50-80-13-4499 assigned. Component II: 17 human burials and two animal burials; Component IIIa: nineteenth-century glass and ceramic wares; Component IIIb: post-1900 historic materials |
| Denham and Cleghorn 1994                | Report of Archaeological Inventory Survey and Limited Subsurface Testing | Proposed Family Housing Revitalization Projects, Work Areas B and C, Hickam AFB              | Minimal finds (mid-twentieth century features associated with military housing)  |
| Anderson and Schilz 1995                | Archaeological Monitoring  | Pearl Harbor Naval Submarine Base  | Identified fishpond deposits associated with Wailolowai Fishpond (50-80-13-100)  |
| Erkelens 1995                           | Archaeological Study   | Proposed Ford Island Golf Park and Saratoga Boulevard Relocation, Ford Island Bridge Project | Discusses reconnaissance of the Hālawa terminus and subsurface testing at 8 locations on Ford Island. Disturbance to the entire Hālawa portion of the study area was indicated                 |
| Eulberg 1995                            | Inadvertent Discovery  | Battery Hasbrouck  | Inadvertent discovery of human left hip bone within Battery sand berm  |
| Lawrence and Spear 1995                 | Archaeological Monitoring and Sampling Report                            | Underground Storage Tanks at Hickam AFB  | Minimal finds  |

| Source                                  | Type of Investigation                                       | General Location   | Findings   |
|---|---|--|--|
| Williams and Dye 1995                   | Fishpond Dating Study the Construction of Loko Kunana       | Loko Kunana  | Focus on showing how different archaeological models affect construction dating estimates  |
| Drolet 1996                             | Phase I Archaeological Subsurface Testing and Data Recovery | Fort Kamehameha Wastewater Treatment Plant, Pearl Harbor               | Work up of cultural deposits and burials first described in Drolet and Schilz 1992   |
| Sprinkle 1996                           | Cultural Resource Investigation                             | Proposed Detention Facility  | Not found in SHPD library  |
| Athens, Ward, and Tomonari-Tuggle 1997  | Paleoenvironm ental Coring                                  | Loko Ka'ihikapu, TRACON Expansion, Hickam AFB                          | Inconclusive data regarding presence of prehistoric fishpond sediments   |
| Drolet 1997 (finalized as Drolet 1999b) | Phase III Archaeological Monitoring and Data Recovery       | Wastewater treatment plant, Fort Kamehameha                            | Component I: double midden pit; Component II: 13 human burials within ten graves and two animal burials; Component IV: historic trash pits |
| Anderson and Bouthillier 1998           | Assessment & analysis of historic properties                | Hickam AFB   | Preparation of a historic preservation plan providing a synthesis of prior studies   |
| Athens and Magnuson 1998                | Archaeological Subsurface Survey                            | Low Level Windshear Alert System, Station No. 1 Relocation, Hickam AFB | No cultural finds; pollen analysis results presented   |
| Tomonari-Tuggle, 1998                   | Archival Background Research                                | Honolulu Airport Post Office   | Not found in SHPD library  |
| Athens and Ward 1999a                   | Paleoenvironm ental Coring Report                           | Ka'ihikapu Fishpond, Vault-X Project, Honolulu International Airport   | Site 50-80-13-81 fishpond research – no sediments from pre-Contact Polynesian period   |
| Athens and Ward 1999b                   | Paleoenvironm ental Coring Report                           | Loko Lelepaua, Hickam AFB  | Not found in SHPD library  |

| Source                        | Type of Investigation   | General Location   | Findings  |
|-------------------------------|---|--|---|
| Drolet 1999a                  | Phase II Archaeological Subsurface Testing and Data Recovery Report | Wastewater Treatment Plant at Fort Kamehameha                              | Not found in SHPD library   |
| Drolet 1999b                  | Phase III Archaeological Monitoring and Data Recovery Report        | Wastewater Treatment Plant, Fort Kamehameha                                | Not found in SHPD library   |
| Robins, Clark, and Allen 1999 | Monitoring and Sampling During Construction Excavations Report      | AMC Ramp Lighting Project at Hickam AFB                                    | Dates Lelepaua Fishpond (SIHP # 50-80-13-82) to late thirteenth to mid-fifteenth centuries; presents C14 and pollen data                |
| Wolforth and Rechtman 1999    | Archaeological Monitoring   | Wastewater Treatment Plant, Fort Kamehameha                                | No significant finds  |
| Athens (ed.) 2000             | Archaeological and Historical Studies                               | Ancient Hawaiian Fishponds of Pearl Harbor on U.S. Navy Land               | Includes dating analysis for several fishponds (Loko Pōhaku, Loko Wailokai, Loko Wailolowai, Loko Muliwai, Loko Kunana) in the vicinity |
| Cochrane and Athens 2000      | Archaeological Monitoring Report                                    | Bilge and Oily Waste Water Collection Facilities, Magazine Loch            | Work did not penetrate beneath historic fill.   |
| Erkelens 2000                 | Archaeological Monitoring Report                                    | For Underground Storage Tank Removals, Hickam AFB and Pearl City Peninsula | No significant finds  |
| Desilets 2000                 | Addendum Archaeological Monitoring                                  | For POL System Component Removal, Fort Kamehameha                          | Identified probable fishpond sediments associated with Lelepaua Fishpond  |
| Magnuson 2000                 | Archaeological Monitoring Report                                    | Storage Tank Removal Hickam AFB  | One focus of work was noted to be at Lelepaua Pond.   |

| <b>Source</b>                           | <b>Type of Investigation</b>   | <b>General Location</b>  | <b>Findings</b>  |
|---|--|--|--|
| Athens, Ward, and Blinn 2001            | Paleoenvironmental Coring Report                                     | Tank 2, Hickam AFB   | Investigations of Lelepaua Fishpond found no intact evidence for fishpond sediments at this location |
| Buffum and Davis 2001                   | Archaeological Monitoring Report                                     | Construction Related to Replacement of Building 2172 at Hickam AFB | No significant finds   |
| Carlson 2001                            | Archaeological Monitoring Report                                     | For Installation Restoration Program Activities at Hickam AFB      | No significant finds; possible fishpond sediments discussed.   |
| Curtis 2001a                            | Report on Emergency Replacement of Two Utility Poles                 | Hickam AFB   | Possible fishpond remnants noted   |
| Curtis 2001b                            | In House field Check Report  | For Photovoltaic Light Installation, Hickam AFB                    | No significant finds   |
| Dega and Davis 2001                     | Archaeological Monitoring Report                                     | Base Civil Engineer Maintenance Complex, Fort Kamehameha           | Identified one historic pit feature containing fuel drum   |
| Dega, Davis, Ward, and Winsborough 2001 | Archaeological Monitoring and Sampling Report                        | In Conjunction with Subsurface Plume Investigations at Hickam AFB  | Investigations at Ka'ihikapu fishpond, but concluded there was substantial sediment mixing           |
| Desilets and Magnuson 2001              | Archaeological Monitoring Report                                     | During Additional Underground Storage Tank Removal, Hickam AFB     | Not found in SHPD library  |
| Drolet 2001                             | Phase IV Archaeological Monitoring, Testing and Data Recovery Report | Wastewater Treatment Plant, Fort Kamehameha                        | Not found in SHPD library  |

| Source                  | Type of Investigation                         | General Location   | Findings   |
|-------------------------|---|--|--|
| Magnuson 2001           | Archaeological Monitoring Report,             | Engineering Evaluation/Cost Analysis project for Sites Along Runway 8L, Hickam AFB                 | No significant finds   |
| Roberts 2001            | Archaeological Monitoring                     | Grease Pit Excavations at Building 1654 Hickam AFB   | No significant finds   |
| Desilets 2002a          | Archaeological Monitoring Report              | Hazardous Waste Removal at Māmala Bay Golf Course & Landfill Site LF05, Hickam AFB                 | No significant finds   |
| Desilets 2002b          | Archaeological Monitoring Report              | For DO-58 Underground Storage Tank Verification and Removal, Hickam AFB                            | Not found in SHPD library  |
| Grant 2002              | Archaeological Monitoring Report              | For Upgrade Hanger Complex (KNMD 983001) Hickam AFB  | No significant finds   |
| Magnuson 2002           | Archaeological Monitoring Report              | AMC Stripper Pit Remediation, Hickam AFB   | Not found in SHPD library; CH2M Hill letter references no finds. |
| McGhee and Curtis 2002a | Archaeological Monitoring and Sampling Report | Carried out in conjunction with Transformer Replacement Projects Fort Kamehameha Historic District | Minimal finds (historic artifacts)                               |
| McGhee and Curtis 2002b | Archaeological Monitoring Report              | Carried out in Conjunction with Repair and Upgrade of Sewer lines Projects Hickam AFB              | No significant finds   |

| <b>Source</b>                | <b>Type of Investigation</b>                  | <b>General Location</b>  | <b>Findings</b>   |
|------------------------------|---|--|---|
| McGhee and Curtis 2002c      | Archaeological Monitoring Report              | Carried out for Soil sampling in Conjunction with Military Housing Replacement Hickam AFB      | No significant finds  |
| Roberts 2002a                | Archaeological Monitoring Report              | For Utility Upgrade Excavations, Signer Boulevard, Hickam AFB                                  | No significant finds  |
| Roberts 2002b                | Archaeological Preconstruction Investigation  | Storm Drain Repair/Upgrade Fort Kamehameha   | No significant finds  |
| Roberts and Bower 2002a      | Archaeological Monitoring Report              | For a Helipad Fence Hickam AFB   | No significant finds  |
| Roberts and Bower 2002b      | Archaeological Monitoring Report              | For Fire Rescue Training Facility Project, Hickam  | No significant finds  |
| Roberts, Dang, and West 2002 | Archaeological Monitoring Report              | For Hickam Alert Aircraft Terminal (HAAT) Security System Installation Project, Hickam AFB     | No significant finds  |
| Roberts and Roberts 2002     | Pre-Construction Archaeological Investigation | For a U.S. Army Logistic Support Vessel Project (FY03 MCA PN 52201) Bishop Point Naval Station | A possible pre-Contact lens (50-80-13-5972) was identified; Two C14 dates are reported. |
| Roberts and West 2002a       | Archaeological Monitoring Report              | Carried out for the Installation of KNMD 97-4011, M/R Waterline and Hydrants, MFH Hickam AFB   | No significant finds  |

| Source                                | Type of Investigation                         | General Location  | Findings   |
|---------------------------------------|---|---|--|
| Roberts and West 2002b                | Archaeological Monitoring Report              | For Combat Installation Transportation System (CITS), Hickam AFB        | No significant finds   |
| Borthwick, Bush, and Hammatt 2003     | Monitoring Report for Geotechnical Sampling   | HIANG Project No. KNBD 989064A Clear Water Rinse Facility, Hickam AFB   | No significant finds   |
| Desilets 2003                         | Archaeological Monitoring Report              | For DO-81 Underground Storage Tank Verification and Removal, Hickam AFB | Monitored 38 UST sites. Data indicated this area was once a wetland marsh environment. One site (-3440) documented: an early 1900s steel fuel tank associated with Coastal Battery Selfridge (-1600) |
| Magnuson 2003                         | Archaeological Monitoring Report              | For Replacement of POL Pipelines and Fuel Additive Injector, Hickam AFB | No significant finds   |
| McElroy 2003                          | Archaeological Monitoring report              | For a Communication Line Installation at Hickam AFB                     | Minimal finds (late 1800s & early 1900s Watertown artifacts)   |
| McGhee and Curtis 2003a               | Archaeological Monitoring Report              | Backyard Fence Installation Behind Building 3327 Hickam AFB             | No significant finds   |
| McGhee and Curtis 2003b               | Archaeological Monitoring Report              | Fence and Gate Installation Near Building 3004 Hickam AFB               | No significant finds   |
| Ogg, Dega, Ward, and Winsborough 2003 | Archaeological Monitoring and Sampling Report | Carried out at an Abandoned Fire Training Area at Hickam AFB            | No significant finds   |
| Davis and O'Rourke 2004               | Archaeological Investigations Report          | For Construction of New Facilities on Airport Apron at Hickam AFB       | Identified a cultural layer (SIHP # 50-80-13-6692) containing numerous post hole and pit features  |

| Source                              | Type of Investigation                                  | General Location  | Findings  |
|-------------------------------------|--|---|---|
| Dye 2004                            | Archaeological Survey Report                           | Proposed Visitor's Quarters, Hickam AFB   | No significant finds (1930s Hickam artifacts)   |
| Pantaleo 2004                       | Archaeological Monitoring Report                       | For the Hickam AFB Chain Link Fence   | No significant finds  |
| DeBaker and Roberts 2004            | Archaeological Monitoring Report                       | Waterline Construction, Fort Kamehameha   | No significant finds  |
| Allen 2005                          | A Study of Native Hawaiian Traditional Cultural Places | Hickam AFB  | Fourteen places are recommended as potential TCPs   |
| DeBaker and Brown 2005              | Archaeological Inventory Survey                        | Waterline Replacement at Fort Kamehameha  | No significant finds  |
| DeBaker and Peterson 2005           | Archaeological Monitoring and Data Recovery Report     | Carried out for the Airport Apron Wash Rack Renovation Project Hickam AFB, O'ahu Island, Hawai'i (TMK: 9-9-01:13, 14) | Comments on previously identified Site 50-80-123-6692 reported in Davis & O'Rourke (2004) but there were no new finds |
| DeBaker, Peterson, and Roberts 2005 | Archaeological Monitoring and Sampling                 | Carried out for Waterline Replacement Project Bishop point and Fort Kamehameha Hickam AFB (TMK: 9-9-01:13, 14)        | Minimal finds (twentieth century artifacts associated with Watertown Village)   |
| Grant 2005                          | Archaeological Monitoring Report                       | For Fire System Sprinkler Installation at Building 1073 Hickam AFB  | Disturbed or re-deposited cultural material (midden, organic rich lenses) observed                                    |

| Source                 | Type of Investigation            | General Location   | Findings   |
|------------------------|----------------------------------|--|--|
| Jourdane and Dye 2005  | Archaeological Monitoring        | Results of Monitoring of Alternate Circuits at Hickam AFB  | No significant finds   |
| Putzi and Dye 2005a    | Archaeological Monitoring Report | for Phase II Housing Development at Hickam AFB   | Describes SIHP # 50-80-13-6761 a retaining wall related to Water Town 1908-1935  |
| Putzi and Dye 2005b    | Archaeological Monitoring Report | Report for Replace Military Family Housing Projects at Hickam AFB  | Describes a T-shaped trestle but no other historic sites   |
| Putzi and Dye 2005c    | Archaeological Monitoring Report | Conducted for the Installation of Sec Light at Hickam AFB  | No significant finds   |
| Shun and Shaw 2005     | Archaeological monitoring        | Carried out for Upgrade Electrical Distribution System Phase I, TMK [1] 9-9-001:013 Hickam AFB                       | No significant finds   |
| Tome and Spear 2005    | Archaeological Monitoring Report | Communications Utilities Related to the Ship Operations Building, Pearl Harbor                                       | Identified two subsurface features consisting of early- to mid-twentieth century artifacts associated with early history of Watertown and Hickam AFB. Traditional artifacts out of context were recovered. |
| Jourdane and Dye 2006a | Archaeological Monitoring Report | Underground Storage Tank Verification and Removal, Hickam AFB, Site Investigation Areas F3018, F2004, F701, and 3222 | Monitoring at 13 locales identified no traditional Hawaiian cultural materials or significant finds  |

| Source                          | Type of Investigation                       | General Location   | Findings  |
|---------------------------------|---|--|---|
| Jourdane and Dye 2006b          | Archaeological Monitoring Report            | Underground Storage Tank Verification and Removal, Hickam AFB, Site Investigation Areas F531, F536, F529-1, -2, -4, -5, -6, -7, -8 | Monitoring at nine locales; no significant finds  |
| McElroy, Dye, and Jourdane 2006 | Archaeological Monitoring and Investigation | Installation of Leach Field at Hickam AFB  | Deposits associated with fish ponds   |
| Petrey and McDermott 2008       | Archaeological Monitoring Report            | Māmala Substation  | No significant finds  |
| Carson, Naboa, and Athens 2009  | Archaeological Monitoring Report            | For Wharf A-7 Repair at Bishop Point   | No significant finds  |
| Kennedy and Moore 2009          | Archaeological Monitoring Report            | For Phase 5 of the Electrical distribution System Repair/ Upgrade Project, Hickam AFB at TMK: (1) 9-9-01: 013 (por.)               | Several glass bottles from the early to mid-twentieth century are reported                                    |
| Nakamura and Clark 2009         | Archaeological Monitoring Report            | Building 19 renovation, Bishop Point, Hālawa   | Describes SIHP 50-80-13-7059 a subsurface cultural deposit interpreted as a 20 <sup>th</sup> century landfill |
| Department of the Navy 2011     | Archaeological Assessment Report            | Proposed Munitions Storage Area, Joint Base Pearl Harbor-Hickam  | No significant finds  |

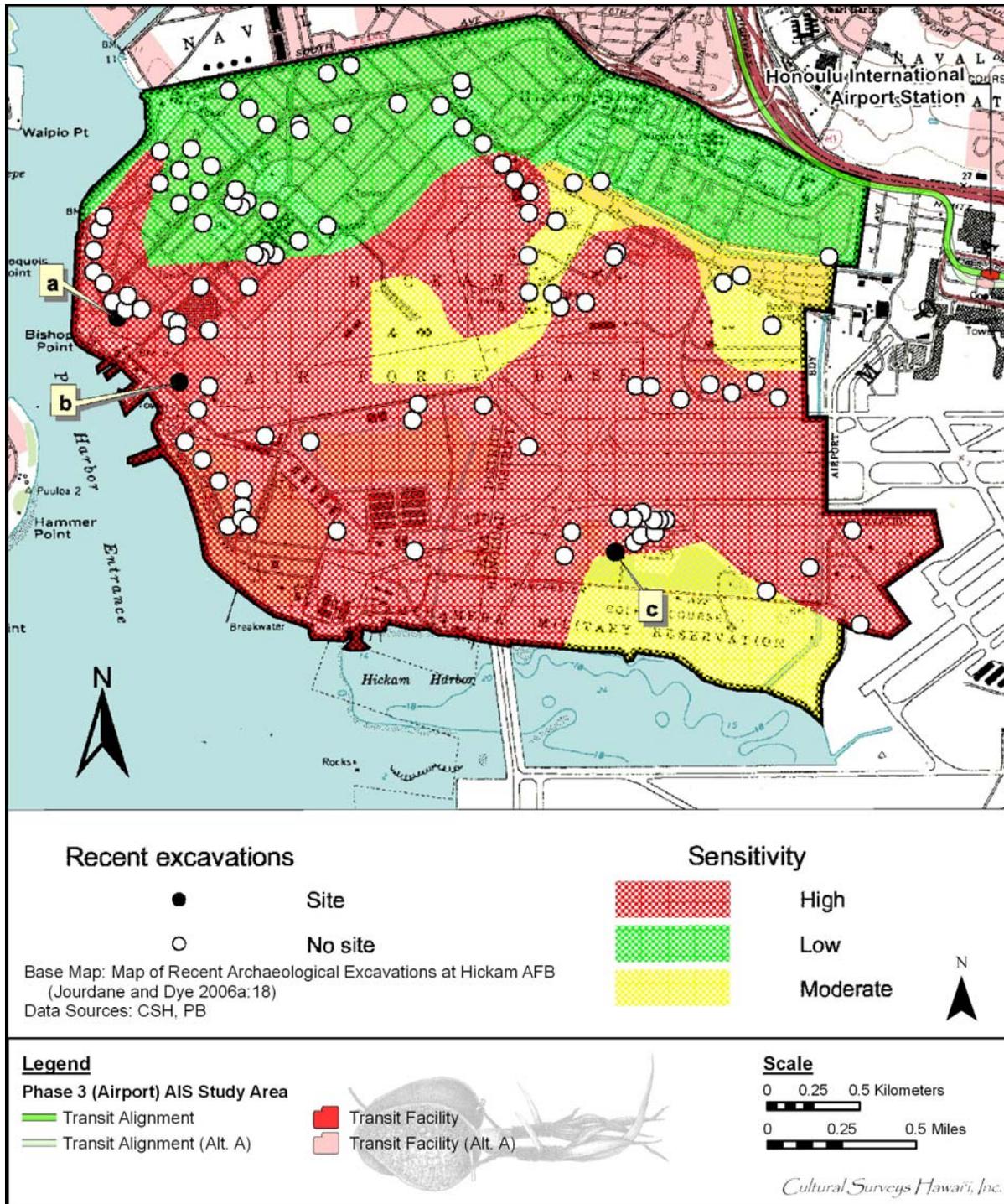


Figure 26. Results of recent archaeological investigations at Hickam AFB (adapted from Jourdane and Dye 2006a:18, showing that in over 100 recent excavations, including over 50 in the Anderson and Bouthillier “High Sensitivity” zone, there have only been three areas (identified here as “a”, “b” and “c”) identified as archaeological sites

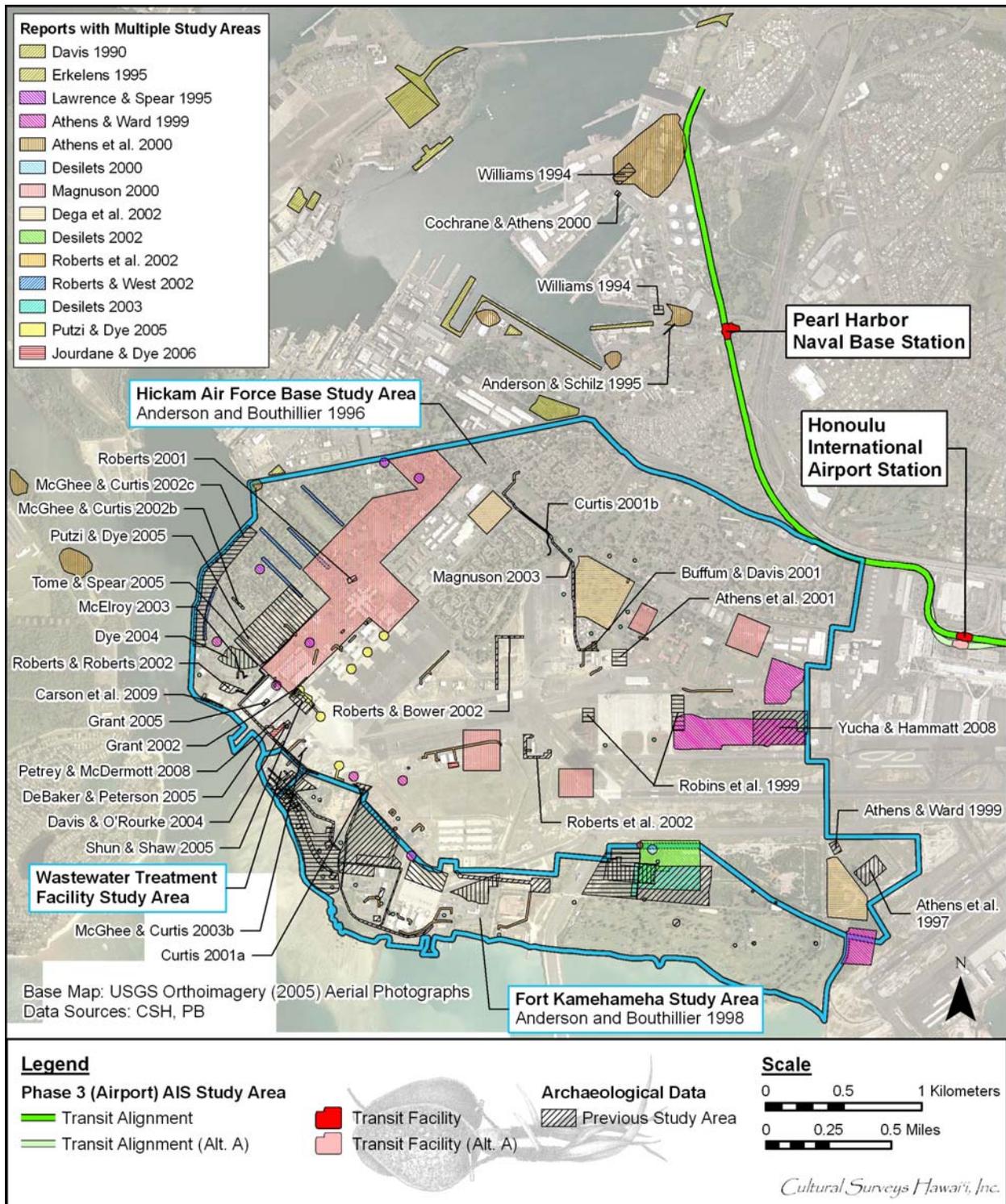


Figure 27. Previous archaeological studies at Joint Base Pearl Harbor-Hickam (coastal Hālawā and Moanalua Ahupua‘a)

## 4.4 Moanalua Previous Archaeological Research

Archaeological cultural resources were first documented in Moanalua Ahupua'a during the pioneering attempt at a comprehensive archaeological survey on the island of O'ahu by J. Gilbert McAllister of the Bishop Museum in 1933. McAllister recorded 19 "sites" (designated consecutively from Site 76 to Site 93, but including a Site 77-A) within the *ahupua'a*, giving their approximate locations (Figure 28 and Figure 29) describing their conditions at the time of the survey. The properties include several features noted in the previous section of this report but are reported as follows (quotations within McAllister's account are further indented):

### Site 76. Oven (*imu*)

Moanalua Gardens (McAllister 1933:91-92) [McAllister places this approximately 900 m *mauka* of the project alignment, see Figure 28].

A story is told by Namakahelu relating to an old *imu* which was once in the Moanalua gardens at the present site of the Damon "Chinese House":

When Kamahalolanihii was the chief of Moanalua, there lived in his district a very handsome youth called Keliikanakaole. Because of his graceful and stately bearing and his fine physique, the women were very fond of him and coveted his favors. This made Kamahalolanihii exceedingly jealous and, as time went on and the youth became more popular, the chief determined to rid himself of a mere commoner who excelled him in so many qualities and even dimmed his prestige among the ladies. For months Kamahalolanihii had the youth closely watched to discover some misdemeanor however slight, as an excuse for putting him to death. But the youth's conduct was impeccable. In exasperation Kamahalolanihii determined upon some other action, deciding upon some trial at which Keliikanakaole would be certain to fail. He went to Paeli, a man of superior mental ability who lived up in the mountains of Moanalua Valley, and asked for a riddle which would be very difficult to answer. He did not tell him for what purpose he would use this conundrum. Shortly after, Kamahalolanihii called a gathering of men to which Keliikanakaole was invited. His purpose, of course, was to present his riddle, which he ostensibly wanted everyone to try, offering a reward to any man who could find the answer within a certain number of months. He commanded of Keliikanakaole that he discover the answer, or forfeit his life, which would be taken by roasting in a red-hot *imu*. If he did learn the answer, then the chief would forfeit his own life. He then began to recite the riddle:

|                                   |                             |
|-----------------------------------|-----------------------------|
| <i>Ku au ekahi helu ana oukou</i> | First month you count one   |
| <i>Ku au elua helu ana oukou</i>  | Second month you count two  |
| <i>Ku au ekolu helu ana oukou</i> | Third month you count three |

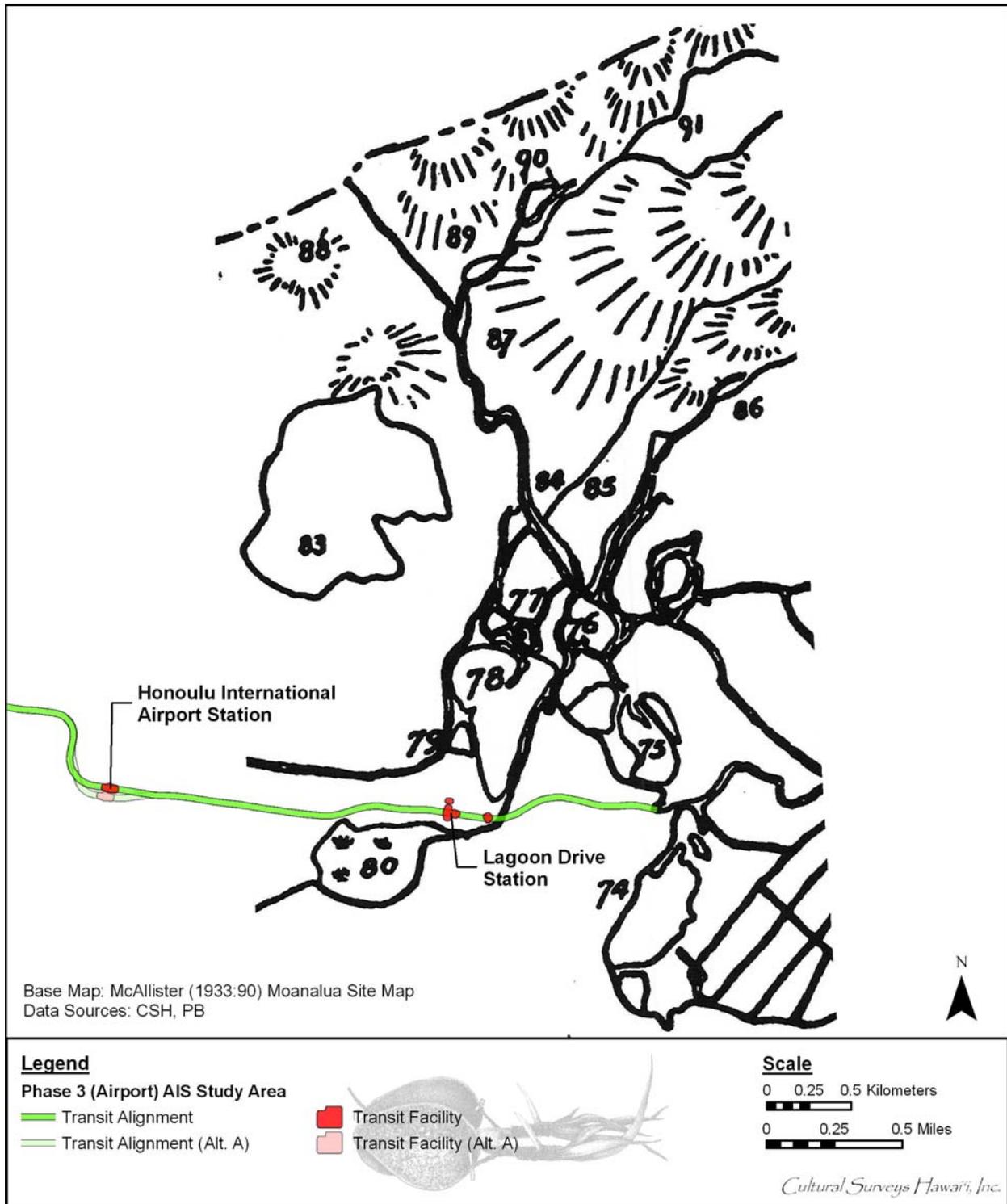


Figure 28. Overlay of project corridor on McAllister's (1933:90) Map of Moanalua Valley showing location of (McAllister's) Sites 74-80 and 83-91

|                                      |                                  |
|--------------------------------------|----------------------------------|
| <i>Ku au eha helu ana oukou</i>      | Fourth month you count four      |
| <i>Ku au elima helu ana oukou</i>    | Fifth month you count five       |
| <i>Ku au eono helu ana oukou</i>     | Sixth month you count six        |
| <i>Ku au ehiku helu ana oukou</i>    | Seventh month you count seven    |
| <i>Ku au ewalu helu ana o Ukou</i>   | Eighth month you count eight     |
| <i>Ku au eiwa helu ana oukou</i>     | Ninth month you count nine       |
| <i>Puni ka umi.</i>                  | Tenth month is the end.          |
| <i>Papahi ke aloha i kuu manawa,</i> | Then love flutters at my temple, |
| <i>Kiei e ka la o lala e.</i>        | As the sun peeps there below.    |
| <i>A Hala a'e na la e ino</i>        | After the hard days are past     |
| <i>Manini au la a holo.</i>          | It grows and runs.               |

When Keliikanakaole heard this he became very sad, for the riddle appeared very difficult to him. He began inquiring of everyone he met for the answer. From Moanalua he went all around Oahu, but no one could give him a suggestion. When the allotted time was nearly at an end he returned to Moanalua. He was so disconsolate that he cared for neither food nor sleep and only brooded upon the fate that was in store for him. The people felt sorry for him and resented the arbitrary manner in which the chief was attempting to dispose of him. His plight was learned by Paeli, and he sent for the young man to come and eat with him. Paeli felt that the chief had deceived him and he determined to save Keliikanakaole's life. The youth came but would not eat of the tempting food prepared. Why eat now when on the morrow he must die? Then Paeli told him to eat and drink and when they had finished, he would give him the answer to the riddle. Keliikanakaole was overjoyed and could hardly wait till the end of his meal for the answer which he had sought for so many months. After telling him, Paeli also warned him not to go near Kamahalolaniialii, for he did not think that the chief could be trusted. When the time came for the answer to be delivered, Keliikanakaole climbed to a near-by hill in view of the chief and people who had gathered. Kamahalolaniialii was so certain of his success that the *imu* had been prepared and was red-hot. From his distance on the hill Keliikanakaole went through the movements of the riddle. As he recited the first ten lines he remained perfectly still, which represented a life from conception to the point of birth. He then lay on the ground and as he said, "Then love flutters at my temple, as the sun peeps there below" he writhed in agony to indicate labor pains. While reciting "After the hard days are past," he imitated movements of nursing and caring for a child. During the last line he expanded and stretched himself and feigned running. The whole performance indicated the development of a life from pregnancy to

youth. At the conclusion, Kamahalolaniālii was greatly enraged, but he called to Keliikanakaole to come and receive his reward. But Paeli had warned the young man to flee if the chief called him. Immediately Kamahalolaniālii commanded his men to follow and seize Keliikanakaole and put him to death. The young man ran to the shore where the chief's own fisherman, knowing of Keliikanakaole's predicament and sympathizing with him, hid him in a cave. When the warriors who were following the youth came to the old fisherman and asked if he had seen a young man who was running away, he replied that no one had come his way. Keliikanakaole remained in hiding until the death of Kamahalolaniālii some time afterward.

### **Site 77. Poki, an apparition**

Poki, an apparition not peculiar to Moanalua but which has been seen in many places on the island. The most vivid description, however, was from a European living in Moanalua. [McAllister's (1933:92). "Site 77" appears to designate "an apparition not peculiar to Moanalua."]

He saw Poki and, as he told me of the vision, I had not the slightest doubt but that he had seen it. It happened many years ago as he was returning from Honolulu on horseback. The moon had just risen, flooding the tops of ridges with light, which emphasized the blackness of valleys. He had just passed Fort Shafter and was beginning the descent into Moanalua when, with a sudden jerk, his horse stopped and stood trembling. In the distance arose the wailing of dogs. Glancing about, the rider saw coming off the ridge to his right a pale form. As he watched, it left the ridge and passed over the dark valley. It was a shapeless, white form, a mist, convulsed with movement, but slowly and stately moving over the invisible treetops, clear and distinct against the black silhouette of the Koolau Range. As the apparition passed over the settlement, there preceded it the whimpering and wailing dogs, but in its path there followed a deathly stillness. Even after it was lost to sight, its presence could be followed by the ever attendant wailing. The rider, being an educated and intelligent gentleman, gives the following explanation at which he shrugs his shoulders and smiles. There is much loose dirt on the eastern ridge above Moanalua. The apparition may have been a small whirlwind illuminated by the rising moon. When asked, Namakaheleu rebuked me with, "Poki was seen many places on the island."

### **Site 77-A. Wakaina Heiau**

Wakaina Heiau on the land of Umimua, Moanalua. (McAllister 1933:93) [McAllister probably intended to locate this *heiau* on his Moanalua site location map as his Site 77, see Figure 28; approximately 1 km *mauka* of the project alignment.]

**Site 78. Mapunapuna fishpond**

Mapunapuna fishpond Moanalua [McAllister places this approximately 600 m *mauka* of the project alignment, see Figure 28].

The pond is 40 acres in area with a wall 1600 feet long. The wall, 10 feet wide, 1 foot above the water on the inside, and 2.5 feet high outside, is almost straight, enclosing a small inlet. There are now four outlets (*makaha*). The wall is principally of coral. Adjoining it on the landward side and near the Damons' house is a small pond said to have been called Keawamalia. It is surrounded by earth embankments.

**Site 79. Awaawaloa fishpond**

Awaawaloa fishpond, Moanalua [McAllister places this approximately 400 m *mauka* of the project alignment, see Figure 28].

A small 8.8-acre pond with a coral rock wall 900 feet long. There are now two outlets (*makaha*). The wall is broken. The adjoining pond, known as Ahua, is said to be recent.

**Site 80. Kaloaloa fishpond**

Kaloaloa fishpond, Moanalua [McAllister places this approximately 200 m *makai* of the project alignment, see Figure 28].

The pond is 36 acres in area with a semicircular wall 2700 feet long. The walls are of coral, 6 feet wide and 3 feet high. There are three outlets (*makaha*).

**Site 81. Kaihikapu fishpond**

Kaihikapu fishpond, Moanalua.

This pond, which is 258 acres in area, with a coral wall 4500 feet in length, 3 to 8 feet in width, and 3 feet high, and three outlets (*makaha*), was built by Kaihikapu-a-Manuia. In the vicinity there were apparently salt pans, for when Captain Brown ran short of salt, he was directed "to the saltponds at Kaihikapu" by Kalanikupule. While the crew was obtaining salt, Captains Brown and Gardner were killed by a party of Hawaiians under Kalanikupule and Kamohomoho.

**Site 82. Lelepaua fishpond**

Lelepaua, a large inland fishpond, in Moanalua.

It is "332 acres, mostly filled," according to Cobb. The walls were coral and earth embankment, 10 feet or more wide. The pond was built by Kaihikapu-a-Manuia, and according to Dibble was the place at which Captain Brown obtained salt.

Site 83·Aliapaakai (Salt Lake), Moanalua [approximately 1,400 m *mauka* of the project alignment, see Figure 28].

Fornander (1916) describes this as the place at which Pele once thought to make her home:

Upon their arrival at Oahu, Pele and Hiiaka took up their abode in Kealiapaakai, at Moanalua" where they dug down into the ground and made a home. On coming from Kauai they brought some red dirt and some salt with them and deposited these things in their new home. Because of this fact these places were given the names of Kealiapaakai and Kealiamanu. Upon finding that the place was too shallow they went to settle at Leahi.

In Kalawela's lamentation for Kahahana, Thrum makes the annotation: "Alia, a salt pond, was the place where the souls of the dead were supposed to descend to the nether world." This may be confused with 'the place mentioned by Kamakau near Kapukaki. (See Sites 88, 186):

According to Jarves [1872:7] it was thought to have a hole in the center " ... five to six fathoms in circumference which, as no bottom has been found to it, is supposed to connect with the ocean. Through this the lake is slightly affected by the tides." Wilkes reported, however, that "No fathomless hole was to be found, and no greater depth than eighteen inches."

In the vicinity of Aliapaakai, Kotzebue [1821:343] observed "several tapa plantations; a tree, of the bark of which the cloth of this country is manufactured."

#### **Site 84. Namakalele, "Flying Eyes"**

Namakalele, "Flying Eyes," a small land section in Moanalua [McAllister places this approximately 1,800 m *mauka* of the project alignment, see Figure 28].

Here Keawe and his wife Keanahaki lived happily many years ago. Daily he went to the mountains cutting wood, gathering plants, and doing other chores. As soon as he could he hurried home and then out to the sea to fish. His whole day was filled in and he had little time for his family, which was steadily increasing. This routine life continued until after the birth of his sixth child. Then one day his wife said, "While you go to the mountains, I will fish." Keawe agreed and then went to the mountains as usual, and Keanahaki started for the sea. On her way she felt peculiar and realized that another self was coming to her. Halfway down she stopped and chanted, asking that the lower portion of her body be made stationary while the upper portion went to the sea to fish. She then continued to the shore, where she stood and again chanted. Telling her right eye to fly to the sea and bring certain fish, then to her left eye to fly in another direction and catch other fish. After some time, she called to her right eye to return. It fluttered back, bringing many fish. Later the left eye returned bringing more fish. These she divided into portions for her husband, children, and herself. Then she not only ate her share, but continued eating until only one fish remained. This she took home. When her husband saw this small

catch he naturally was disappointed. "Was this all you were able to catch?" he inquired of her. "Yes," she 'replied. For many consecutive times Keanahaki returned with only one fish, which greatly dissatisfied Keawe. He reasoned that a person could not continually have such bad luck. Then he learned from a friend that his wife was no normal being. She had unusual 'powers, he was told. As she stood by the shore, her eyes out at sea caught the fish. If Keawe would gather leaves from the *ipuawaawa* vine, he would be able to catch and preserve the eyes of his wife, should he follow and watch her when she went fishing. So one day Keawe pretended to go to the mountains as usual, but he waited and watched for his wife to go fishing. When she did, he followed her. As soon as Keanahaki got to the shore she again chanted for her right eye to fly over the sea and fish for certain fish and for her left eye to fly in another direction and bring in other fish. Keawe watching her was astounded. He came very close to his wife, but she could not see him, for her eyes were gone. When she called to her eyes to return he caught them as they flew back with the fish. Carefully he wrapped each eye in some leaves of the *ipuawaawa*. Then he gathered the fish and went home, while his wife stood on the shore calling for her eyes and wondering why they did not return. When Keawe reached his grass hut, his children gathered round and were proud of the catch father had brought in. He left them admiring the fish and went to the hut to hide the eyes. He did not know that the smallest child, the sixth, had noticed the small bundle and followed and watched his father place it on a high ledge. In the meantime Keanahaki, waiting on the beach for her eyes to return, became suspicious of what had occurred. Stumbling and groping, she slowly found her way home. There her six children gathered around. She asked them if their father had returned "Did he bring anything with him?" Yes, they replied, "a large mess of fish." "Didn't he have anything else? A small bundle that he didn't open?" No five of them had seen nothing more; but the smallest told his mother that he had seen his father with a small bundle wrapped in leaves and watched him place it on a high ledge. "Show me where," the mother said, and the youngster led her to the place. After groping about Keanahaki found and restored her eyes to their sockets. That is why this place is known as Namakalele.

### **Site 85. Kaulua or Kauwalua “House of Bones”**

Kaulua or Kauwalua “House of Bones [McAllister places this approximately 1,800 m *mauka* of the project alignment, see Figure 28].

Kaulua or Kauwalua in Moanalua has received attention from a number of writers, probably because of the unusual and bizarre nature of a "house of bones" which was 'located at Lapakea in Moanalua Valley. It is a small land on the plateau between Puukapu and Puu o Ma‘o, Inland of the highway. According to my informant, Namakahelu:

Kaualua was constructed by Kalalakoa (Kalaikoa) when he was chief of Moanalua. He was in the habit of stationing himself at a prominent place along the roadway, probably not far from Puukapu, and waylaying travelers. After overpowering them in hand-to-hand combat, he would kill them and remove the long bones with which he was constructing a fence around his grass hut. This continued for many years, and the people were in great fear of him and would go many miles out of their way, frequently traveling by canoe, rather than pass his house. When this fence had almost been completed except for one more set of bones, there arose a warrior, by name Kaluailalawa. He gathered together a large group of people and expressed his intention of attempting to kill Kalalakoa. The people went with him to the foot of Puukapu where they remained while he climbed to the top of the hill where Kalalakoa was watching. As Kaluailalawa neared the chief, he told him that he had come to fight. "It means death," Kalalakoa replied. "Then let me rest and get my breath" said Kaluailalawa, to which the other agreed. After an interval, Kalalakoa again warned the warrior that the outcome meant death, but Kaluailalawa lunged forward and tripped the chief toppling him over and throwing himself upon him and killing him. The people who were watching below sent up a mighty cheer.

The portion of the account dealing with Kaluailalawa as given by Namakahelu differs from all other records. Fornander writes as follows:

Fearfully did Kahekili avenge the death of Haeu on the revolted Oahu chiefs. . . . It is related that one of the Maui chiefs, named Kalaikoa, caused the bones of the slain to be scrapped and cleaned, and that the quantity collected was so great that he built a house for himself, the walls of which were laid up entirely of the skeletons of the slain. The skulls of Elani, Konamanu, and Kalakioonui adorned the portals of this horrible house. The house was called "Kauwalua," and was situated at Lapakea in Moanalua, as one passes by the old upper road to Ewa. The site is still pointed out but the bones have received burial.

The following account was obtained by Stokes:

Kalaikoa was chief of the district, lived right by the old highway where it crossed the cliff, and occupied himself by waylaying the travelers and killing them for the purpose of getting their bones to build a fence around his house. He was secure from reprisals, as he had a strong body of soldiers at his call. After killing his victims he extracted the long arm and leg bones and planted them upright in the ground to make a low palisade. Retribution overtook the bloodthirsty chief, for when he had the fence completed, except for the bones of one man, he died, and his bones were used to fill the gap. -

[The fence was] composed of the leg and arm bones placed erect in the ground as close together as the fingers when relaxed. They were not tied.

There was a single line of fence, making a square enclosure, one side of which was 50 feet (paced). In this enclosure was a large stone platform on which the grass house had stood, but there was no house standing when he [Mr. Stokes' informant] first saw the place. Well outside the enclosure, 60 feet to the south, was a small house, built entirely of stone, into which the remaining portions of the murdered bodies were put. He had seen the house there himself. The house was not an *imu* but of proper house shape, large enough for the body of a man. The road passed between this and the fence. This house the old man spoke of as a "heiau" dedicated to the war god Kaili. It had walls three feet high and four feet wide, with a pitched roof of stone and a door facing the bone fence. Outside the door was a stone pavement, where the priests gathered.

Corney visited this site in 1818 on his way from Honolulu to Pearl Harbor:

In my tour with Mr. Manning (Manini), we visited the ruin of a large stone house, or fort, which had formerly belonged to a great chief; it had a double fence of human bones around it; these were the bones of his enemies killed in the war before the islands were visited by Europeans. The bones of this great chief are said to be still in the house; the natives are afraid to go near it; preferring to go a round of five or six miles to passing it.

Nothing at present remains of this site, though the possible burial place of the bones from the fence is still in evidence (See Site 88).

#### **Site 86. Probable Heiau**

Probable Heiau, Moanalua district [McAllister places this approximately 2 km *mauka* of the project alignment, see Figure 28].

Located on the side of the ridge facing the stream in the valley, a northwest direction, is a small heiau with practically an open terrace, for there is only one wall 3-5 feet high and wide which delimits a portion of the southwest side. The terrace is almost entirely rock-paved, and toward the center of the back is an area which appears as if it might have been the foundation for some structure with a slight terrace surrounding it. The slope in back is rather steep, with several convenient shelters which bear evidence in the form of bits of mats and broken gourds of having been frequented and probably used as habitations.

#### **Site 87. Burial cave**

Burial cave, Moanalua Valley [McAllister places this approximately 2.5 km *mauka* of the project alignment, see Figure 28].

On the cliff northeast of the highway just before turning into the road which leads to the golf club is a burial cave. The mouth was at one time closed with a facing of stones, but has since been opened and the cave looted, the fragmentary remains of skeletons being scattered within. The remains of two coffins near the entrance

indicate post-European use of the site. A half-dozen people can comfortably seat themselves within the chamber. No old burials were evident.

### **Site 88. Terrace facings**

Terrace facings, Moanalua Valley [McAllister places this approximately 3 km *mauka* of the project alignment, see Figure 28].

On the north side of the rather level top of Puukapu, or Kapukaki, are a great many stones which appear to have been the facing of a terrace 115 feet long and probably 30 to 40 feet wide. This stone facing on the north is now greatly disturbed but the remains are sufficient to indicate its former regularity. It is 10 feet wide and 5 feet high, with a number of square depressions side by side, not more than 1 to 2 feet deep, and averaging 5 feet across. South of the terrace is the rather precipitous slope into Aliamanu, a crater-like depression with Aliapaakai (Salt Lake) adjoining farther south. The survey triangulation station is just west of the terrace. The structure is so old that Mr. Douglas Damon was unable to discover the significance of the site from the Hawaiians. Only one of those of whom I inquired had knowledge of the place and she, Namakahelu, told me that here the bones which had formed the fence of Kaulua (Site 85) were buried.

Macrae undoubtedly visited this site May 18, 1825. He makes the following notation:

By 4 P. M. we gained the summit of a high hill thickly covered with tufts of long grass. It lies within three miles of Hanarura. There is a burying ground of the natives at the top which was formerly where the chiefs of high rank had a morai [heiau]. At the bottom toward the sea, there is a circular salt pond [Aliapaakai], nearly two miles in circumference, surrounded by low conical hills."

The location and features of the site lead me to believe it was a heiau. Namakahelu knows it as a burying ground. Macrae describes it as an old heiau used as a place of burial, which may explain the disturbed condition of the stones. When the bones were removed from Kaulua (Site 85) this old heiau terrace was probably thought to be a suitable and logical place for burial.

Kamakau speaks of "The burial mound of Aliamanu, which may possibly be this same site. In the vicinity of Kapukaki was an entrance to the nether world [Site 186]."

Another reference to this same site was made by Lyons:

"One (*ahupua'a*) near Honolulu may still be seen on the north external slope of the crater of Salt Lake. This, besides marking the boundary of Halawa and Moanalua, marked also the limits of the Kona and 'Ewa districts."

### Site 89. Pu'u o ma'ō

Pu'u o ma'ō stone with figures in relief [McAllister places this location approximately 3 km *mauka* of the project alignment, see Figure 28].

Puu o ma'ō, the cliff forming the eastern side of Moanalua Valley. This site on Puu o ma'ō is the approximate place where a stone with figures in relief was found several years ago, at a depth of several feet. The stone is now in the Damon gardens before the house occupied by Kamehameha IV and Kamehameha V. The figures have been described in great detail by Stokes:

The stone is an irregularly shaped piece of rather finely cellular basalt, measuring 31 inches long, 21 wide and 17.5 thick, the face of which has been carefully worn down by hammering ... leaving the representations of two human figures in relief ... The measurement from head to foot [of the figure on the right] is 11.8 inches ... The hand has only three fingers.

The height of the relief of the figure on the right, which is the most distinct, averages about 1 inch. The other figure measures 10.2 inches from head to foot. It is believed that the figures are of Hawaiian conception, but they resemble neither the carved wooden images nor the petroglyphs. They are unique in presenting a profile view, in the squatting position of the figures, and in the detail of the limbs.

### Site 90. Paliuli Heiau

Paliuli Heiau, on the north side of Moanalua Valley about 1 mile above Salt Lake [McAllister places this approximately 3.2 km *mauka* of the project alignment, see Figure 28].

Only two portions of the heiau are now discernible. One is a small elevated terrace which is divided by a line of flat stones placed upright on their long sides. The back of this area was similarly marked off. No trace of stepping can now be found on the front of the long slope. Some 30 feet back and above this terrace is a bluff 10 to 20 feet high with a cave at its foot. This was formerly used as a place of burial, according to Douglas Damon, but as the contents were gradually being carried away and the bodies subject to the disrespect of curio hunters, the remains were burned some years ago. A wall begins near the upper terrace and continues along the side of the hill for some distance. It not only has the appearance of recent construction, but does not seem to form a part of the heiau.

The second portion is a lower terrace; a part of the front side still shows evidence of having been evenly faced and stepped. A portion of a tibia was seen imbedded between the rocks about one foot deep. Upon further examination, a crushed skull which was wedged between the rocks 1.5 feet deep was seen a few feet from the tibia. Both appear to have been placed at the time or before the building of the terrace. It is possible that this terrace suggested a good burial ground to the Hawaiian after the heiau fell into disuse in missionary times, as in Sites 293, 329, 371. If this happened, a large number of stones were removed and then replaced so as to appear undisturbed.

There were probably other features of the site, for many stones had been removed before Mr. Damon could stop a workman whom he found dislodging stones on the heiau. These stones were not replaced but were evenly piled in circles a few hundred feet below the site.

### **Site 91. Koaloha Heiau**

Koaloha Heiau, Honolulu side of Moanalua Valley, about halfway up the Side of the ridge [McAllister places this approximately 3.6 km *mauka* of the project alignment, see Figure 28].

The front of the terrace is visible from the road in the valley. The entire structure is approximately 93 feet front by 50 feet wide, built of the rather rough lava rocks found in the vicinity. It appears to have been but a single main terrace, with step-like ledging in front, two smaller areas on either side, and one or possibly two small terraces, which probably formed the oracle tower site, in the back-center against the steep slope. The large stone just north of the main terrace may or may not have had any connection, though the stone paving which surrounded it, except in front, would indicate that it had a function. The heiau was undoubtedly approached by an incline which zigzagged up the front. The slope back of the terrace is steep and in places precipitous.

### **Site 92. Waiola pool**

Waiola pool, Halawa side of Moanalua Valley above the mountain home of Mr. Douglas Damon.

The pool is said to have medicinal qualities. The old Hawaiians came here to bathe [sic] when they were recuperating from illness.

### **Site 93. Pōhaku ka lua hine Petroglyph Bolder**

Toward the head of Moanalua Valley by the side of the stream on the land known as Kahalelauki is a stone 11 feet by 8.7 feet by 3 feet high, which is known by the name of Pohaku ka lua hine. The current tradition regarding the stone follows:

During the consecration of a heiau in Moanalua Valley, a small child cried. Now, noise made by man or animal during such tapu periods meant instant death for the offender. The grandmother, desiring to protect the child, ran with it up the valley and hid behind this rock. Men were sent out in search, but were unable to find them. After the elapse of the tapu period of a few days, the woman and the child were safe and returned to their home. Namakahelu, the oldest living kamaaina of Moanalua Valley, is of the opinion that this is a recent story. The stone, she says, was sacred, an akua, with at least two forms of which she knows. As a stone it was known as Laupo, and as a bird it was known as Laea. Offerings were placed before it. On the top and sides were a number of petroglyphs, probably many more formerly than now, for there are a number of indistinct depressions which may or may not be artificial. Portions of the

konane board which was on a flat portion of the upper side, have been badly weathered.

The *konane* board measures 22 by 27 inches, with 90 holes, 9 rows on the short side and 10 on the other. Aside from the board there are 22 carvings that are sufficiently distinct to form definite patterns. Nearly all are human figures. Aside from those shown, there are many depressions scarring the face of the rock which are not definitely limited and may be natural. Some were undoubtedly artificial, but continued weathering has obliterated distinct features ...

In summary, the 19 "sites" McAllister recorded at Moanalua include:

- five fishponds (named Mapunapuna, Site 78; Awaawaloa, Site 79; Kaloaloa, Site 80; Kaihikapu, Site 81; and Lelepaua, Site 82);
- five storied places (including a legendary *imu*, Site 76; Āliapa‘akai or Salt Lake, Site 83; a land section associated with the "Flying Eyes," Site 84; the "House of Bones," Site 85; and a medicinal pool, Site 92);
- an apparition of no specific provenience (Site 77);
- a burial cave (Site 87);
- an area of terraces (Site 88);
- two rock carving sites (Site 89, the location of an unusual relief carving and Site 96, the famous Pōhaku ka luahine petroglyph boulder of Moanalua Valley); and
- four *heiau* – (Wakaina, Site 77-A; Paliuli, Site 90; Koaloa, Site 91; and an unnamed "probable" *heiau*; Site 86).

By the 1970s, all traces of the named *heiau* had been lost; T. Stell Newman writes:

A search was made in 1970 for Paliuli, Koaloa, and Umi Mua (or Wakaina) *heiau* by B. Jean Martin and myself as part of the Statewide Inventory effort. Working from a copy of the original McAllister base map (not the simple drawing in the published volume), we determined McAllister's locations for Paliuli and Koaloa *heiau* and made a field check at these two locations. The location of Paliuli is now covered by residences and no trace of the *heiau* remains. Although the major part of a day was spent searching the hillside where McAllister plotted Koaloa *heiau*, no trace of it was found. It was probably destroyed by the old, now abandoned, road that winds up the mountain side. Ms. Martin and I also thoroughly checked the area where the *heiau* at Umi Mua was said to have been located after being shown the spot by Frances Damon Holt - without finding a trace of it. (Newman et al. 1973: 23)

None of the cultural resources recorded by McAllister are in the immediate vicinity of the current study area (see Figure 28). The cultural resources are generally situated at lower elevations along the coastal plain and along the flat bottoms of the two major valleys - Kamana-nui and Kamana-iki - of the *ahupua'a*.

However, one property - a burial cave (Site 87) - is located to the south of the junction of Moanalua Road and Ala Aolani Road, near the base of Tripler Ridge:

On the cliff northeast of the highway just before turning into the road which leads to the golf club is a burial cave. The mouth was at one time closed with a facing of stones, but has since been opened and the cave looted, the fragmentary remains of skeletons being scattered within. The remains of two coffins near the entrance indicate post-European use of the site. A half-dozen people can comfortably seat themselves within the chamber. No old burials were evident. [McAllister 1933: 96]

The cave was further studied in 1964 by Lloyd Soehren of the Bishop Museum. Excavations in the cave floor exposed, at the lower levels, traditional Hawaiian artifacts (including bone and shell fishhooks, basalt adzes, a dog or pig tooth pendant, and cores and flakes of volcanic glass), organic material, and midden pointing to a shelter or habitation function for the cave prior to its use during the historic-era as the burial repository noted by McAllister.

In a 1980 proposal for further archaeological investigation of the cave site, Bertell D. Davis and M.W. Kaschko suggest that it “functioned primarily in the context of people and goods moving back and forth between the coastal and upper valley areas”; and further:

What the nature of this seaward-landward traveling may have been is not certain. Early in the settlement period it may have involved only intermittent treks from the coastal settlement back into the upper valleys to gather wild forest products. Later travel may then have become more regular as settlement extended further and further into the valleys. But whether these upland residences represent short-term or long-term occupation remains a question. (Davis and Kaschko 1980:8-9)

The possible pre-Contact settlement and the archaeological resources extant within the upland areas of Moanalua would become a question of special concern during the 1960s and 70s, when Kamana-nui Valley - the westernmost of the two major valleys of Moanalua - was proposed as a route for the H-3 Interstate Highway. The floor of Kamana-nui Valley was surveyed in 1970 by archaeologists from the Bishop Museum (Ayes 1971). The survey located 57 archaeological cultural resources, including: terraces, a pre-Christian shrine, house platforms, and two petroglyph rocks. The survey report concluded that “utilization of Kamana-nui Valley by prehistoric populations was limited but does show evidence of having been of greater significance than was previously thought” and “both agricultural and residential units were developed in this valley” (Ayes 1971:35). Further:

It is believed that the terraces in the upper portion of Kamana-nui Valley represent a time period when the local population reached a high level and indicate attempts by individuals or family groups to delineate clearly their agricultural tracts. [Ayers 1971:33]

Two historic properties have been documented within the Tripler Army Medical Center (TAMC) property. Both historic properties were recorded during an archaeological reconnaissance survey of the TAMC conducted by archaeologists from the Bishop Museum on November 10, 1976 (Rosendahl 1977). The TAMC study was a portion of a survey project that included:

...all lands owned or controlled by the Army within the State of Hawaii, [comprising] 34 individual installations totaling 174,237.16 acres...Because the overall study area was far more than could be adequately surveyed in full, individual installations were survey-sampled. Areas to be sampled were selected on the basis of literature search and aerial photograph analysis. (Rosendahl 1977:1-i).

Of the total 367.17 acres comprising the TAMC, approximately 202 acres were deemed to have potential for having archaeological features - the excluded acreage having been "modified to such an extent that it could no longer possibly have [surface] sites" (Rosendahl 1977:1-11) - and the actual survey-sampled area consisted of 36.7 acres. The two historic properties are located in the broad gully on the northwest side of the TAMC, below the gymnasium building and the enlisted men's barracks.

SIHP # 50-80-14-9504 is called the "Moanalua Complex" and is described as comprising a small, crude platform of stacked stone and piles of stones from clearing activities. SIHP # 50-80-14-9505 is called "Moanalua Terraces" and is described as consisting of crude retaining walls defining terraces and possibly a house platform. Both historic properties were evaluated as in poor condition and no positive dating (i.e. whether pre-Contact or historic) of them was possible. The sites are further evaluated as historic properties, the value which should be preserved if possible (Category III - Section 4-1, Historic Property Evaluation; TM 5-801-1: Technical Manual, Historic Preservation Administrative Procedures, Headquarters Department of the Army, 1975), and the report notes that "although the sites are of minimal potential for research and/or interpretation, they are suggestive of patterns of past human occupation in this dry environment" (Rosendahl 1977).

In 1994, an archaeological assessment of the TAMC property was conducted by Cultural Surveys Hawai'i (Hammatt and Chiogioji 1994). The previously identified SIHP #s 50-80-14-9504 and -9505 were relocated and documented with formal historic property descriptions, scale drawings, and photographs.

Portions of the TAMC were later investigated by archaeologists from Ogden Environmental and Energy Services Co., conducting an archaeological surface survey of study areas of a proposed VA Medical Regional Office Center (Hurst and Williams 1994). These sites included:

...the proposed Parking Garage, Center for Aging, Reproduction/Administration Facility; and the DPW Entomology Shop areas. These areas were selected as the most likely areas to contain surface archaeological sites or evidence for subsurface deposits. (Hurst and Williams 1994:1)

No surface historic properties or evidence of possible subsurface deposits were observed. The archaeologists suggest further investigation - archeological monitoring during initial vegetation clearing and grading - of one area:

Of the various project components, only the area proposed for the new parking garage appears to have favorable conditions for intact subsurface cultural deposits, and even there the potential is very low. The potential for subsurface deposits in the parking garage area is assumed to be somewhat more favorable than other areas in TAMC because the parking garage will be built within a small

gully that does not have any structures within it. If remains are present, they are likely to be isolated earth ovens, firepits, charcoal concentrations, or lithic debris. No surface remains were located in the gully, but a dirt road had been recently graded into the gully and the material pushed down the slope, possibly burying surface remains. The area of the gully above the road was also examined, however, and no remains were present; this makes it highly unlikely that any surface features were buried by material pushed from the road. (Hurst and Williams 1994:18)

#### **4.5 Archaeological Studies in the Immediate Vicinity of the Study area**

As can be seen from Figure 26, there have only been three areas in neighboring Hickam in which sites have been found (shown as “a,” “b,” and “c” on Figure 26). Two of these designated sites lie nearly four kilometers to the southwest on the eastern margin of the entrance to Pearl Harbor in what was clearly an intensively used area in traditional Hawaiian times. The nearest designated site (shown as locale “c” on Figure 26), and the only one within three kilometers, consisted of three pit features (Desilets 2002a) designated as site 50-80-13-6406. While finds were limited to thermally altered limestone, charcoal, and very sparse quantities of midden, the carbon dating ranges obtained of AD 1478 – 1664 and 1306 – 1452 include the earliest reported date for Hickam AFB. This appears to be the only site designated in the eastern half of the Hickam AFB.

The closest studies, such as the Carlson 2001 study of the Manuwai Canal, found no significant finds. In addition, Cultural Survey's recent archaeological investigation (Yucha and Hammatt 2008) of six geo-technical test borings in the 22 acres of undeveloped land to the southwest of the current study area's western parcel evidenced no cultural deposits.

A consideration of the results of the many archaeological studies that have taken place at Hickam AFB since Anderson and Bouthillier (1996) produced their sensitivity map suggests that the designation of a large area of inland east Hickam AFB as of high archaeological sensitivity might not be completely accurate. At the time of the creation of the Anderson and Bouthillier (1996) sensitivity map, there had not been a single archaeological study east of the present western reef runway taxi approach, which is to say there had not been a single archaeological study within two kilometers of the present study area. We now know a great deal more about the likelihood of significant subsurface deposits in eastern Hickam, and the likelihood appears to be not high or even moderate but, as a generalization, may be expected to be rather low.

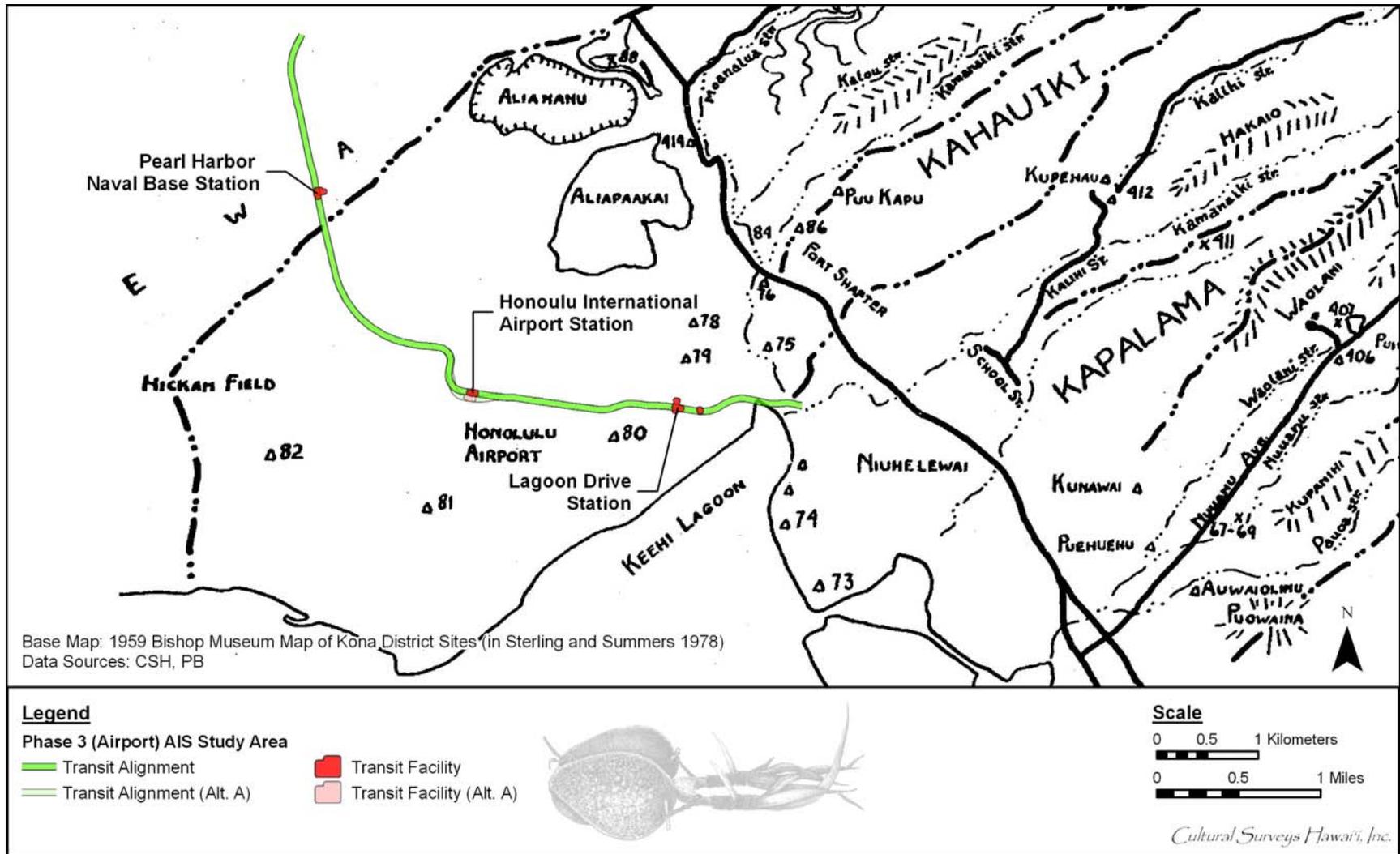


Figure 29. 1959 Bishop Museum site location map (adapted from Sterling and Summers) showing neighboring fishponds (Site 80 is the Kaloaloa Fishpond, Site 81 is the Ka’ihikapu Fishpond, and Site 82 is the Lelepaua Fishpond)

Table 8. Previous Archaeological Studies at Moanalua Ahupua'a (not including Joint Base Pearl Harbor-Hickam and Fort Kamehameha studies)

| Source          | Type of Investigation           | General Location            | Findings  |
|-----------------|---------------------------------|-----------------------------|---|
| Cobb 1905       | Fisheries Inventory             | Territory-wide              | Fishponds in Moanalua include: Lelepaua (332 acres, mostly filled up), Kaihikapu (258 acres)  |
| Stokes 1909     | Study of walled fish traps      | Pearl Harbor                | Located former fish trap at Bishop Point  |
| McAllister 1933 | Early survey                    | O'ahu Island                | Site 81. Kaihikapu Fishpond; Site 82. Lelepaua, a large inland fishpond at Moanalua; Site 94. Loko Waiaho, known as Queen Emma's pond; Site 95. Loko Ke'oki was a pond near Watertown; Site 96. Papiolua Fishpond in Hālawā   |
| Barrera 1979    | Archaeological Reconnaissance   | Salt Lake District Park     | Possibly relocated a previously identified rockshelter indicated on a State Historic Preservation Office map (# 50-80-13-500). Survey incomplete due to difficult terrain.  |
| Connolly 1980   | Archaeological Reconnaissance   | Salt Lake District Park     | Identified one overhang shelter, a possible temporary habitation with human burial remnants (# -3992). Report referenced Bishop Museum excavations in 1961 and 1964, which documented # -500 (containing cultural deposits) and Bishop Museum Site Oa-A7-21, (containing midden, adzes and adz fragments, fishhooks, a pumice disk, and a canine tooth). Due to steep slopes, was unable to examine several other rock overhangs. |
| Sprinkle 1996   | Cultural Resource Investigation | Proposed Detention Facility | Not found in SHPD library   |

| Source                 | Type of Investigation            | General Location  | Findings   |
|------------------------|----------------------------------|---|--|
| Tomonari-Tuggle 1998   | Archival Background Research     | Honolulu Airport Post Office  | Concluded that there was little probability of intact archaeological deposits within the project area. Research indicated that the project area and vicinity was likely not used in any intensive way during the pre-Contact era |
| Athens and Ward 1999a  | Paleoenvironmental Coring Report | Ka'ihikapu Fishpond, Vault-X Project, Honolulu International Airport                        | Site 50-80-13-81 fishpond research – no sediments from pre-Contact Polynesian period   |
| Yucha and Hammatt 2008 | Archaeological Monitoring Report | Undeveloped 22-Acre Portion of the SDOT's HIA Terminal Modernization Elliott Street Project | No cultural deposits were identified. The project area's subsurface deposits appear to be intact near the present water table at depths between 1-3 m below the modern level ground  |